

APPENDIX A :

Peer Review

A.1. Introduction

Cumberland Ecology has been requested by Hawkesbury City Council to undertake a peer review of a Biodiversity Development Assessment Report (BDAR) prepared by Narla Environmental in March 2020 (the Narla BDAR). The Narla BDAR was prepared to support a Development Application (DA0119/20) submitted to the Hawkesbury City Council for a proposed resource management facility at 99 Sargents Road, Ebenezer, New South Wales (NSW) (the 'project'). The purpose of this document is to detail the methods used to conduct the peer review, present the findings of the peer review, and detail any recommendations.

A.2. Methodology

This peer review has been prepared by Katrina Wolf (BAM Accredited Assessor No: BAAS18010). It has been undertaken as a desktop assessment, including document review, database review, Geographic Information System (GIS) file review and use of the Biodiversity Assessment Method Calculator (BAMC). Further details of the methods are detailed below.

A.2.1. Document Review

The following documents were reviewed as part of this peer review:

- Biodiversity Development Assessment Report (Streamlined Assessment) – 99 Sargents Road, Ebenezer, NSW, 2756 (Narla Environmental 2020);
- Relevant legislation, including:
 - *Biodiversity Conservation Act 2016* (BC Act); and
 - *Biodiversity Conservation Regulation 2017* (BC Regulation).
- Relevant BDAR guidance documents:
 - Biodiversity Assessment Method (NSW Government 2017);
 - Biodiversity Assessment Method Operational Manual – Stage 1 (NSW Government 2018b);
 - Biodiversity Assessment Method Operational Manual – Stage 2 (NSW Government 2019); and
 - Biodiversity Assessment Method (BAM) Calculator – User Guide (NSW Government 2018a).

A.2.2. Database and Dataset Review

The following databases were reviewed as part of this peer review:

- BioNet Atlas;
- BioNet Vegetation Classification Database; and
- Threatened Biodiversity Data Collection .

The following mapping datasets were reviewed as part of this peer review:

- A field based update of vegetation community mapping (2005) within the Hawkesbury City Council area. VIS_ID 3958 (Hawkesbury City Council 2013);
- Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands (Tozer et al. 2010); and
- Remnant Vegetation of the western Cumberland subregion, 2013 Update. VIS_ID 4207 (OEH 2013).

A.2.3. GIS File Review

The following GIS files were reviewed as part of this peer review:

- Cadastral boundaries (NSW Government Spatial Services 2019);
- Interim Biogeographic Regionalisation for Australia (IBRA) Bioregions and Subregions (DoEE 2019a);
- NSW BioNet Landscapes (OEH 2016);
- Waterways (NSW Government Spatial Services 2019); and
- Directory of Important Wetlands in Australia (DoEE 2019b).

A.2.4. Calculations

To check the accuracy of the credits documented within the Narla BDAR, an assessment was created in the BAMC (referred to as the 'test BAMC'). This assessment utilised the following information from the Narla BDAR:

- Vegetation:
 - Plant Community Type (PCT) (1081);
 - Vegetation zone areas (0.55 for vegetation zone 1 and 1.00 ha for vegetation zone 2);
 - Plot data (as provided in Appendix A); and
 - Patch size: 101 ha (reported as >100 ha in the Narla BDAR).
- Threatened species:
 - Confirmed ecosystem credit species; and
 - Confirmed species credit species.

A.2.5. Limitations

The following limitations are noted:

- The peer review has been undertaken as a desktop exercise only. Therefore the field results presented within the Narla BDAR, such as vegetation mapping, have not been verified;

- None of the GIS files created by Narla Environmental for the Narla BDAR have been reviewed;
- Native vegetation cover was estimated as 60% through the use of Google Earth, as this information was not reported within the Narla BDAR;
- Vegetation attributes for vegetation management zone 1.2 could not be accurately replicated based on the data presented within the Narla BDAR; and
- This peer review did not access the BAMC prepared and submitted by Narla Environmental.

A.3. Findings

A.3.1. General

The preparation of BDARs are guided by the BAM and the associated operational manuals. The Narla BDAR generally takes the form of a BDAR as required by the BAM and associated operational manuals, however some items have been omitted or insufficiently addressed.

Appendix B provides an assessment of the Narla BDAR against the requirements outlined in the *Guidance for local government on undertaking a critical review of a Biodiversity Development Assessment Report*. **Appendix C** provides an assessment of the Narla BDAR against the requirements set out in the BAM and the two operational manuals.

Items that have been omitted or incorrectly assessed within the Narla BDAR include:

- Construction and operational footprints not clearly defined. Table 11 also notes temporary structures required for constructions works could be placed outside the subject land in areas containing no native vegetation. All construction and operational footprints should be contained within the subject land;
- Determination of native vegetation extent and cover within the buffer area has not been clearly documented or mapped, including reporting of percent native vegetation cover. Section 4.3.2 of the BAM details the requirements of assessing native vegetation cover;
- No detail is provided on cleared areas or differences between mapped vegetation extent and aerial imagery. A building appears to be included within the mapped extent of a PCT within the subject land (see Figure 7 of the Narla BDAR);
- Not all landscape features have been documented and mapped in accordance with the BAM and operational manuals;
- A site map and location map in accordance with Section 4.2.1.1 and Section 4.2.1.2 of the BAM, respectively, have not been included. Some information required on these figures is spread across multiple figures;
- Patch size has been mapped incorrectly and not taken into consideration the definition of patch size within BAM Operational Manual Stage 1;
- Adjustments to vegetation attributed for management zone 1.2 have been inadequately described;

- No figure showing plot locations relative to PCTs, or vegetation zones, is provided;
- No figure showing targeted survey locations is provided;
- One species credit species, the Stuttering Frog has been excluded from the assessment for an invalid reason; and
- No figure showing areas of impacts requiring offsets, areas of impacts not requiring offsets and areas not requiring assessment.

In many instances these technical issues are inconsequential to the findings of the assessment (e.g. re-mapping of patch size is unlikely to change the patch size class). However, as the BAM and operational manual establish the reporting requirements for BDARs, these technical issues are still representative of non-compliances.

A.3.2. Landscape Features

Generally, the details relating to landscape features within the Narla BDAR have been addressed. However, a few additional details or clarifications are required in text, such as those relating to NSW BioNet Landscapes, wetlands and areas of outstanding biodiversity value (AOBV). This review has also found that the maps presented within the Narla BDAR of landscape features are inconsistent with the requirements of the BAM and operational manuals, as set out in **Appendix C**. It is also noted that the mapping and reporting of the native vegetation extent and cover within the 1,500 m buffer area has not met the requirements of the BAM and operational manuals.

A.3.3. Native Vegetation

The following issues have been identified in relation to native vegetation within the subject land:

- Whilst justification for PCT selection has been included within the Narla BDAR, due consideration was not given to a potentially occurring PCT, which is also associated with a TEC;
- Patches of vegetation zone 1 are inconsistently connected/separated;
- A building visible on the aerial has been mapped as native vegetation; and
- Changes to vegetation attribute scores for management zone 1.2 are insufficiently described.

These issues are discussed further below.

A.3.3.1. PCT Selection

Sections 3.1.1 and 3.1.2 of the Narla BDAR provide a description of the process to determine the PCT within the subject land and justification of the selection of PCT 1081. In reviewing the process and justification in the Narla BDAR, this review has also interrogated the following:

- Broad-scale vegetation mapping of the subject land prepared by Hawkesbury City Council (2013) and Tozer et al (2010);
- Plot data provided within the Narla BDAR; and

- Final determination for Shale Sandstone Transition Forest.

The two PCTs that are considered most likely to occur within the subject land comprise PCT 1081 and PCT 1395. PCT 1081 is equivalent to Sydney Hinterland Transition Shale Woodland in Tozer et al. (2010) and PCT 1395 is equivalent to Shale Sandstone Transition Forest in Tozer et al. (2010).

Both the Hawkesbury City Council (2013) and Tozer et al. (2010) mapping of the subject land align the vegetation within the subject land and surrounds with Shale Sandstone Transition Forest, which is associated with PCT 1395. The presence of Shale Sandstone Transition Forest (being PCT 1395) across the subject property and surrounding areas should have triggered further discussion and consideration of this TEC in the Narla BDAR.

When species alignment to a PCT from the BioNet Vegetation Classification are considered, the plot data from the subject land shows the following:

- Plot 1:
 - PCT 1081: One species match, being *Eucalyptus punctata*; and
 - PCT 1395: One species match, being *Eucalyptus punctata*.
- Plot 2:
 - PCT 1081: No matches; and
 - PCT 1395: No matches.

When diagnostic species from Tozer et al. (2010) are considered, the plot data from the subject land shows the following:

- Plot 1:
 - Sydney Hinterland Transition Forest: One species match, being *Eucalyptus punctata*; and
 - Shale Sandstone Transition Forest: Two species matches, being *Eucalyptus punctata* and *Eucalyptus tereticornis*.
- Plot 2:
 - Sydney Hinterland Transition Forest: One species match, being *Kunzea ambigua*; and
 - Shale Sandstone Transition Forest: One species matches, being *Kunzea ambigua*.

Due to the limited number of native species within plot 1 and 2, it is acknowledged that it is difficult to ascertain the best-fit PCT based on these species alone. One rationale behind selecting PCT 1081 in the Narla BDAR is that it has the most matches when you include trees and shrubs in nearby intact vegetation. This conclusion supports the selection of PCT 1081, however the ruling out of PCT 1395 on this basis is confounded by a lack of species included in the description of PCT 1395 and that most of the species held in the BioNet Vegetation Classification are geared towards the higher shale influenced forms of the PCT.

The statement that ironbarks are not present works against the community being Shale Sandstone Transition Forest (or PCT 1395) is correct, however the presence of *Eucalyptus tereticornis* (Forest Red Gum) in turn works against the vegetation being PCT 1081.

Many of the species in nearby intact vegetation that helped determine the PCT as 1081 such as *Corymbia gummifera* (Red Bloodwood), *Angophora bakeri* (Narrow-leaved Apple) and *Allocasuarina littoralis* (Black She-oak), are also in the final determination for Shale Sandstone Transition Forest. However some species, such as *Leptospermum trinervium* are not. To be able to sufficiently rule out the presence of Shale Sandstone Transition Forest, and in effect PCT 1395, it would have been beneficial to have conducted a minimum of one plot within intact vegetation to enable a more detailed analysis of floristic information.

The selection of PCT, including alignment with TECs, is of particular importance, given that Shale Sandstone Transition Forest is a candidate Serious and Irreversible Impact (SII) entity. The presence of this SII would have additional implications for the BDAR (reporting and mapping) and potentially the determination of the development application.

A.3.3.2. Mapping of Patches

Figure 7 of the Narla BDAR has inconsistencies in how patches of the PCT have been mapped. **Figure 1** below shows where individual trees have been connected together to form a patch of vegetation zone 1 at some locations, but not at others. Consistency in the mapping approach is required. Given that the PCT mapped is a woodland community, gaps between canopy is expected to occur and therefore the mapped area of vegetation zone 1 is considered to be larger than is mapped.

Figure 1 Inconsistencies of mapping on Figure 7 of Narla BDAR



A.3.3.3. Mapping of Building

Figure 7 of the Narla BDAR indicates that a building has been mapped as native vegetation within the subject land (see **Figure 2** below). This area constitutes cleared land and should be excised from the mapped area of native vegetation.

Figure 2 Building mapped as part of vegetation zone 2 on Figure 7 of Narla BDAR



A.3.3.4. Changes to Vegetation Attribute Scores

Whilst section 3.1.3.1 discusses how vegetation attribute scores have been amended in management zone 1.2, it is unclear exactly what these changes are. For example, Table 5 indicates that for management zone 1.2 that there is a reduction in species composition, however it is unclear what this reduction is (e.g. to 0, or reduced by 50%). Further detail is required to adequately assess the reduction in scores.

A.3.4. Threatened Species

The assessment of ecosystem credit species in the Narla BDAR is considered to be appropriate.

The Narla BDAR is generally considered to assess species credit species appropriately. As the Narla BDAR has been undertaken using the streamlined assessment module, species that are not within the 'very high sensitivity to gain' class are not required to be considered further. The following issues were identified regarding the exclusion of other species:

- Removal of the Swift Parrot refers to a draft map of important areas. At the current time a map has not been released for use by accredited assessors by Department of Planning, Industry and the Environment (DPIE) and therefore accredited assessment must seek advice directly from DPIE as to whether the subject land falls within a mapped important area; and
- Removal of the Stuttering Frog refers to the absence of 'suitable habitat'. Whilst it is agreed that suitable habitat is absent, this is not a valid justification in accordance with the BAM. Species credit species can only be removed if none of the defined habitat constraints are present, the species is vagrant, the defined habitat constraints or microhabitats are substantially degraded such that the species is unlikely to occur, or an expert report indicates a species is unlikely to be present.

A.3.5. Prescribed Impacts

The Narla BDAR does not identify any relevant prescribed impacts. Figure 7 shows the presence of a building within the subject land, and based on review of the associated architectural plans, it would appear that this building will be demolished as part of the project. Therefore the project has the potential to include development on the habitat of threatened species or ecological communities associated with human-made structures. Threatened species potentially occupying this human-made structure includes microchiropteran bats. Further discussion on this potential prescribed impact is required.

The project is also located in close proximity to a waterway, and due consideration has not been given to the potential for water pollution (both surface and groundwater) resulting from the operational activities at the site.

A.3.6. Avoid and Minimise

The Narla BDAR provides minimal discussion of avoidance measures implemented for the project. Given the presence of additional cleared land immediately surrounding the subject land, further details are required to justify the current location and design of the project.

A.3.7. Mitigation Measures

Table 11 indicates that a Project Ecologist will be commissioned for vegetation clearing and restoration. It alludes to implementation of vegetation restoration, if required, and undertaken threatened species habitat augmentation. It is not clear if these measures are specifically proposed for the project as no further details are provided.

The following additional mitigation measures are recommended:

- Any proposed landscaping undertaken within the subject land utilise locally endemic plant species, including species representative of the PCT occurring within the subject land and immediate surrounds;
- A two-stage clearing process is undertaken, whereby hollow-bearing trees identified within the pre-clearance surveys are left overnight following clearing of other trees; and
- For each hollow-bearing tree removed by the project, a nest boxes or an equivalent size is installed within retained vegetation of the subject property.

A.3.8. BAMC Output

Input of data contained within the Narla BDAR, including estimation of the vegetation attribute scores in management zone 1.2, resulted in the same credit output as reported in the Narla BDAR.

A.4. Recommendations

It is recommended that the following issues be addressed to enable Hawkesbury City Council to make an informed decision on the development application:

- Refinement of PCT/vegetation zone boundaries;
- Consideration of alternative PCTs and justification of the absence of TEC vegetation;
- Clarification of changes to vegetation attribute data in management zones;
- Further consideration of the occurrence of prescribed impacts;
- Further details of measures taken to avoid and minimise impacts;
- Further details of indirect impacts associated with the operational phase of the project; and
- Clarification and expansion of mitigation measures.

Where possible, technical issues within the BDAR should also be addressed.

A.5. References

- DoEE. 2019a. Australia's Bioregions IBRA. Department of the Environment and Energy.
- DoEE. 2019b. Directory of Important Wetlands in Australia.
- Hawkesbury City Council. 2013. A field based update of vegetation community mapping (2005) within the Hawkesbury City Council area. VIS_ID 3958. Hawkesbury City Council.
- Narla Environmental. 2020. Biodiversity Development Assessment Report (Streamlined Assessment) – 99 Sargents Road, Ebenezer, NSW, 2756. Narla Environmental Pty Ltd, Warriwood.
- NSW Government. 2017. Biodiversity Assessment Method. Office of the Environment and Heritage, Sydney.
- NSW Government. 2018a. Biodiversity Assessment Method (BAM) Calculator - User Guide. Office of Environment and Heritage, Sydney.
- NSW Government. 2018b. Biodiversity Assessment Method Operational Manual – Stage 1 Office of Environment and Heritage, Sydney.
- NSW Government. 2019. Biodiversity Assessment Method Operational Manual – Stage 2. Environment, Energy and Science, Department of Planning, Industry and Environment, Sydney.
- NSW Government Spatial Services. 2019. SIX Maps.
- OEH. 2013. Remnant Vegetation of the western Cumberland subregion, 2013 Update. VIS_ID 4207 Office of Environment and Heritage, Hustville.
- OEH. 2016. NSW (Mitchell) Landscapes - version 3.1. Office of Environment and Heritage.
- Tozer, M. G., K. Turner, D. A. Keith, D. Tindall, C. Pennay, C. Simpson, B. MacKenzie, P. Beukers, and S. Cox. 2010. Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands. *Cunninghamia* **11**:359-406.

APPENDIX B :

Assessment of BDAR Requirements (Council Guidelines)



Table 1 Assessment against the requirements outlined in the *Guidance for local government on undertaking a critical review of a Biodiversity Development Assessment Report*

Key Feature	Assessment	Details
1. Getting Started		
Was the report prepared by an accredited assessor?	Compliant	The BDAR was prepared by Accredited Assessor Alexander Graham (BAAS19040).
Is the report finalised?	TBC	
Has the report been certified as BAM compliant within 14 days of the submission date?	TBC	
Has a streamlined BAM assessment been applied? If so, does the proposal qualify for a streamlined assessment?	Compliant	The BDAR has been prepared using the streamlined assessment module. The subject land is not located on the Biodiversity Values Map, has a minimum lot size of 10 ha, and has an area of clearing of 1.55 ha, which qualifies the project for the streamlined assessment module.
Does the development overlap with Category 1 – exempt land (within the meaning of the Local Land Services Act 2013)?	Compliant	Project does not overlap with Category 1 – exempt land.
Does the development application seek a reduced credit requirement?	Compliant	Project is not seeking a reduced credit requirement.
Does the application include all required shape files for maps?	TBC	
Has the accredited assessor provided a checklist indicating compliance with Appendix 10 or 12 of the BAM, as relevant?	Non-compliant	The BDAR does not include a checklist indicating compliance with BAM reporting requirements. Appendix C of this review provides an assessment of compliance.
2. Landscape Features		
Is a Site Map included?	Non-compliant	A site map is provided as Figure 1, however it does not contain all the components required by the BAM, such as landscape features. It is noted that additional components of the site maps are included in other figures or in text.

Key Feature	Assessment	Details
Is a Location Map included?	Non-compliant	A location map is provided as Figure 2, however it does not contain all the components required by the BAM, such as landscape features. It is noted that additional components of the site maps are included in other figures or in text.
Is the development site described and identified on the Site Map and Location Map?	Non-compliant	<p>Section 1.2 briefly describes the development, and the boundary of the subject land is shown in Figure 1. Neither the text description or figure differentiate between operational or construction footprint. No further description is provided within the report.</p> <p>The BAM defines the development footprint as '<i>the area of land that is directly impacted on by a proposed development...</i>'. Figure 1 shows a development footprint and an Asset Protection Zone within the subject land. It has been assumed that, for this figure, the term development footprint has been used to signify the areas proposed to be wholly cleared rather than aligning with the definition in the BAM.</p> <p>Table 11 notes that temporary structures required for construction works should be located within the subject land or areas containing no native vegetation. This implies that the construction footprint may extend beyond the identified subject land. All construction works are required to be included within the subject land boundary.</p>
Is there a general description of the biodiversity and other environmental features of the site?	Compliant	Section 1.3 contains a summary of the subject land features.
Are the IBRA bioregion and subregion identified correctly?	Compliant	IBRA Bioregion and subregion detailed in Section 2.1 and depicted in Figure 3.
Is the native vegetation extent correctly mapped on an aerial image? Has planted native vegetation been included?	Non-compliant	Native vegetation extent in the buffer area is not reported or depicted in any figures. It is noted that Figure 7 maps patch size/connectivity, however this does not correlate to native vegetation extent as defined by the BAM.
Are any reductions to native vegetation extent relative to current maps acceptably justified?	Non-compliant	As native vegetation extent has not been mapped it is unknown if any reductions to native vegetation extent relative to current maps occur.

Key Feature	Assessment	Details
Has the per cent native vegetation cover within a 1500 metre buffer of the development site been determined? Is the percentage cover reasonable?	Non-compliant	Native vegetation extent in buffer area is not reported or depicted in any figures. It is noted that Figure 7 maps patch size/connectivity, however this does not correlate to native vegetation extent as defined by the BAM.
3. Native Vegetation		
Is there a map of plant community types (PCTs) on the development site?	Non-compliant	<p>An individual map of the PCT within the subject land is not provided, however mapping of the PCT is inferred from Figure 7 which maps vegetation zones.</p> <p>This review has found inconsistencies in how PCTs, and associated vegetation zones, have been mapped within the subject land. Patches of vegetation zone 1 are inconsistently connected/separated (see Section A.3.3.2 of this review). Additionally, an existing building has been mapped as native vegetation (see Section A.3.3.3 of this review). Amendments to PCT and vegetation zone mapping are required.</p>
Is there an explanation of how the PCT was determined? Are the conclusions reasonable?	Non-compliant	Justification of evidence use for PCT selection provided in Section 3.1.1 and 3.1.2. This review has found that the presence of PCT 1395, which corresponds to Shale Sandstone Transition Forest TEC, was not sufficiently considered as detailed in Section A.3.3.1 of this review.
Is there a map of threatened ecological communities (TECs)?	TBC	If Shale Sandstone Transition Forest (PCT 1395) is assessed as occurring within the subject land, a map would need to be included.
Is there a map of vegetation zones with PCTs? Are the zones reasonable?	Non-compliant.	<p>Vegetation zones are identified in Table 3 and mapped on Figure 7.</p> <p>This review has found inconsistencies in how PCTs, and associated vegetation zones, have been mapped within the subject land. Patches of vegetation zone 1 are inconsistently connected/separated (see Section A.3.3.2 of this review). Additionally, an existing building has been mapped as native vegetation (see Section A.3.3.3 of this review). Amendments to PCT and vegetation zone mapping are required.</p>
Has the patch size of each vegetation type been determined?	Non-compliant	Patch size has been identified in Table 3 and Section 3.2 and mapped on Figure 7. BAM Operational Manual Stage 1 indicates that a patch comprises intact native vegetation,

Key Feature	Assessment	Details
		which is described as containing all structural layers characteristic of the PCT. Many of the grassland areas mapped on Figure 7 do not meet the criteria of intact vegetation and should therefore be excluded from the patch. This review notes that the patch size class, being >100 ha, is unlikely to change as a result of refining the mapping of the relevant vegetation patch.
Is there an estimate of the per cent cleared value of the PCT?	Compliant	Estimate of percent cleared value is identified in Table 3.
Is there a map of plot locations relative to vegetation zones?	Non-compliant	Plot locations relative to PCTs and vegetation zones have not been shown in a figure.
Are there enough plots? Are plots clustered close to vegetation zone boundaries?	Non-compliant	Minimum plot requirements have been met, however as plot locations are not shown it is not possible to determine suitability of plot locations.
Is there a table with plot data and current vegetation integrity scores for vegetation zones on the development site?	Compliant	Plot data is contained within Appendix A, and vegetation integrity scores are provided in Table 3.1.3.
Are the plots within a vegetation zone relatively consistent?	Compliant	Only one plot required/undertaken within each vegetation zone.
4. Threatened Species		
Is there a list of predicted ecosystem species likely to occur?	Compliant	A list of ecosystem species is provided in Table 6.
Has the exclusion of any predicted ecosystem species been justified?	Compliant	Section 4.1 indicates that no species listed in Table 6 have been excluded from the assessment.
Is there a list of predicted species credit species likely to occur?	Compliant	A list of species credit species is provided in Table 7 (fauna) and Table 8 (flora).
Has the exclusion of any predicted species credit species been justified?	Non-compliant	Table 7 (fauna) and Table 8 (flora) provide the justifications for exclusion of species. Of these exclusions, the following issues were encountered: <ul style="list-style-type: none"> - Removal of the Swift Parrot refers to a draft map of important areas, rather than advice issued by DPIE.

Key Feature	Assessment	Details
		<ul style="list-style-type: none"> - Removal of the Stuttering Frog refers to the absence of suitable habitat. Whilst it is agreed that suitable habitat is absent, this is not a valid justification in accordance with the BAM.
Is there a table indicating whether the remaining candidate species are present or likely to use the habitat on the development site and how this was determined?	Compliant	No threatened fauna species were targeted, as detailed in Section 4.3.1. Targeted flora surveys are outlined in Section 4.3.2 and absence noted in Table 8.
Where targeted survey has been undertaken, are the methods compliant with DPIE guidance or best practice?	Non-compliant	Survey technique is described in Section 4.3.2, however there is no accompanying figure to demonstrate the location of such surveys.
If an expert report has been used to determine presence or absence of a threatened species has the expert been approved by the Chief Executive of DPIE?	Compliant	An expert report has not been used.
Does an expert report justify conclusions on species presence and estimates or on species absence? Are the conclusions reasonable?	Compliant	An expert report has not been used.
Is there a species polygon for each remaining species credit species, including those species assessed by counts of individuals?	Compliant	No species credit species are present or assumed.
Is there a table with an area or count of individuals for each remaining candidate species credit species?	Compliant	No species credit species are present or assumed.
5. Impact Assessment		
Has there been a genuine effort to avoid and minimise impacts on native vegetation and habitat?	Non-compliant	Table 11 details avoidance and mitigation measures, however very little detail is provided on avoidance measures. No discussion is provided on options considered and project design.
Has there been a genuine effort to avoid and minimise prescribed impacts?	Potential non-compliance	Section 6.4.2 does not indicate the potential for any prescribed impacts. A prescribed impacts that may be relevant to the project is 'impacts to human-made structures', as

Key Feature	Assessment	Details
		there is a building within the subject land which could be used as roosting habitat by threatened microchiropteran bats. Further consideration of prescribed impacts required to determine if measures to avoid and minimise are required.
Have all the direct impacts of the development on native vegetation and habitat during construction and operation phases been assessed and a credit obligation calculated?	Compliant	Direct impacts are noted in Section 6.1.
Have all the indirect impacts of the development on native vegetation and habitat during construction and operation phases been assessed?	Non-compliant	Indirect impacts are detailed within Section 6.4.1, however few details are provided particularly in relation to waterway impacts and downstream impacts. The Environmental Protection Agency has raised a number of issues relating to water (surface and groundwater), and such indirect impacts are not addressed within Section 6.4.1.
Have all the prescribed biodiversity impacts relevant to the development during construction and operation phases been assessed?	Potential non-compliance	Section 6.4.2 does not indicate the potential for any prescribed impacts. A prescribed impacts that may be relevant to the project is 'impacts to human-made structures', as there is a building within the subject land which could be used as roosting habitat by threatened microchiropteran bats. Further consideration of prescribed impacts required to determine if all impacts assessed.
Is the assessment thorough and are the conclusions reasonable?	Non-compliant	Non-compliances and potential non-compliances to be addressed prior to determination.
Have reasonable and effective mitigation measures been identified for: <ul style="list-style-type: none"> • displacement of resident fauna during vegetation clearing • indirect impacts on adjacent and downstream vegetation and habitat • prescribed biodiversity impacts? 	Non-compliant	<p>Table 11 indicates that a Project Ecologist will be commissioned for vegetation clearing and restoration. It alludes to implementation of vegetation restoration, if required, and undertaken threatened species habitat augmentation. It is not clear if these measures are specifically proposed for the project as no further details are provided.</p> <p>The following additional mitigation measures are recommended:</p> <ul style="list-style-type: none"> • Any proposed landscaping undertaken within the subject land utilise locally endemic plant species, including species representative of the PCT occurring within the subject land and immediate surrounds;

Key Feature	Assessment	Details
		<ul style="list-style-type: none"> A two-stage clearing process is undertaken, whereby hollow-bearing trees identified within the pre-clearance surveys are left overnight following clearing of other trees; and For each hollow-bearing tree removed by the project, a nest boxes or an equivalent size is installed within retained vegetation of the subject property.
Are mitigation measures summarised in a table, including: <ul style="list-style-type: none"> proposed techniques timing frequency responsibility risk of failure? 	Non-compliant	Mitigation measures are detailed within Table 11, however this table does not include details on frequency and risk of failure.
Have potential serious and irreversible impacts (SAILs) been correctly identified?	Potential non-compliance	Resolution of PCT selection and TEC occurrence to determine the presence of SAIL.
Has additional information for potential SAILs been provided to support the decision-maker?	Potential non-compliance	Resolution of PCT selection and TEC occurrence to determine the presence of SAIL.
6. Credit Obligation		
Is there a table detailing impacted PCTs (and ecosystem credit species) and the associated credit obligation?	Compliant	Impacted PCTs are detailed within Table 14, and associated impacted ecosystem credit species are inferred from Table 6.
Is there a table detailing impacted species credit species and the associated credit obligation?	Compliant	No species credit species are present or assumed.
Is the Biodiversity Credit Report from the BAM Credit Calculator (BAM-C) appended to the report?	Compliant	Biodiversity credit report showing credit class and credit profile is provided in Appendix B.

APPENDIX C :

Assessment of BDAR Requirements (BAM and Operational Manuals)

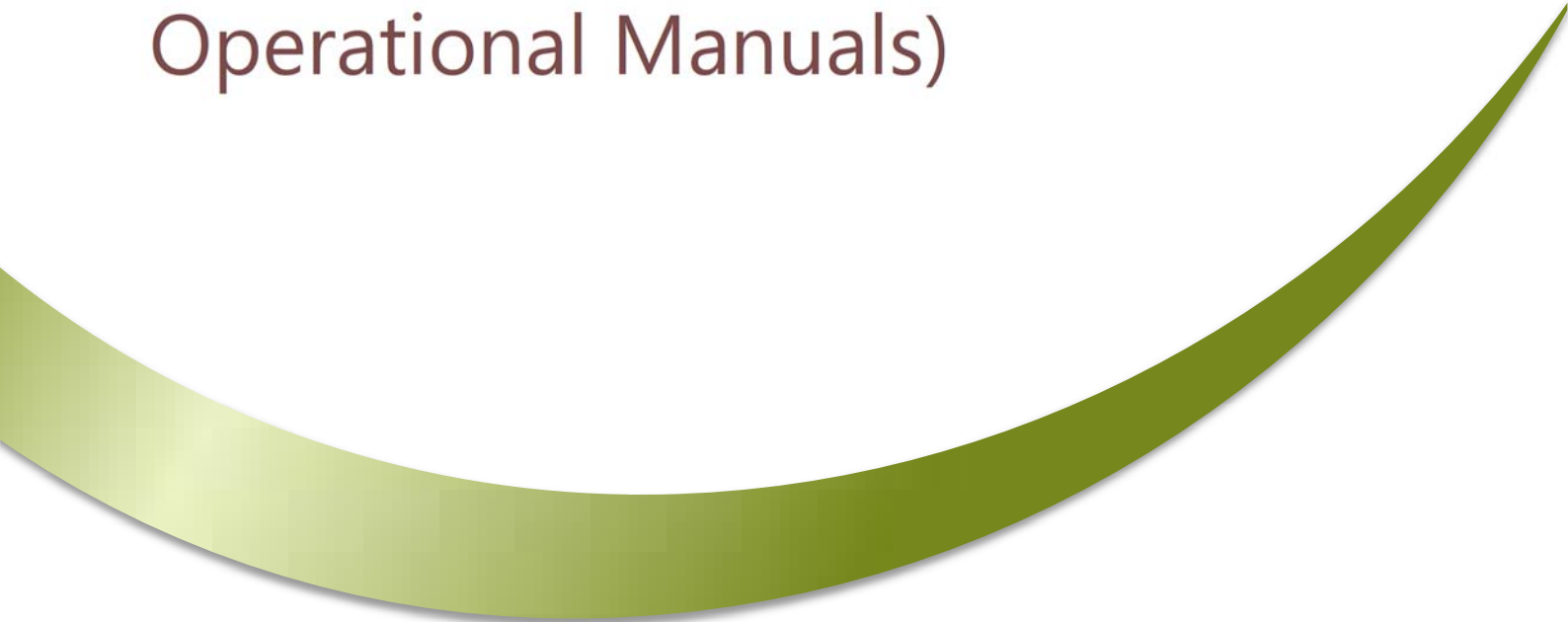


Table 2 Assessment against the requirements outlined in the BAM and Operational Manuals

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
Introduction	Information		
	Introduction to the biodiversity assessment including:		
	<ul style="list-style-type: none"> identification of development/ footprint, including the operational footprint 		<p>Section 1.2 briefly describes the development, and the boundary of the subject land is shown in Figure 1. Neither the text description or figure differentiate between operational or construction footprint. No further description is provided within the report.</p> <p>The BAM defines the development footprint as '<i>the area of land that is directly impacted on by a proposed development...</i>'. Figure 1 shows a development footprint and an Asset Protection Zone within the subject land. It has been assumed that, for this figure, the term development footprint has been used to signify the areas proposed to be wholly cleared rather than aligning with the definition in the BAM.</p> <p>Table 11 notes that temporary structures required for construction works should be located within the subject land or areas containing no native vegetation. This implies that the construction footprint may extend beyond the identified subject land.</p>

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
	<ul style="list-style-type: none"> general description of development 		Section 1.3 contains a summary of the subject land features.
	<ul style="list-style-type: none"> sources of information used in the assessment, including reports and spatial data (optional). 		Section 1.4 identifies sources of information. It is noted that no reference is made to the vegetation mapping prepared by Hawkesbury City Council (2013).
	Maps and Data		
	<ul style="list-style-type: none"> Site Map (as described in Section 4.2) 		A site map is provided in Figure 1, however not all required components required by the BAM are shown on the figure. It is noted that additional information required on the site map is contained within Figures 3 and 5.
	<ul style="list-style-type: none"> Location Map (as described in Section 4.2) 		A location map is provided in Figure 2, however not all required components required by the BAM are shown on the figure. It is noted that additional information required on the site map is contained within Figure 3 - 6.
	<ul style="list-style-type: none"> Digital shape files for all maps and spatial data 		TBC
Landscape Features	Information		
	Identification of landscape features at the development site, including:		-
	<ul style="list-style-type: none"> IBRA bioregions and subregions 	Subject land area (ha) IBRA bioregions and subregions BioNet NSW Landscapes	The subject land area is provided in Section 1.2. IBRA Bioregion and subregion detailed in Section 2.1 and depicted in Figure 3.

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
			The NSW BioNet Landscapes is not reported. It is noted that the BAM suggests this is only required for Stewardship Sites, however Operational Manual Stage 1 requires this information for development sites.
	<ul style="list-style-type: none"> any landscape features 		Native vegetation extent in the buffer area is not reported or depicted in any figures. It is noted that Figure 7 maps patch size/connectivity, however this does not correlate to native vegetation extent as defined by the BAM. Native vegetation extent (percentage) is an input in the BAMC and used to determine ecosystem and species credit species.
		Rivers, streams and estuaries	Hydrology is described within Section 2.3, and stream orders are depicted on Figure 6.
		Wetlands within, adjacent to and downstream of the site	Section 2.3 indicates that no wetlands identified under the <i>State Environmental Planning Policy (Coastal Management) 2018</i> are present within the buffer area. Whilst not stated within the report, no important wetlands listed in the Directory of Important Wetlands in Australia are present within the buffer area.
		Connectivity of areas of habitat including areas identified as priority investment areas, flyways for migratory species	Section 2 does not describe connectivity features. It is noted that Figure 7 maps patch size/connectivity, however the mapping does not correspond to potential movement corridors.
		Areas of geological significance and soil hazard features	Absence of areas of geological significance is described within Section 2.2. Soil hazard features,

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
			being acid sulfate soils, are noted within Section 2.2. and mapped on Figure 4.
		Areas of Outstanding Biodiversity Value	Section 2 does not detail the presence/absence of Areas of Outstanding Biodiversity Value. This review has found that none occur within the subject land or buffer area.
		Cleared areas	Cleared areas are not detailed within Section 2. Whilst one of the vegetation zones mapped within the subject land is described as cleared, the reference to cleared areas in the BAM and Operational Manuals relate to areas of non-native vegetation, such as roads and buildings, or exotic grassland.
	<ul style="list-style-type: none"> site context components, including percent native vegetation cover in the buffer area. 	Percent native vegetation cover including: <ul style="list-style-type: none"> buffer area justification to support differences between aerial imagery used for the assessment and final mapped native vegetation cover. 	Section 2 does not indicate the method applied. Figure 2 demonstrates that the assessment has been undertaken as a site-based assessment. Native vegetation extent in the buffer area is not reported or depicted in any figures. It is noted that Figure 7 maps patch size/connectivity, however this does not correlate to native vegetation extent as defined by the BAM.
Maps and Data			
	IBRA bioregions and subregions (as described in Paragraphs 4.2.1.3–4.2.1.4)	IBRA bioregions and subregions	IBRA bioregion and subregion are shown on Figure 3. The BAM and the Operational Manuals require both the bioregion and subregion to be shown on the site map and location map.

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
		BioNet NSW landscapes	The NSW BioNet Landscapes is not mapped.
		Rivers, streams (using Strahler stream ordering) and estuaries	Rivers and streams are shown in Figure 6, and a dam is shown in Figure 5. Dams and their associated riparian buffers are not depicted on Figure 6.
		Wetlands	One dam is identified on Figure 5; however no dams have been mapped in Figure 6 for the buffer area.
		Connectivity	Figure 7 maps patch size/connectivity, however the mapping does not correspond to potential movement corridors.
		Areas of geological significance and soil hazards	Section 2.2 notes an absence of areas of geological significance and have therefore not been mapped. Soil hazard features, being acid sulfate soils, have been mapped on Figure 4.
		Native vegetation cover	Native vegetation extent is not defined within Section 2 and has not been mapped on Figure 1 or 2. It is noted that Figure 7 maps patch size/connectivity, however this does not correlate to native vegetation extent as defined by the BAM.
		Boundary of the subject land.	The subject land is shown on Figure 1 and 2 (in addition to other figures).
		Areas of Outstanding Biodiversity Value	Section 2 does not detail the presence/absence of Areas of Outstanding Biodiversity Value. This review has found that none occur within the subject land or buffer area.

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
Native Vegetation	Information		
		Native vegetation cover on subject land and justification to support differences between mapped native vegetation cover and aerial imagery.	<p>Section 3.1.2 identifies vegetation zones within the subject land, and specifies the extent of native vegetation.</p> <p>This review has found the following issues with the mapped extent of native vegetation within the subject land:</p> <ul style="list-style-type: none"> - Patches of vegetation zone 1 are inconsistently connected/separated. - A building visible on the aerial has been mapped as native vegetation.
	Identify the PCTs within the development site, including:	PCTs within the subject land, including:	-
	<ul style="list-style-type: none"> • vegetation class 	<ul style="list-style-type: none"> • vegetation class 	Vegetation class is provided in Table 3.
	<ul style="list-style-type: none"> • vegetation type 	<ul style="list-style-type: none"> • vegetation type (i.e. PCT names and ID numbers) 	Vegetation type is provided in Table 3.
	<ul style="list-style-type: none"> • area (ha) for each PCT 	<ul style="list-style-type: none"> • area (ha) 	Area of PCT is provided in Table 3.
		<ul style="list-style-type: none"> • species relied upon for identification of vegetation type and relative abundance 	Species relied upon for identification are provided in Table 3. Relative abundances are not discussed, however abundance values from plots are provided in Appendix A.
	<ul style="list-style-type: none"> • information used to identify a PCT being field assessment or best available native 	<ul style="list-style-type: none"> • evidence and justification of decision pathway used in identification of PCT 	Justification of evidence use for PCT selection provided in Section 3.1.1 and 3.1.2. This review has found that the presence of PCT 1395, which

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
	vegetation map (as outlined in Paragraph 5.2.1.12)	(e.g. vegetation structure and landscape position/geomorphology).	corresponds to Shale Sandstone Transition Forest TEC, was not sufficiently considered as detailed in Section A.3.3.1 of this review.
	<ul style="list-style-type: none"> Identify each TEC and area (as outlined in Paragraphs 5.2.1.14-5.2.1.15) 	<ul style="list-style-type: none"> TEC status 	TEC status detailed in Table 3.
		<ul style="list-style-type: none"> estimate of percent cleared value of the PCT (available in the BioNet Vegetation Classification) 	Estimate of percent cleared value is provided in Table 3.
		Vegetation integrity assessment of the subject land, including:	-
		<ul style="list-style-type: none"> description of vegetation zones within the subject land with justification for assigning vegetation zones to PCTs area (ha) of each vegetation zone 	Vegetation zones are identified in Table 3 and mapped on Figure 7. As noted previously, issues with the mapping of native vegetation extent has flow on impacts to the mapping of vegetation zones.
	<ul style="list-style-type: none"> patch size (development site and biodiversity stewardship site) 	<ul style="list-style-type: none"> patch size for each vegetation zone 	Patch size has been identified in Table 3 and Section 3.2 and mapped on Figure 7. BAM Operational Manual Stage 1 indicates that a patch comprises intact native vegetation, which is described as containing all structural layers characteristic of the PCT. Many of the grassland areas mapped on Figure 7 do not meet the criteria of intact vegetation and should therefore be excluded from the patch. This review notes that the patch size class, being > 100 ha, is unlikely to change as a result of refining the mapping of the relevant vegetation patch.
		<ul style="list-style-type: none"> survey effort 	Survey effort for vegetation integrity is detailed within Table 3. The coordinates of plots are provided

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
			in Appendix A; however the locations are not shown on a figure.
	<ul style="list-style-type: none"> table showing the vegetation integrity score for each vegetation zone 	<ul style="list-style-type: none"> composition, structure, function and vegetation integrity condition scores. 	Vegetation integrity scores are provided in Table 4.
		<p>Where use of local data is proposed, identify:</p> <ul style="list-style-type: none"> source of information for local benchmark data justification of use of local data in preference to database values. 	The report does not indicate that local data has been used.
Maps and Data			
		Native vegetation extent within the subject land.	<p>A figure showing just the native vegetation extent within the subject land is not provided. However, this information can be inferred from Figure 7.</p> <p>This review has found the following issues with the mapped extent of native vegetation within the subject land:</p> <ul style="list-style-type: none"> Patches of vegetation zone 1 are inconsistently connected/separated. A building visible on the aerial has been mapped as native vegetation.
	Map of PCTs within the development/biodiversity stewardship site	Distribution of PCTs within the subject land.	PCTs are shown within Figure 7.

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
		Plot locations relative to PCTs including GPS coordinates (GDS zone, eastings, northings and bearings)	Plot locations have not been shown on a figure. GPS coordinates are provided in Appendix A.
	Map of EECs	TECs on the subject land	No TECs have been identified within the subject land, and therefore have not been mapped.
	Table of plot data for each attribute		Plot data is provided in Appendix A in separate tables and noted as copied from an electronic datasheet.
		Plot field data and sheets	Plot data is provided in Appendix A in separate tables and noted as copied from an electronic datasheet.
		Vegetation zones	Vegetation zones are shown on Figure 7.
	Patch size of intact native vegetation (as described in Subsection 5.3.2)	Patch size of intact native vegetation	Patch size is mapped on Figure 7. BAM Operational Manual Stage 1 indicates that a patch comprises intact native vegetation, which is described as containing all structural layers characteristic of the PCT. Many of the grassland areas mapped on Figure 7 do not meet the criteria of intact vegetation and should therefore be excluded from the patch. This review notes that the patch size class, being > 100 ha, is unlikely to change as a result of refining the mapping of the relevant vegetation patch.
	Table of current vegetation integrity scores for each vegetation zone	Table of vegetation integrity scores for each vegetation zone within the subject land	Current vegetation integrity scores are provided in Table 4.
Threatened Species	Information		

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
	Identify ecosystem credit species associated with PCTs on both the development site and biodiversity stewardship site as outlined in Section 6.2, including:		-
	<ul style="list-style-type: none"> list of species derived 	List of predicted ecosystem credit species associated with PCTs on the subject land	A list of ecosystem species is provided in Table 6.
	<ul style="list-style-type: none"> justification for exclusion of any ecosystem credit species predicted above. 	Justification for exclusion of any ecosystem credit species predicted above	Section 4.1 indicates that no species listed in Table 6 have been excluded from the assessment.
	Where required, identify species credit species on both the development site and the biodiversity stewardship site as outlined in Sections 6.3 to 6.5, including:	Identify species credit species on the subject land, including:	-
	<ul style="list-style-type: none"> list of candidate species assessed 	<ul style="list-style-type: none"> list of candidate species assessed 	A list of species credit species is provided in Table 7 (fauna) and Table 8 (flora).
	<ul style="list-style-type: none"> justification for inclusions and exclusions based on habitat features 	<ul style="list-style-type: none"> justification for inclusions and exclusions of any species credit species predicted above based on habitat features, or vagrancy 	<p>Table 7 (fauna) and Table 8 (flora) provide the justifications for exclusion of species. Of these exclusions, the following issues were encountered:</p> <ul style="list-style-type: none"> Removal of the Swift Parrot refers to a draft map of important areas, rather than advice issued by DPIE. Removal of the Stuttering Frog refers to the absence of suitable habitat. Whilst it is agreed that suitable habitat is absent, this is not a valid justification in accordance with the BAM.

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
	<ul style="list-style-type: none"> indication of presence based on targeted survey or expert report 	<ul style="list-style-type: none"> indication of presence based on targeted survey or expert report (see below) 	<p>No threatened fauna species were targeted, as detailed in Section 4.3.1.</p> <p>Targeted flora surveys are outlined in Section 4.3.2 and absence noted in Table 8.</p>
	<ul style="list-style-type: none"> details of targeted survey 	<ul style="list-style-type: none"> details of targeted survey including technique, effort, timing and weather 	<p>Survey technique is described in Section 4.3.2, however there is no accompanying figure to demonstrate the location of such surveys.</p> <p>Survey effort, timing and weather is described in Section 4.3. However it is noted that Table 10 indicates that surveys were conducted in March, with the remaining references to surveys being February.</p>
	<ul style="list-style-type: none"> species polygons 	<ul style="list-style-type: none"> species polygons 	<p>Section 4.4 details the absence of species credit species and therefore no species polygons are required.</p>
	<ul style="list-style-type: none"> biodiversity risk weighting for the species 	<ul style="list-style-type: none"> biodiversity risk weighting for the species 	N/A
		<ul style="list-style-type: none"> area of suitable habitat or number of individuals counted 	N/A
	<ul style="list-style-type: none"> threatened species survey 		<p>Survey technique is described in Section 4.3.2, however there is no accompanying figure to demonstrate the location of such surveys.</p> <p>Survey effort, timing and weather is described in Section 4.3. However it is noted that Table 10 indicates that surveys were conducted in March, with the remaining references to surveys being February.</p>
		Where use of local data is proposed:	Local data does not appear to be proposed.

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
		<ul style="list-style-type: none"> identify relevant species or population 	N/A
			N/A
		<ul style="list-style-type: none"> identify source of information for local data 	N/A
		<ul style="list-style-type: none"> justify use of local data in preference to database values. 	N/A
	Expert report if it was used in place of targeted survey	Where expert reports are used in place of targeted survey:	No expert reports have been included.
		<ul style="list-style-type: none"> identify the relevant species or population 	N/A
		<ul style="list-style-type: none"> justify the use of an expert report 	N/A
		<ul style="list-style-type: none"> flag the likely presence of the species or population and the evidence to support this assessment including all information considered 	N/A
		<ul style="list-style-type: none"> estimate the number of individuals or area of suitable habitat, including a description of how the estimates were made (e.g. reference populations, past reports) 	N/A
		<ul style="list-style-type: none"> identify the expert and provide evidence of their expert credentials. 	N/A
		Identify potential prescribed biodiversity impacts on threatened species.	Section 6.4.2 does not indicate the potential for any prescribed impacts. A prescribed impacts that may be relevant to the project is 'impacts to human-made structures', as there is a building within the

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
			subject land which could be used as roosting habitat by threatened microchiropteran bats.
	Maps and Data		
	Table of habitats or habitat components and their sensitivity classes for each species	Table of habitats or habitat components and their sensitivity classes.	Table 7 (fauna) and Table 8 (fauna) outline species credit species, their sensitivity class (within the Biodiversity Risk Weighting column) and where relevant habitat constraints.
		Table detailing the list of species credit species; presence on subject land as determined by targeted survey, indicating where presence is assumed or by expert report.	Table 7 (fauna) and Table 8 (fauna) outline the presence/absence of species credit species within the subject land.
		Mapped targeted survey locations including GPS coordinates of survey sites.	No survey locations are mapped.
	Species credit species polygons (as described in Paragraph 6.4.1.33)	Species credit species polygons including GPS locations of any individuals counted.	Section 4.4 details the absence of species credit species and therefore no species polygons are required.
		Table detailing species habitat features associated with the species and its location (GPS coordinates) and abundance on the subject land.	N/A
		Table detailing biodiversity risk weighting for species credit species on the subject land.	Although no species credit species recorded within the subject land, the biodiversity risk weighting of predicted species is contained within Table 7 (fauna) and Table 8 (flora).

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
		Map location of prescribed biodiversity impacts on the subject land	Section 6.4.2 does not indicate the potential for any prescribed impacts. A prescribed impacts that may be relevant to the project is 'impacts to human-made structures', as there is a building within the subject land which could be used as roosting habitat by threatened microchiropteran bats.
		For wind farm developments, maps of habitual flight paths for nomadic and migratory species likely to fly over the site and maps of likely habitat for threatened aerial species and raptor species resident on site.	N/A
Avoid and Minimise Impacts	Information		
	Demonstration of efforts to avoid and minimise impact on biodiversity values in accordance with Section 8.	<p>Demonstration of efforts to avoid or minimise impacts on native vegetation, threatened species habitat and prescribed impacts during project planning including:</p> <ol style="list-style-type: none"> 1. locating the project – <ul style="list-style-type: none"> • options considered (including maps and why they were not feasible/suitable) • analyses associated with alternative options (e.g. routes, locations, sites within the property, constraints) 	Table 11 details avoidance and mitigation measures, however very little detail is provided on avoidance measures. No discussion is provided on options considered and project design.

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
		<ul style="list-style-type: none"> justification for selecting proposed location <p>2. designing the project –</p> <ul style="list-style-type: none"> temporary and permanent ancillary construction and maintenance facilities required for the proposal options for avoiding these features (e.g. alternative locations, engineering solutions, modes of technology, constraints) justification for selecting proposed location measures taken to minimise impacts long-term management of areas avoided. 	
	Assessment of direct and indirect impacts unable to be avoided at the development site in accordance with Sections 9.1 and 9.2.	<p>Determination of the impacts on native vegetation and threatened species habitat including:</p> <ul style="list-style-type: none"> describing impacts of clearing describing the nature, extent, frequency, duration and timing of indirect and prescribed impacts including during construction and operation phases, on adjacent vegetation 	Direct impacts are noted in Section 6.1. Indirect impacts are detailed within Section 6.4.1.
		<ul style="list-style-type: none"> calculating the change in VI score and habitat suitability 	The change in vegetation integrity score it provided in Table 4. Whilst section 3.1.3.1 discusses how

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
			scores have been amended in management zones 1.1 and 1.2, is unclear exactly what these changes are. For example, Table 5 indicates for management zone 1.2 that there is a reduction in species composition, however it is unclear what this reduction is (e.g. to 0, or reduced by 50%).
		<ul style="list-style-type: none"> describing impacts that are uncertain and their management/mitigation 	Despite being included in the title of Section 6.4.2 there is no detail provided on the relevance of uncertain impacts.
		<ul style="list-style-type: none"> evaluating consequences of indirect and prescribed impacts 	<p>Indirect impacts are described within Section 6.4.1.</p> <p>Section 6.4.2 does not indicate the potential for any prescribed impacts. As noted previously there may be a need to address prescribed impacts not previously considered.</p>
		<ul style="list-style-type: none"> documenting limitations to data, assumptions and predictions. 	No predictions are detailed and therefore limitations and assumptions are not provided.
Maps and Data			
	Table of measures to be implemented before, during and after construction to avoid and minimise the impacts of the project, including action, outcome, timing and responsibility	Table of biodiversity mitigation measures to be implemented before, during and after construction to avoid and minimise the impacts of the project, including action, outcome, timing and responsibility. Unique identifiers (e.g. BIO01) should be included for tracking through management plans and compliance auditing.	Table of measures detailed within Table 11.

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
		Map of alternative locations or sites within the development site that were considered when locating and designing the project including constraints to the final selection.	No figure of alternatives is provided.
		Map of the final development footprint, including demarcation of any prescribed impacts and measures to minimise impacts.	The development layout is shown in Figure 1. However, this figure does not differentiate between operational or construction footprints. No further description is provided within the report.
		Showing the areas of biodiversity value on the site map of where impact has been avoided will assist in demonstrating the reasonable measures that the proponent has taken to avoid and minimise impacts.	Table 11 details avoidance and mitigation measures, however very little detail is provided on avoidance measures.
		Map of sites within the subject land likely to be impacted by direct, indirect and prescribed impacts where applicable.	<p>No indirect impacts zones are identified within Section 6.4.1.</p> <p>Section 6.4.2 does not indicate the potential for any prescribed impacts. A prescribed impacts that may be relevant to the project is 'impacts to human-made structures', as there is a building within the subject land which could be used as roosting habitat by threatened microchiropteran bats.</p>
Impact Summary	Information		
		Identification of impacts:	-
		<ul style="list-style-type: none"> on entities at risk of a serious and irreversible impact (SAIL), including 	N/A

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
		<p>addressing the assessment criteria in Subsection 10.2.2 (TECs) and 10.2.3 (species) of the BAM</p> <p>All relevant information required by the consent authority to determine whether the proposed impact is serious and irreversible including:</p> <ul style="list-style-type: none"> • clear documentation of the sources of information • where confidence in the information provided is low or of questionable reliability • how proposed additional measures will contribute to the recovery of the entity • where information is not available, for example where impact thresholds for the entity have not been provided. 	
		<ul style="list-style-type: none"> • requiring offsets 	Section 6.5 identifies the impacts that require an offset.
		<ul style="list-style-type: none"> • not requiring offsets 	No specific text regarding impacts not requiring an offset is included in Section 6.5.
		<ul style="list-style-type: none"> • not requiring further assessment. 	No specific text regarding impacts not requiring an assessment is included in Section 6.5.
	Maps and Data		
		Mapped locations:	-

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
		<ul style="list-style-type: none"> that support an entity at risk of a serious and irreversible impact (SAIL) 	No SAIL have been identified within the subject land.
		<ul style="list-style-type: none"> where offsets are required 	Whilst impacts requiring offsets can be inferred from text contained within the report and Figure 7, no separate figure is provided to summarise where offsets are required.
		<ul style="list-style-type: none"> where offsets are not required, and 	Whilst impacts not requiring offsets can be inferred from text contained within the report and Figure 7, no separate figure is provided to summarise where offsets are not required.
		<ul style="list-style-type: none"> where no further assessment is required. 	Figure 7 shows a building within a mapped area of PCT, which should have been excluded. This building would be classified as not requiring further assessment.
		Maps illustrating the extent of a TEC or species distribution and any other data used to address the assessment criteria for an entity at risk of an SAIL.	N/A
Impact Summary	Information		
	Description of the impact on PCTs/TECs		A description of the impacts on the PCT within the subject land is provided in Section 6.1.
	Description of the impact on threatened species		Section 6.2 indicates no species credit species impacted.
		The assessor is required to report on:	

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
	Table showing for each PCT/TEC for each vegetation zone at the development site:		
	<ul style="list-style-type: none"> current vegetation integrity score 		The current vegetation integrity score is provided in Table 4.
	<ul style="list-style-type: none"> future vegetation integrity score (Equations 17 and 18 in Appendix 6) 		The future vegetation integrity score is provided in Table 4.
	<ul style="list-style-type: none"> change in vegetation integrity score (Subsection 9.1.3) 		The change in vegetation integrity score it provided in Table 4.
	<ul style="list-style-type: none"> biodiversity risk weighting 	<ul style="list-style-type: none"> the biodiversity risk weighting (BRW) for each ecosystem and species credit requirement generated 	N/A
	<ul style="list-style-type: none"> BC Act listing status 		BC Act listing status is provided in Table 3.
	<ul style="list-style-type: none"> number of required ecosystem credits for each PCT (Subsection 11.2.3) 	<ul style="list-style-type: none"> the number of ecosystem credits for each PCT/TEC 	The number of required ecosystem credits is provided in Table 14.
	<ul style="list-style-type: none"> Name of each species assessed for species credits and the number credits required for species (Subsection 11.2.4). 	<ul style="list-style-type: none"> the number of species credits for each species credit species impacted by the proposal 	N/A
	Maps and Data		
	Table of PCTs requiring offset and the number of ecosystem credits required		Table 14 lists the PCT and number of credits required.
	Table of threatened species requiring offset and the number of species credits required		N/A
	All digital data must be submitted using the Upload Files function in BOAMS:		TBC

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance
		<ul style="list-style-type: none"> digital shape files for all maps and spatial data completion of all required data fields in BOAMS and the BAM-C. <p>Finalised case in the BAM-C (can be returned to assessor for editing).</p>	
Biodiversity Credit Report	Information		
	Credit classes for ecosystem credits and species credits at the development site.	<ul style="list-style-type: none"> biodiversity credit report from the BAM-C, which defines the number and class of ecosystem and species credits from the proposed impact. 	Biodiversity credit report showing credit class is provided in Appendix B.
	Maps and Data		
	Produced by the BAM Credit Calculator		Biodiversity credit report showing credit class and credit profile is provided in Appendix B. A summary of credits is provided in Table 14.