



Our ref: DOC20/886017

Senders ref: SSI 10040

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Via email: [iwan.davies@planning.nsw.gov.au](mailto:iwan.davies@planning.nsw.gov.au)

4 December 2020

Dear Mr Davies

**Subject: EnergyConnect (NSW - Western Section) – SSI 10040**

Thank you for your email dated 27 October 2020 seeking comments from the Biodiversity and Conservation Division (BCD) of the Department of Planning, Industry and Environment (the Department) on the Environmental Impact Statement (EIS) for the EnergyConnect (Western Section) project (SSI 10040).

We have reviewed the exhibited EIS against the Secretary's Environmental Assessment Requirements (SEARs) provided by the Department to the proponent on 31 July 2020.

BCD considers that the EIS has not fully met the Secretary's requirements for biodiversity. The proponent must address issues 1 - 16 outlined in **Attachment A**. The Biodiversity Development Assessment report (BDAR) requires more work to be compliant with the Biodiversity Assessment Method (BAM). BCD expects a revised BDAR to be provided as part of the Response to Submissions.

BCD considers that the EIS **does** meet the Secretary's requirements for flood risk, contingent upon the proponent addressing issue 17 outlined in **Attachment A**.

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

All plans required as a Condition of Approval that relate to biodiversity or flood risk should be developed in consultation with and to the satisfaction of BCD.

Matters of National Environmental Significance under the *Environmental Protection and Biodiversity Conservation Act 1999* will be considered in a separate response in accordance with the bilateral agreement (EPBC 2020/8673).

If you have any questions about this advice, please contact Andrew Fisher, Senior Team Leader - Planning, via [rog.southwest@environment.nsw.gov.au](mailto:rog.southwest@environment.nsw.gov.au) or 02 6022 0623.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Graeme Enders'.

Graeme Enders  
**Director**

**South West Branch**  
**Biodiversity and Conservation Division**  
**Department of Planning, Industry and Environment**

## ATTACHMENT A BCD Assessment Summary for EnergyConnect (NSW – Western Section) Environmental Impact Statement (SSD 10040)

### Key Issues

1.	<i>Issue</i>	<p>Avoidance and minimisation of impacts.</p> <p>The design elements presented are based on standard approaches that do not reflect the local context. No justification has been provided for the proposed extent of tree trimming, easement width and the width of access tracks in the context of the vegetation communities of the project area.</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>• <i>Provide justification for proposed removal of all vegetation to 2m height along the entire route length, given the different tower heights proposed for the project.</i></li> <li>• <i>Provide justification for the need for a standard Transgrid easement width that relate specifically to the low and sparse natural vegetation communities of western NSW.</i></li> <li>• <i>Finalise the width of all access tracks and provide justification for the required widths.</i></li> <li>• <i>Append the document Vegetation clearance requirements at maximum line operating conditions (TransGrid 2003).</i></li> </ul>
	<i>Extent and Timing</i>	Pre-determination

2.	<i>Issue</i>	<p>Maintenance areas labelled 'no impact' have not been assessed.</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>• <i>Include areas where maintenance actions will occur in the impact area or justify why ongoing maintenance activities will have no impact on biodiversity.</i></li> </ul>
	<i>Extent and Timing</i>	Pre-determination

3.	<i>Issue</i>	<p>Description of mitigation of prescribed biodiversity impacts</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>• <i>Rearrange Table 8.3 in the BDAR to focus on the list of prescribed impacts in Section 6 of the BAM.</i></li> </ul>
	<i>Extent and Timing</i>	Pre-determination

4.	<i>Issue</i>	Assessment of Serious and Irreversible Impacts
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		<p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>• <i>Explain why the project alignment cannot avoid the areas of habitat for Austrostipa nullanulla.</i></li> </ul>
	<i>Extent and Timing</i>	Pre-determination

5.	<i>Issue</i>	<p>Impacts on avifauna</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>• <i>BDAR to include more specific mitigation measures for transmission line strike and EMF exposure for larger species, particularly raptors.</i></li> <li>• <i>Ensure BDAR mitigation measures include actions to minimise disturbance of nesting raptors.</i></li> </ul>
	<i>Extent and Timing</i>	Pre-determination
	<i>Recommended Conditions of Approval</i>	<i>Prior to construction, an adaptive management plan for impacts of transmission line strike and EMF exposure to bird and bat species will be prepared, in consultation with BCD, and to the satisfaction of the Department.</i>

6.	<i>Issue</i>	<p>Vegetation maintenance and 'partial' impact assessment</p> <p>The BDAR does not provide full details about operational impacts and how these relate to the assessed threatened species habitat and species credit species.</p> <p>No information is presented to justify the assumptions about vegetation management that result in the vegetation integrity score adjustments relating to the vegetation integrity scores in 'partial' impact zones.</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>• <i>Provide TransGrid maintenance procedures referenced in BDAR s10.3 that will involve impacts on biodiversity during operation, either in the text or in an Appendix</i></li> <li>• <i>Revise the BDAR to include consideration and assessment of all impacts associated with the 'partial' impact zones.</i></li> </ul>
	<i>Extent and Timing</i>	Pre-determination

7.	<i>Issue</i>	<p>The Category 1 land assessment lacks the required evidence relating to the criteria stated in the <i>Local Land Services Act 2013</i>. The proposed route includes vegetation communities that have naturally patchy tree cover, no rationale has been presented for classifying areas between patches as Category 1 land.</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>• <i>Provide a Category 1 land assessment that shows the Local Land Services Act 2013 (s.60H) criteria for each lot and include specific evidence relevant to the criteria.</i></li> </ul>
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		<ul style="list-style-type: none"> <li>Update all EIS/BDAR figures with the correct terminology for areas that are not Category 1 - Exempt land.</li> </ul>
	<i>Extent and Timing</i>	Pre-determination

8.	<i>Issue</i>	<p>The BAM should document all the vegetation zones in the four assessed IBRA subregions.</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>Revise Table 3.9 to include all zones (by BAM-C subregion case).</li> <li>Provide an explanation as to why the condition state of the PCTs was considered to be the same across the entire alignment. For each IBRA subregion BAM-C case, justify why BAM plot data from outside the subregion was relevant to generate VI scores for vegetation zones.</li> </ul>
	<i>Extent and Timing</i>	Pre-determination

9.	<i>Issue</i>	<p>Modified BAM threatened flora survey methods have been used without endorsement.</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>Provide the dataset showing PCTs in moderate to good condition used to determine threatened flora survey locations (to enable BCD assessment of survey adequacy)</li> </ul>
	<i>Extent and Timing</i>	Pre-determination

10.	<i>Issue</i>	<p>Categorisation of vegetation condition requires clarification. Vegetation zones would be better classed as good, moderate or poor condition.</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>Replace the term 'modified' in the PCT (vegetation zone) descriptions with a more appropriate term.</li> </ul>
	<i>Extent and Timing</i>	Pre-determination

11.	<i>Issue</i>	<p>Derived native vegetation communities appear to have been over-estimated.</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>Demonstrate that vegetation mapped as derived is not an open-woodland or natural structural variant of the relevant PCT, such as where the overstorey is absent due to fire or drought.</li> </ul>
	<i>Extent and Timing</i>	Pre-determination

12.	<i>Issue</i>	Arid woodlands/shrubland classification.
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		<p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>• <i>Bull and whipstick mallee communities should be considered in the BDAR as communities in a natural state unless there is clear evidence that they are significantly modified.</i></li> </ul>
	<i>Extent and Timing</i>	Pre-determination

13.	<i>Issue</i>	<p>The impact of drought on vegetation condition and implications for the assessment of vegetation integrity have not been adequately considered.</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>• <i>BDAR to provide an assessment of drought impacts on vegetation condition and assigned vegetation integrity scores.</i></li> </ul>
	<i>Extent and Timing</i>	Pre-determination

14.	<i>Issue</i>	<p>Rehabilitation/revegetation mitigation measures.</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>• <i>BDAR to provide a summary of mitigation measures that relate to the proposed rehabilitation of vegetation.</i></li> </ul>
	<i>Extent and Timing</i>	Pre-determination

15.	<i>Issue</i>	<p>Explanation of avoidance and mitigation hierarchy.</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>• <i>Restate the hierarchy of avoidance and mitigation in the BDAR to better relate to the relevant biodiversity values.</i></li> </ul>
	<i>Extent and Timing</i>	Pre-determination

16.	<i>Issue</i>	<p>Biodiversity Offset Strategy</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>• <i>A Biodiversity Offset Strategy to be developed to demonstrate how the biodiversity credit obligation will be met</i></li> </ul>
	<i>Extent and Timing</i>	Pre-construction
	<i>Recommended Conditions of Approval</i>	A Biodiversity Offset Strategy will be prepared prior to construction, in consultation with and to the satisfaction of the Department

17.	<i>Issue</i>	<p>The qualitative flood risk assessment completed as part of the EIS does not fully satisfy the submitted BCD environmental assessment requirements related to flooding.</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li>• <i>In the detailed design phase, complete quantitative flood modelling and assessments for infrastructure that will be located in floodplain areas with the aim to reduce flood impacts to acceptable level of risk</i></li> </ul>
	<i>Extent and Timing</i>	Pre-construction
	<i>Recommended Conditions of Approval</i>	<i>In the detailed design phase the proponent will complete flood modelling and assessments on infrastructure located in floodplain areas, to reduce flood impacts to acceptable levels of risk, to the satisfaction of the Department.</i>

## **ATTACHMENT B Detailed comments for EnergyConnect (NSW - Western Section) Environmental Impact Statement (SSI 10040)**

### **Biodiversity**

**The EIS does not meet the Secretary's environmental assessment requirements for biodiversity.**

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

#### ***Avoidance and minimisation of impacts***

Section 24-2 of the EIS states that environmental investigations have been carried out to ensure that potential impacts are understood with a high degree of certainty. Table 8.2 (Section 8.1.2) of the BDAR lists design factors that will be considered to avoid and minimise impacts of the project. However, this table does not mention tower height, easement width and width of access roads as a means of reducing the clearing footprint.

It is reasonable to expect that the heights of towers to be used in different locations will be known for assessment purposes. Width of roads required to access the towers is a detail that should also be known, in addition to partial impacts resulting from intended tree trimming in the areas under the powerline. Such dimensions of the project have implications for impacts on vegetation and the operational footprint of the proposal.

#### ***Rationale for clearing under transmission tower heights***

Using transmission towers of different heights could reduce impacts on woody vegetation if there is flexibility in approach to risk management. Section 5.4.1 of the EIS discusses transmission line maintenance with generic diagrams of clearing areas needed to support infrastructure. However this section requires justification for the clearing areas based on typical tree heights in the impact area for this project.

We note that the project description for the Robertstown to SA / NSW Border section of Project Energy Connect (ElectraNet 2019) states that 'As much of the vegetation present on the alignment is relatively low, slow growing and at mature height, it is possible that it can be spanned across with minimal clearance required.' ElectraNet (2019) also state that 'Where possible, conductor heights will be set to avoid or minimise vegetation clearance in sensitive areas both during construction and ongoing maintenance.'

Typical tree height in mallee vegetation communities (PCT170, 171, 172) is 5-6m. The EIS should describe why there is a significant reduction in risk to infrastructure from reducing the height of woody vegetation from 5m to 2m under a transmission line spanning 80m high towers, even with sag in the middle of the span. For instance, risk could be mitigated through mallee communities by using the tallest towers and trimming in the centre of the span where sag is greatest but leaving 4m trees untrimmed where the wires are above 50m high. This would leave habitat connections at regular intervals along the alignment. Figure 6 and 7 of the *Victorian Electricity Safety (Electric Line Clearance) Regulations 2020* are schematic representations showing required clearance from tree canopy relative to power line heights (including maximum sag and sway). This is an example of how required management actions in different local contexts could be represented in the EIS.

Section 6.6.2 refers to *Vegetation clearance requirements at maximum line operating conditions* (TransGrid 2003). This document should be appended to the EIS.

#### **Recommended action:**

- *Provide justification for removal of all vegetation to 2m height along the entire route length, especially given the different tower heights proposed for the project.*
- *Append the document Vegetation clearance requirements at maximum line operating conditions (TransGrid 2003).*

#### ***Easement width***

Under the *Biodiversity Conservation Act 2016*, development should first avoid impacts on biodiversity and then use mitigation measures to minimise impacts. Linear infrastructure not only removes habitat but creates barriers to wildlife movement and reduces effective habitat patch size. Maintaining patch size is acknowledged as an important aspect of biodiversity management at a landscape scale.

The EIS states that impacts have been, or will be, reduced as 'far as possible', but the EIS does not state the reasons why the transmission line easement needs to be up to 80m wide (Section 5.5.2 and Figure 5.9 EIS). Clearing is the greatest impact of the project and this is a construction standard that does not take into account the site context, including the typical height of canopy trees.

A TransGrid Line Design Standard (July 2018) which complies with AS/NZS 7000 standard states that easement widths are 'sized to ensure standard safety clearances under high wind conditions, provide an area where vegetation heights can be controlled and provide ease of access for ongoing maintenance and repairs'. The standard width for 300kV single or double circuit is 60m.

The easement width in this project does not consider the nature of the vegetation communities through which the transmission line passes. The same easement that will be applied in this project in the very low, open woodland of western NSW is used in the tall closed forest in eastern Australia, where risks from high winds and fire are likely to be greater. If the easement width is designed to manage risks to infrastructure then additional justification is required

The EIS should describe the reasons for 'vegetation management' standards for maintaining separation from infrastructure, if necessary in reference to any national or internal design standards. Figure 5-9 is a diagram showing high risk trees (those with potential to fall on the power line). The EIS should be more specific about local circumstances, describing the wind and fire risk relative to the typical canopy height of vegetation communities in the project area.

**Recommended action:**

- *Provide reasons for the need for a standard Transgrid easement width that relate specifically to the low and sparse natural vegetation communities of western NSW.*

**Access roads**

The Area A clearing footprint for the project shown in GIS files provided with the EIS includes a 10m wide access track extending the entire length of the transmission line. Section 6.6.3 of the EIS describes different road and track options and states that a maximum of 6m will be required for **constructed** access tracks.

Evidently a 10 m wide access track is not essential, given that there will not be a track at locations where the line crosses major watercourses.

In relation to the Robertstown to SA / NSW Border section of Project Energy Connect (ElectraNet 2019), access tracks are only required to each tower, and would be up to 5 m wide. Across the length of a large project such as EnergyConnect (Western), an access track the entire length of the easement and a width double that used elsewhere will considerably increase the biodiversity impact and as a result the offset requirement.

If the 'access' track between towers will involve the clearing to ground level of all vegetation, including grassland and chenopod communities, justification needs to be provided for the width of access track to be used

**Recommended action:**

- *Finalise the width of all access tracks and provide justification for the required widths.*

**Maintenance areas labelled 'no impact' have not been assessed**

Areas of vegetation labelled as 'no impact' in the digital data (PECx\_IA\_vegPVT\_v02) where maintenance activities may occur have not been assessed.

Some areas of naturally treeless vegetation have not been assessed. Assumptions about the impact of maintenance on biodiversity are not sufficiently explained to justify exclusion of these areas from the assessment.

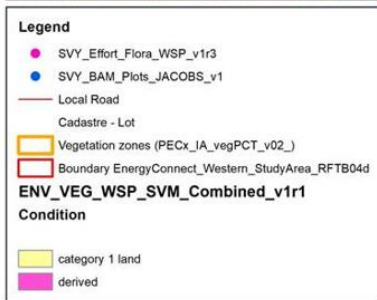
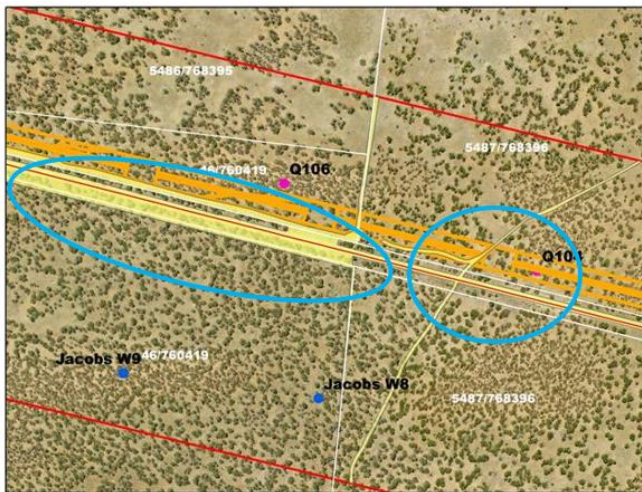


For example: South Olary Plain sub-region (Lot 9, DP 1255309), mapped as PCT 154 Pearl Bluebush low open-shrubland in the vicinity of Jacobs flora plot W12. Jacobs ecologists described vegetation within this plot as in 'good condition'.

The EIS should explain the following:

- the specific impacts of maintenance
- if maintenance includes regular vehicle movements across the vegetation
- if weed control is to occur within this area, and if so, what are the impacts on this vegetation and associated threatened species and their habitats?

Example of category 1 land mapped on Renmark Road roadside and Lot 5487/768396 that requires further justification (blue circle).



**Recommended action:**

- *Include areas where maintenance actions will occur in the impact area for the project or justify why ongoing maintenance activities will have **no** impact on biodiversity.*

**Prescribed biodiversity impacts**

Tables 8.3 and 8.4 of the BDAR (Section 8) repeat information about how row items relate to prescribed biodiversity impacts. A simpler approach would be to list the prescribed impacts (Section 6 of the BAM 2020) and list avoidance and mitigation for each impact.

**Recommended action:**

- *Rearrange Tables 8.3 and 8.4 in the BDAR to focus on the list of prescribed impacts as required in Section 6 of the BAM.*

**Serious and irreversible impacts**

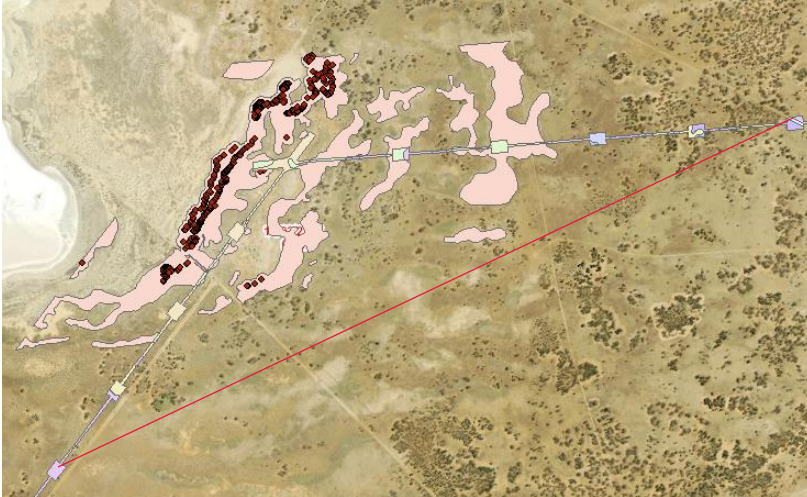
BDAR Section 9.4

Two threatened plant species that are serious and irreversible impact (SAIL) candidates were identified in the project area.

The project as presented avoids all impacts on *Dodonaea stenozyga*. The project will result in the loss of 2.18 ha of habitat for *Austrostipa nullanulla*.

Table 9.14 provides an assessment of the SAI on *Austrostipa nullanulla*, following the *Guidance to assist a decision-maker to determine a serious and irreversible impact* (DPIE, 2019). The assessment addresses most of the SAI criteria.

However, the BDAR states that the proposal was refined to avoid and minimise impacts on *Austrostipa nullanulla*. In fact, there is an opportunity to completely avoid the gypseous rises that are habitat for this species by running the alignment south of this area (see figure below). The EIS does not explain why this option was not feasible.



**Recommended action:**

- Explain why the project alignment cannot avoid the areas of habitat for *Austrostipa nullanulla*.

**Impacts on avifauna**

Section 6.2.3 of the BDAR provides an appropriate assessment of threatened fauna habitat along the alignment. The rationale for excluding mallee dependent bird species such as black-eared miner, mallee fowl and red-lored whistler from impact assessment is reasonable. Ground nesting birds such as chestnut quail-thrush will be less affected if a good shrub layer remains to connect north and south patches of mallee.

The risk of transmission line strikes to threatened avifauna (particularly raptors) should be assessed as a prescribed impact in Table 6.14 of the BDAR, because it is an impact that is in addition to clearing and difficult to quantify and offset. Hence, avoiding and minimising the impact is critical (BAM Stage 2 Operational Manual, Section 1.2). The Applicant should apply the assessment framework for vehicle strikes (BAM 2017 s9.2.1.9) or wind turbine strikes (BAM 2017 s9.2.1.8) as both categories of impact are analogous to transmission line strikes.

Similarly, Electromagnetic Frequency (EMF) exposure should be assessed as an indirect impact because it:

- relates to negative effects on the threatened species habitat beyond the subject site (BAM 2017 s 9.1.4.1)
- is lower in intensity when compared to direct impacts (BAM Stage 2 Operational Manual, Section 1.2)
- has an impact which is harder to spatially predict (BAM Stage 2 Operational Manual, Section 1.2),

The BDAR (Appendix F, page F-4.10) correctly identifies that certain aerial species are at higher risk of collision including 'guilds of larger and higher-flying birds, which reside over larger territories. These birds include birds of prey, ravens and magpies, cockatoos and some parrots, waterbirds and waterfowl'. The Applicant should use survey data to clearly identify these at-risk species and undertake the following assessment:

- predict the likelihood of impact on aerial species resident in, or likely to fly over, the project area, using survey data. This assessment should include threatened bats.

- predict the rate of impact taking into consideration mobility, abundance, range and other relevant life history factors
- justify predictions of likelihood of impact
- predict the consequences of impacts to bioregional populations
- map significant landscape and habitat features within the zone of disturbance for species likely to be affected, i.e all foraging habitat for threatened species, not simply species locations and species polygons for species credit species.
- justify predictions of likelihood and nature of impact

The BDAR Appendix F (page F-4.4). correctly identifies that certain types of birds (e.g. larger raptors) are more likely to use towers to nest for longer periods of time, which poses a higher risk due to EMF exposure The Applicant needs to assess the indirect impacts to specific threatened species habitat caused by the EMF. This assessment of indirect impacts BAM 2017 s9.1.4.3) should:

- identify the threatened species likely to be affected
- describe the nature, extent and duration of short-term and long-term impacts to the high-risk species identified
- predict the consequences of the impacts for the bioregional persistence of the threatened species.

This assessment should include quantifying the expected level of EMF exposure to the high-risk species identified above in kilovolts per metre (V/m) of transmission line and Amperes per meter (A/m). The Applicant should compare those unique exposure levels to those in the scientific literature to obtain a clearer understanding about the expected physiological decline in the high-risk species identified.

Several raptors were recorded during surveys. BCD recommends that any nesting close to the alignment should be confirmed and disturbance avoided during breeding seasons. Department staff advise that there is an existing raptor platform on a 220kV tower near where the proposed alignment crosses the Sturt Highway. It may be wedge-tailed eagle or white-breasted sea-eagle. If it is the latter then particular attention should be given to avoiding disturbance during the breeding season.

Black-breasted buzzards may also nest on towers, unless there is nest supplementation or nest deterrents used (see comments below about Biodiversity mitigation).

The BDAR must outline the adaptive management strategy proposed for minimising impacts that are uncertain. BCD strongly recommends using an adaptive management plan that includes:

- measures to monitor predicted impacts.
  - o a monitoring program should be established to provide annual estimates of bird mortality (and which account for errors associated with scavenging, searcher efficiency, sampling frequency and survey area)
  - o monitoring should intensively target high risk locations in the alignment as well as high risk times such as migration periods or shortly after erection the structures (BDAR Appendix F, page F-4.1).
- trigger thresholds for species mortality which will result in adaptive management actions.
- measures to mitigate impacts which are targeted to high risk species.

The 'bird flappers' proposed in the BDAR (Appendix F, page F-4.10) employ three deterrent methods (depending on the brand used) but are likely only effective on smaller species are identified in the BDAR as being at low risk of collision and EMF exposure. We note that the use of bird flappers is not mentioned in Section 11 the BDAR (p 220), so it is not clear if their use is a mitigation commitment. They should also be included in the EIS Tables 9-7 and 23-3.

BCD recommends a suite of mitigation measures, as it is unlikely that a single approach will be effective for the entire alignment. Effective mitigation measures should be targeted to particular threatened species which are at high risk of collision and EMF exposure (e.g, those listed in Section 6.3 of the BDAR, p 128 - 137). Given the highest risk category of birds are raptors, mitigation measures to be considered should include:

- Raptor Wire Bird Diverter which is mounted on structures to discourage raptors from roosting and nesting above the insulator strings.
- Nest supplementation, which would involve building stick nests in high risk areas to attract raptors away from TL poles. Nest supplementation has been effective for a number of falcon species.
- Perch deterrent devices which have been effective in deterring raptor use of transmission lines in North America (Slater & Smith 2010). This might include using spikes or devices which deliver a mild electric shock.

It is important that the mitigation measure/s employed are targeted to the threatened species most at risk of transmission line strike and EMF exposure. A suite of measures may be required depending on the risk profile to particular threatened species at that particular location.

**Recommended action:**

- *BDAR to Include more specific mitigation measures for transmission line strike and EMF exposure for larger species, particularly raptors.*
- *Ensure BDAR mitigation measures include actions to minimise disturbance of nesting raptors.*
- *Preparation of an adaptive management plan for impacts of transmission line strike and EMF exposure to bird and bat species.*

**Vegetation maintenance and partial impact assessment**

The BDAR (Section 10.3, Operational Vegetation Maintenance and Partial impact assessment) refers to TransGrid operational reports for vegetation removal and ongoing maintenance, but does not provide any details about operational impacts and how these relate to the assessed threatened species habitat and species credit species.

Partial impact is described as “removal of vegetation growing over 2 m tall”. The BDAR should describe the impacts of trimming and maintenance activities, including (but not limited to) how the vegetation will be removed, ongoing vehicle hygiene measures, weed control methods, ongoing vehicle movements outside the total impact zone

Impact assessment should include how each candidate ecosystem credit species or confirmed species credit species would be impacted in partial clearing zone.

No information is presented to determine whether assumptions about vegetation management inherent in the partial VI scores are reasonable. Ideally reductions in VI scores should be based on published information. The BADR must describe what future weed control measures will be used and how are impacts to threatened fauna resulting from edge effects will be managed.

Any claim for partial direct impacts would need to be validated in post-construction monitoring at an appropriate interval (e.g. 5 and 10 years), including a commitment in the Biodiversity Offset Strategy for securing additional offsets if actual VI score after monitoring is lower than the predicted VI score in BAM-C.

**Recommended action:**

- *Provide TransGrid maintenance procedures referenced in BDAR s10.3 that will involve impacts on biodiversity during operation, either in the text or in an Appendix*
- *Revise the BDAR to include consideration and assessment of all impacts associated with the ‘partial’ impact zones.*

**Category 1 land assessment**

BDAR Section 5.1 Native Vegetation Regulatory Mapping – Category 1 ‘Exempt Lands’

In responding to a request for advice about a preliminary Category 1 land assessment, BCD stated (5 August 2020) that evidence was needed to justify the use of the stated criteria under Section 60H of the *Local Land Services Act 2013* (LLS Act). This advice has not been reflected in the EIS or BDAR.

Section 3.6.1 of the BDAR describes the resources used to determine if land would satisfy the definition of Category 1 - Exempt land under the LLS Act.

Section 5.1.1 of the BDAR appropriately identifies various kinds of land as assessable, including derived native vegetation in grazing pastures and sensitive regulated land.

Some of the areas identified as Category 1 (or equivalent) accord with the Department's land mapping. However, other areas, particularly the areas between patches of trees, do not match government mapping.

The aim of EIS land assessment is to identify land that does not require BAM assessment because it would satisfy the criteria of Category 1 - Exempt land if a mapping process was applied to it.

Under the LLS Act, in order for land to be mapped as Category 1 the Environment Agency Head must 'reasonably' believe that relevant conditions on the land apply. These conditions include one or more of the following according to Section 60H of the LLS Act:

- land cleared before 1 January 1990
- land cleared **lawfully** after 1 January 1990
- land that is comprised of low conservation grasslands
- land identified as regrowth in a property vegetation plan.

In all these cases, evidence must be presented to allow the Environment Agency Head to make a decision. The same applies to this EIS in order for areas to be removed from BAM assessment.

Note that in assessment presented in the BDAR, where native vegetation clearing occurred after 1990 it has been assumed that it was lawful. This is **not** a valid assumption. Evidence from LLS should be provided about the clearing.

The EIS should stipulate which criteria from Section 60H of the LLS Act are being used to categorise particular areas of land as not assessable (identified by Lot/DP) and present relevant evidence to support the claim.

In vegetation communities that have naturally patchy tree cover, no rationale has been presented in the EIS for classifying areas between patches as equivalent to Category land. Justification is required that addresses the natural patchiness of the PCTs in question, as well as ground cover species composition and condition.

Note that the BDAR uses NVR Map terminology to identify areas that are subject to assessment. The term Category 2 – Regulated Land refers to **particular** areas (mapped on the NVR Map) that the Agency Head has designated as Category 2 – Regulated Land. For the purposes of the BDAR, land that is not the equivalent of Category 1 – Exempt Land, and is not shown on the NVR Map as Category 2 – Regulated land, is just land to which the BAM applies. The BDAR figures should reflect this to avoid confusion, including updating relevant figures.

**Recommended action:**

- *Provide a Category 1 land assessment that shows the LLS Act criteria for each lot/DP and includes specific evidence relevant to the criteria.*
- *Update all EIS/BDAR figures with the correct terminology for areas that are not Category 1 - Exempt land.*

## **Vegetation integrity plots**

BDAR Section 3.6.5 Vegetation integrity plot survey effort (page 26)

A BAM-C case has been created for each of the four IBRA sub-regions that cover the proposed project route.

The number of BAM vegetation integrity plots required for BAM calculations is based on vegetation zone areas determined for the amalgamated project area and not the vegetation zones in each IBRA subregion. Although the BAM and Operational Manuals do not specify that vegetation zones are to be differentiated by IBRA sub-region, it is evident that subregional datasets are unique. The BAM Operational Manual Stage 1 (page 24) states that 'Where multiple discontinuous areas of vegetation form a vegetation zone ... plots must be evenly distributed across these areas if size permits. If size is restrictive, as a minimum, at least one plot should be placed in each of the separate areas.'

The result of the approach used for the assessment presented in the BDAR is that a number of BAM plots are used in more than one BAM-C case because there are too few plots to cover the number of vegetation zones when the subregion is considered. In addition, some vegetation zones are oversampled.

The assessment considers that PCTs are in the same condition state across the entire alignment. Those that are not 'derived' are identified as 'modified' and therefore are only considered as one vegetation zone (e.g. the large communities like PCT58, PCT153 and PCTs 170 and 171 (whip mallee) occur across the whole alignment). The BDAR should explain why the vegetation condition is considered to be the same across the whole alignment, and therefore why the condition state from plots outside a subregion are appropriate for inclusion in the BAM-C data analysis. If vegetation condition varies, then there should be more zones, and therefore more BAM vegetation would be required.

Nevertheless, the BAM calculator has anomalies in the vegetation integrity plot data entry. One zone has too few plots and several have more than required, as explained below:

- Pooncarie Darling subregion PCT 21. This is a small area that required 1 plot. It would have been more appropriate to do the one plot in the subregion because the other plots in PCT 21 are a long way from this area. Also, all four PCT 21 plots were entered in the calculator.
- PCT 153 – three quadrats were used (Q78, Q54, Q55). The latter 2 quadrats are located about 60km away from the subregion, whereas Q88 and Q87 are within 15km. It is unclear why the quadrats closer to the subregion were not used.
- There is a 4.2ha area of PCT 170 (modified) that would require 2 BAM plots that appears to have been grouped with PCT 170 (modified-bull) (4 plots). However, if these are in fact separate vegetation zones then no plots were done for the former. It may be an error in coding the GIS file, but requires explanation.

The assessment presented has a total of 58 vegetation zones over three IBRA bioregions and four subregions. Bioregional differences are expected within each PCT, so BCD would have expected the plots to be representative of at least the three bioregions, and ideally the four subregions.

BCD would note that the number of zones can be reduced in the BAM-C by entering areas of a zone with different future vegetation integrity (e.g. partial and total impact) as management zones within a vegetation zone, rather than separate vegetation zones.

### **Recommended action:**

- *Revise Table 3.9 to include all zones (by BAM-C subregion case).*
- *Provide an explanation as to why the condition state of the PCTs was considered to be the same across the entire alignment. For each IBRA subregion BAM-C case, justify why BAM plot data from outside the subregion was relevant to generate VI scores for vegetation zones.*

### **BAM field survey methods have been modified without consultation and endorsement**

Section 3.7.1 Candidate threatened flora species field approach (page 28)

The Stage 1 BAM Operation Manual (page 37-38) requires that targeted threatened species survey must be in accordance with the available taxa-specific guidelines. There is no evidence that the proponent received agreement from DPIE for the modified threatened flora survey method. The justification for altering the method on page 29 relies upon information that has not been provided to DPIE.

The BDAR (page 29) describes a desktop analysis to demonstrate adequacy of threatened flora survey, including 'assessment of PCTs in moderate to good condition sampled under an indicative calculation using the new guidelines plot based approach'. Neither the BDAR or the BAM-C describe vegetation as being in moderate or good condition, and a dataset with these descriptors has not been provided with the spatial data. As such, we are unable to verify whether modification to the threatened flora survey technique meet BAM minimum requirements.

The 2016 NSW Guide to Surveying Threatened Flora (OEH 2016) is included in the list of guidelines used for survey design (page 3.7.1). Regardless of whether the 2020 update for BAM flora survey (DPIE 2020) was available before field survey was designed, Section 4.4 of the 2016 guide clearly states that there may be options for reducing the survey requirement for large areas through consultation with OEH regional offices (now BCD Branches).

**Recommended action:**

- *Provide the dataset showing PCTs in moderate to good condition used to determine threatened flora survey locations (to enable BCD assessment of survey adequacy)*

***Descriptions of vegetation condition in the EIS are not supported by the BAM vegetation integrity plot data***

In the BDAR, vegetation that is not considered derived is classed as 'modified'. This may lead the reader to infer that the vegetation is not in a natural state or is in poor condition. The term 'modified' is not useful as an indication of degree of disturbance, which is the intention of the broad condition state.

The vegetation integrity scores for a number of the vegetation zones labelled as 'modified' are above 70 and represent those vegetation types in relatively good condition. For example, PCT 154 'modified' in the Pooncarie-Darling subregion has a VI score of 95.2, which is close to benchmark. This vegetation zone (and others with VI >50) should be labelled as moderate or good condition.

Most vegetation in NSW has been modified since European settlement. All of the vegetation in south-western NSW has been grazed to some degree by native and exotic herbivores. Most of the PCTs are labelled as 'modified' because of grazing (based on the community profile descriptions in Appendix C). But the term 'modified' implies that the PCT is permanently affected and this not the case when the impact is the result of the combination of drought and grazing.

Ninety two percent of the plots for the project were completed before July 2020, which was while the project area was still in drought. Categorising PCTs as 'modified' simply as a result of drought does not appropriately describe the vegetation condition.

Labelling all communities as modified also suggests that the condition state is the same across the entire alignment. If grazing has contributed to a 'modified' condition, it is more likely that grazing regimes on multiple properties covering 150km would produce the different condition states.

The vegetation zones would be better classed as good, moderate or poor condition if there is any difference between areas, otherwise just the PCTs should just be identified by the number.

**Recommended action:**

- *Replace the term 'modified' in the PCT (vegetation zone) descriptions with a more appropriate term.*

***Derived vegetation***

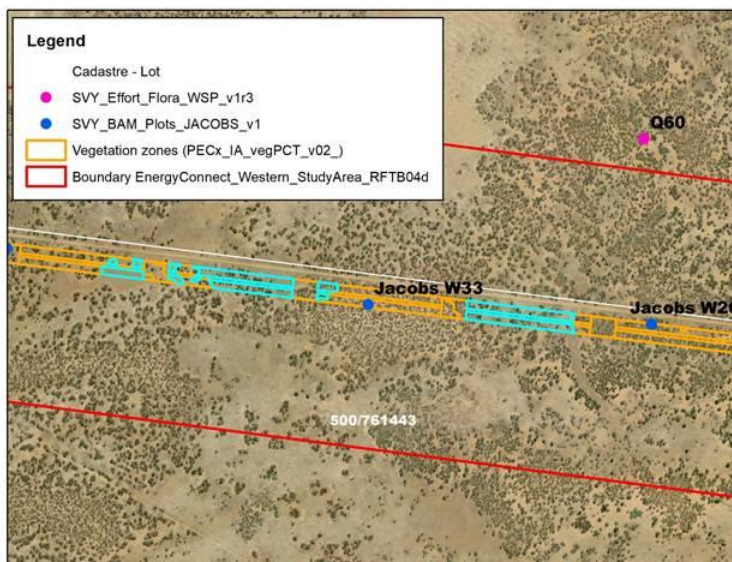
Derived native vegetation communities appear to have been over-estimated.

Derived vegetation is defined in the BDAR as vegetation lacking a canopy stratum (e.g. see PCT 56 page C2.32). This definition does not accord with the definition in the BAM Operational Manual (Stage 1, page 15) that derived (or secondary vegetation) is vegetation that has changed to an alternative stable state as a consequence of land management practices since European settlement. Derived PCTs differ from PCTs that have been modified from their natural state in that the derived PCT is unlikely to revert to the natural state without significant active restoration. Temporary loss of structural elements due to grazing, drought or fire may result in a vegetation with lower vegetation integrity than an intact example without being designated as derived.

It is incorrect to map the boundary of woodlands or open-woodland to the edge of obvious tree canopies. The structure of an open-woodland overstorey is defined as “well separated” trees with a crown cover of 0.25 to 20% (Walker & Hopkins 1990). The equivalent foliage cover is 0.2 - 10% (Table 17 in Hnatiuk *et al.* 2009). That means trees in a mapped woodland polygon can be 100 m apart.

Note that vegetation mapping and survey in NSW should follow the Native Vegetation Interim Type Standard (‘the Standard’) (Sivertsen 2009). The Standard relies on the National Vegetation Information System classification system (ESCAVI 2003) and Walker and Hopkins (1990), commonly known as the ‘yellow book’, for vegetation circumscription, and employs a system based on vegetation structure and dominant floristics.

For example: Lot 500/761443 South Olary Plain PCT 170 not assessed and mapped as derived



There appears to be native vegetation within the polygons with blue boundaries, which have been designated as derived in the assessment.

#### Recommended action:

- *Demonstrate that vegetation mapped as derived is not an open-woodland or natural structural variant of the relevant PCT, such as where the overstorey is absent due to fire or drought.*

#### **Arid woodland/shrubland classification**

##### BDAR Section 5.6.2 Arid woodland/shrublands

Assumptions about the age of mallee vegetation and habitat value in this section are not supported by evidence or peer-reviewed literature. In particular, the biodiversity value of ‘whipstick’ mallee appears to have been underestimated.

Whipstick and bull mallee variants are part of a landscape-scale mosaic. Composition and structure of sandplain mallee woodlands varies with rainfall, soil texture and time since fire. For example Keith (2004) explains the variation in mallee communities: ‘In general, the density and diversity of shrubs declines with decreasing rainfall... and decreasing fire frequency. Long-unburnt stands of sand plain



mallee woodland apparently reach a self-perpetuating state in which the extremely sparse ground cover is rarely capable of carrying fires (which would generally stimulate the emergence of a more diverse understorey). In the driest sandplain mallee in the far south west [of NSW], a sparse understorey of low chenopod shrubs may develop if fires are infrequent and there is a moderate amount of clay in the soil.'

Whipstick mallee stems are described in this section and Section 3.6.3 (page 24) as young. However, the individual stems are likely to be much older than is assumed in this assessment. A large-scale study into fire, fauna and mallee ecosystems in south west NSW found that the six prevalent mallee eucalypts were not predicted to provide hollows before stems reached around 7 - 10 cm diameter, and that stems of that size were around 50 - 60 years old (Haslem *et al.* 2012; Clarke *et al.* 2010).

Whipstick growth form in mallee is also known to be a response to resource limitation on dunes (Noble *et al.* 1980) and fire frequency (Keith 2004), rather than loss of condition due to human disturbance.

Mallee refers to Eucalyptus species with a characteristic multi-stemmed habit. The presence of very old lignotubers with multiple stems is common.

For example, the vegetation description for PCT 170 states that "These [whipstick and bull mallee] variants were used to distinguish between areas which either contained a mature or semi-mature canopy cohort due to past disturbances such as fire regimes and past tree clearing" (Appendix C-2 p C-2.33).

Fire is a dynamic and integral part of the south-western NSW landscape and a shorter time since fire should not be used to infer a loss of condition. The assessment and interpretation of vegetation condition in fire-prone environments, such as mallee, should consider the likely time since the last fire and how that may be reflected in the vegetation. Vegetative states in dune-swale mallee can be related to the interval between successive fires (Bradstock & Cohn 2002).

**Recommended action:**

- *Bull and whipstick mallee communities should be considered in the BDAR as communities in a natural state unless there is clear evidence that they are significantly modified.*

***Drought has not been adequately considered in the interpretation of vegetation data***

The impact of drought on vegetation condition and implications for the assessment of vegetation integrity is not adequately considered in BDAR Section 3.5 or in the description of PCTs.

- Table 3-5 would be more helpful if it was presented to clearly show how the actual rainfall compared to mean rainfall and how that could have impacted vegetation composition and function scores.
- Table 3-6 is unclear – is the recorded rainfall for 2020 in the row labelled 'Total'?

The drought-affected discussion in Section 3.5.2 only relates to threatened species, not PCTs.

For example, the description of PCT 170 Vegetation condition (page C-2.34) states that "All areas recorded were subject to varying degrees of grazing with some areas displaying a less diverse mid and understorey due to intense grazing pressures". The assumption that low ground and shrub layer diversity or cover is due to intense grazing pressures is questionable due to drought conditions and natural variation.

**Recommended action:**

- *BDAR to provide an assessment of drought impacts on vegetation condition and assigned vegetation integrity scores.*

***Rehabilitation***

Section 6.6.7 of the EIS refers to rehabilitation of roads, fences and water infrastructure but not revegetation. In the context of a Biodiversity sub-plan the BDAR should describe what, if any rehabilitation of vegetation will occur as a part of mitigation measures for the project.

**Recommended action:**

- *BDAR to provide a summary of mitigation measures that relate to the rehabilitation of vegetation.*

**Avoidance and mitigation hierarchy**

This comment is about wording in the BDAR. The hierarchy of avoidance and mitigation categories is not appropriate for a BDAR, which is a report that addresses impacts on biodiversity.

No- go areas should be areas of high biodiversity value requiring maximum protection, not areas for which TransGrid will have difficulty obtaining permission to clear.

**Recommended action:**

- *Restate the hierarchy of avoidance and mitigation to better relate to biodiversity values.*

**Biodiversity Offset Strategy**

The offsetting of biodiversity impacts is referred to in general terms in the EIS (EIS Table ES.1, Table 5.7, Section 9.6.3) and BDAR (Section 11.2). While it is appropriate for the details to be finalised once the overall credit requirement for the project is known, the Biodiversity Offset Strategy and offsets to meet the credit requirement must be in place prior to construction commencing.

**Recommended action:**

- *A Biodiversity Offset Strategy to be developed prior to construction to demonstrate how the biodiversity credit obligation will be met.*

**Flooding**

**The EIS does meet the Secretary’s environmental assessment requirements for flooding, contingent upon the proponent addressing the following issues.**

The EIS (Section 15 Technical Paper 6 - Hydrology, flooding and water quality as well as the supplied BECA, 2020, Project EnergyConnect – Hydrological Risk Assessment – Final Dataset) does not address the DPIE-EES-BCD environmental assessment requirements related to flooding, but BCD accepts that it does address the Secretary’s requirements for flooding due to the general nature of the SEARs.

BCD also acknowledges that the infrastructure design has not progressed to a stage when site specific flood impact assessments can be completed to comply with the BCD requirements. Impacts of the project are likely to be minor if flood modelling and assessments are completed in the detailed design stage (on infrastructure located in floodplain areas) with the aim to reduce any identified flood impacts to acceptable levels through design modifications.

The aim of assessments should be to determine if there would be any detrimental changes in potential flood effects on other developments or land, including redirection of flow, flow velocities, flood levels, hazards and hydraulic categories. If any flood impacts are determined to be real and prejudicial, then the designs should be modified to reduce the impacts to an acceptable level.

**Recommended action:**

- *Complete quantitative flood modelling and assessments in the detailed design phase for infrastructure that will be located in floodplain areas with the aim of reducing flood impacts to acceptable levels of risk*

## References

- Bradstock RA & Cohn JS (2002) Fire regimes and biodiversity in semi-arid mallee ecosystems, p238-258 in *Flammable Australia: the fire regimes and biodiversity of a continent* (Eds. RA Bradstock, JE Williams & MA Gill) Cambridge University Press, Cambridge.
- Clarke MF, Avitabile SC, Brown L, Callister KE, Haslem A, Holland GJ, Kelly LT, Kenny SA, Nimmo DG, Spence-Bailey LM, Taylor RS, Watson SJ & Bennett AF (2010), Ageing mallee eucalypt vegetation after fire: insights for successional trajectories in semi-arid mallee ecosystems. *Australian Journal of Botany* **58**: 363–372.
- Department of Planning Industry and Environment NSW (2019). *Guidance to assist a decision-maker to determine a serious and irreversible impact*. State of NSW and Department of Planning, Industry and Environment.
- ElectraNet (2019) Project Description. Project EnergyConnect (Robertstown to SA / NSW Border). 27 May 2019 RevB. Attachment 1 to EPBC Act referral.  
[http://epbcnotices.environment.gov.au/\\_entity/annotation/b424a765-a390-e911-a2e6-005056842ad1/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1560998822169](http://epbcnotices.environment.gov.au/_entity/annotation/b424a765-a390-e911-a2e6-005056842ad1/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1560998822169)
- ESCAVI (2003) *Australian Vegetation Attribute Manual, National Vegetation Information System V6*. Executive Steering Committee for Australian Vegetation Information (ESCAVI), Commonwealth Department of Environment and Heritage, Canberra. Url:  
<http://www.environment.gov.au/node/18931>
- Haslem A, Avitabile SC, Taylor RS, Kelly LT, Watson SJ, Nimmo DG, Kenny SA, Callister KE, Spence-Bailey LM, Bennett AF & Clarke MF (2012) Time-since-fire and inter-fire interval influence hollow availability for fauna in a fire-prone system. *Biological Conservation* **152**: 212–221.
- Hnatiuk RJ, Thackway R & Walker J (2005) *Vegetation*, in Australian soil and land survey: field handbook, 3rd edition. Department of Agriculture, Fisheries and Forestry, Canberra.
- Keith DA (2004) *Ocean shores to desert dunes: the native vegetation of NSW and the ACT*. NSW Department of Environment and Conservation, Hurstville.
- Noble JC, Smith AW & Leslie HW (1980) Fire in the Mallee Shrublands of Western New South Wales, *Aust. Rangeland J.* **2**(1): 104 – 114.
- Slater, S & Smith, J (2010) Effectiveness of Raptor Perch Deterrents on an Electrical Transmission Line in Southwestern Wyoming. *Journal of Wildlife Management* **74** (5): 1080 – 1088.
- Sivertsen D (2009) *Native Vegetation Interim Type Standard*. Department of Environment, Climate Change and Water, Sydney. Url:  
<http://www.environment.nsw.gov.au/resources/nativeveg/10060nvinttypestand.pdf>
- Walker J & Hopkins MS (1990) 'Vegetation' pp 58–77 in RC McDonald, RF Isbell, JR Speight, J Walker & MS Hopkins (eds.), *Australian soil and land survey – field handbook*, 2<sup>nd</sup> edition, Inkata Press, Melbourne.