Department of Climate Change, Energy, the Environment and Water

Our ref: DOC25/799823
Your ref: SSD-29508870-Mod-1

Nestor Tsambos
Team Leader – Planning
Solar and Battery Assessments
Department of Planning, Housing and Infrastructure

nestor.tsambos@dpie.nsw.gov.au

Dear Mr Tsambos

Birriwa Solar and Battery Project Modification 1 (SSD – 29508870-Mod-1) – Modification Report

Thank you for your request via the NSW Planning Portal dated 13 August 2025 to the Conservation Programs, Heritage and Regulation Group (CPHR) of the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) inviting comments on the Modification Report for the Birriwa Solar and Battery Project Modification 1.

CPHR has reviewed the Biodiversity Development Assessment Report (BDAR), noting that key supporting information was provided after the submission date – the Biodiversity Assessment Method calculator (BAM-C) case made available to CPHR on 20 August, and plot and spatial data files were supplied to CHPR in stages on 18 August, 20 August and 27 August.

The modification brings together two components that have been separately assessed by two consultancies, with each stage having its own BAM calculator (BAM-C) case:

- the additional lots (assessed by EMM)
- the Birriwa Bus Route South upgrade (this stage has been moved forward from another project assessment prepared by EcoLogical Australia (ELA), to form part of the Birriwa Solar modification).

Whilst a single consolidated BDAR covering the entire modification was requested by CPHR and the Department of Planning, Housing and Infrastructure (DPHI), the Modification 1 BDAR has not effectively integrated the separate assessments, taking a hybrid approach of partial integration and reference to a separate BDAR. This has created confusion and inconsistency, and we continue to request submission of a single consolidated BDAR for the modification.

We are unable to confirm compliance with the BAM based on the current BDAR(s) and the associated data supplied, and we cannot verify the biodiversity credit obligations. Some components of our review are deferred pending receipt of a revised BDAR, supported by all required spatial and plot data.

Based on the information submitted, we have identified the following priority issues:

- The Biodiversity Assessment Method (BAM) minimum information requirements have not been met. All required information must be submitted to facilitate a full review.
- The credit summaries within the BDAR(s) do not align with one of the BAM-C cases. These must be consistent.
- Discrepancies between the area of impact indicated in the Modification Report and BDARs must be addressed to confirm the final credit liability.

- Two native vegetation context factors (native vegetation extent and patch size) require revision.
- Vegetation zone mapping, plot allocation and BAM-C data entry require review to address inconsistencies and ensure appropriate and accurate credit calculation.
- The candidate species assessment requires clarification.
- Proposed avoidance and minimisation measures require clarification and additional detail to meet BAM requirements.
- The assessment of indirect and prescribed impacts requires revision to address BAM requirements, remove inconsistencies, and identify any residual impacts.
- A consolidated assessment of mitigation measures is required to confirm the actions proposed for implementation by the proponent and support identification of residual indirect and prescribed impacts.
- Several of the key issues listed above require resolution to inform our evaluation of a serious and irreversible impact for the Box Gum Woodland critically endangered ecological community, in accordance with section 9.1 of the BAM.

Our biodiversity recommendations are provided in **Attachment A**, with detailed comments in **Attachment B**. We recommend DPHI requests an updated BDAR that incorporates all the recommendations listed in **Attachment A.** The updated BDAR should be provided with the Response to Submissions report.

If you have any questions about this advice, please do not hesitate to contact Erica Baigent, Senior Conservation Planning Officer, via erica.baigent@environment.nsw.gov.au or (02) 6883 5311

Yours sincerely

Sarah Carr
Director North West
Conservation Programs, Heritage and Regulation Group

25 September 2025

Attachment A – CPHR's Recommendations

Attachment B – CPHR's Detailed Comments

CPHR's recommendations
Birriwa Solar and Battery Project Modification 1 – Modification Report

Additional lots	The additional lots to be added to the project footprint, excluding the Birriwa Bus Route South upgrade.
BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BBRS	Birriwa Bus Route South
BC Act	*Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
CEEC	Critically Endangered Ecological Community
DNG	Derived native grassland
ELA	Ecological Australia
ELA BDAR	BDAR prepared by ELA (2025), included as Appendix A of the EMM BDAR for the project (see Table 1, Attachment B of this submission)
EMM BDAR	BDAR prepared by EMM (2025) (see Table 1, Attachment B of this submission)
EMM plot	BAM plot established by EMM for the additional lots portion of the modification footprint.
ELA plot	BAM plot established by ELA for the Birriwa Bus Route South portion of the development footprint.
GIS	Geographic Information System
HBT	Hollow bearing tree
PCT	Plant community type
RDP	Rapid data point
SAII	Serious and irreversible impacts
SVTM	NSW State Vegetation Type Map
TBDC	Threatened Biodiversity Data Collection
VI score	Vegetation integrity score

Recommendations

1.1 Submit a single consolidated BDAR for the modification, certified in accordance with section 6.15(1) of the BC Act. Finalise and submit the revised BAM-C cases in BOAMS, within 14 days of the date of BDAR certifications and submission.

1.2 Ensure all biodiversity credit summaries within the BDARs match the credit reports generated from the finalised BAM-C cases.

1.3 Ensure the revised BDARs and supporting data meets the minimum information requirements set out in Appendix K of the BAM, at the time of resubmission.

2.1 Clarify the extent of direct impacts associated with the modification and ensure these are assessed in accordance with the BAM.

3.1 Re-examine the extent of woody and non-woody native vegetation within the two assessment areas via:

a) undertaking finer scale vegetation extent mapping, including both woody and non-woody vegetation

b) considering all native vegetation mapped within the total Modification 1 disturbance footprint.

3.2 Recalculate the percentage of native vegetation cover within the assessment areas for both project stages. If reassessment of the native vegetation percent cover results in a change to the applicable cover class, review the list of candidate species and update the assessment.

3.3 Supply final GIS shapefiles supporting the calculation of native vegetation percent cover for both project stages with the revised BDAR.

4.1 Review and explain the patch size calculations. If patch size estimates change, review the list of candidate species and update the assessment.

5.1 Review the vegetation zone mapping for the additional lots stage BDAR:

a) Include justification in accordance with s.4.1.2 of the BAM (areas that do not contain any native vegetation) for all areas assessed as non-native vegetation. If the exotic pasture mapped is considered a vegetation zone, supply the VI score noted in the BDAR and the supporting data

b) Confirm the PCT 281 DNG boundaries within the northern lot against aerial imagery and justify the delineation of the zone boundary.

5.2 Check vegetation zone attribution within the vegetation zone shapefile, particularly for plots 3, 5 and 7.

5.3 Explain plot placement in relation to the mapped vegetation zones.

5.4 If hollow bearing trees will be removed, ensure that at least one plot per vegetation zone captures this, to ensure the credit profile for ecosystem credits records this for offsetting requirements.

5.5 For the ELA BAM plots, provide plot data sheets and a digital shapefile which shows start and finish points for the BAM plots.

6.1 Provide a review of candidate species assessments in the BDARs and BAM-C cases for the entire modification development footprint, correcting all inconsistencies and inaccuracies ensuring survey adequacy against relevant survey guides, and providing a consolidated candidate species assessment across the development site.

6.2 Ensure all species habitat suitability assessments and exclusions provide clear justification in relation to habitat constraints or known microhabitats required being absent or degraded to the point the species is unlikely to occur (BAM s.5.2.3).

6.3 Present evidence within the BDAR for adequate surveys being undertaken during optimal conditions to detect bluegrass.

6.4 For the large-eared pied bat provide a shapefile of the suitable habitat identified within Barney's reef, with a 2km buffer applied. Include any associated PCTs on the development site in the 2km buffer in the species polygon.

6.5 Provide adequate justification for not creating an eastern cave bat species polygon, otherwise generate a species polygon in accordance with the BAM species credit threatened bat guide.

7.1 Detail and justify avoidance and minimisation measures in accordance with the requirements of sections 7.1 and 7.2 of the BAM, including a summary of alternatives considered.

8.1 Ensure all requirements of the BAM have been met for assessment of indirect impacts, prescribed impacts and mitigation measures.

8.2 Present consolidated and consistent evaluations of indirect and prescribed impacts for the entire modification, ensuring the full extent of the impacts are defined and assessed.

8.3 Present a single consolidated and consistent set of mitigation measures that will be implemented for the modification.

9.1 Update the SAII information (BAM s 9.1) based on the cumulative impact of the modification.

CPHR's detailed comments

Birriwa Solar and Battery Project Modification 1 – Modification Report

Table 1 below provides an overview of submission and certification dates for the BDARs and BAM-C cases associated with this modification.

Table 1 Overview of BDARs submitted for the Birriwa solar and battery project modification.

EMM (2025) *Birriwa Solar and Battery Project Modification - Biodiversity Development Assessment Report.* E240117 RP#2, V3 dated 5 Jun 2025 **EMM (2025) Attachment A**: • ELA (2025) *Birriwa Bus Route South Biodiversity Development Assessment Report*. 24MUD9919. V2 dated 4 June 2025				
Certification date	**Received by CPHR**	**Finalised credit reports**	**BAM-C cases finalised and submitted**	**BDAR matches BAM-C cases**
EMM (2025) - 5 June 2025	13 August 2025	No	20 August 2025	No for BBRS stage. BDAR provides credit reports from open BAM-C case. Credits do not match across all tables and the finalised BAM-C case for BBRS. The credit report for the BBRS also does not align with the final BBRS BAM-C case.
ELA (2025) - 20 May 2025				No. BDAR provides a BBRS credit report from an open case that does not match with the EMM BDAR or the final BBRS BAM-C case.
EMM (2025) *Birriwa Solar and Battery Project Modification - Biodiversity Development Assessment Report.* E240117 RP#2, V4 dated 20 August 2025 **EMM (2025) Attachment A:** • ELA (2024) *Birriwa Bus Route South Biodiversity Development Assessment Report*. 24MUD9919. V0 draft dated 16 December 2024				
Certification date	**Received by CHPR**	**Finalised credit reports**	**BAM-C cases finalised and submitted**	**BDAR matches BAM-C cases**
EMM (2025) - 20 August 2025	4 September 2025	Yes	20 August 2025	Yes for the additional lots stage. No for the BBRS stage.
ELA (2024) - uncertified		No		No. BDAR provides a BBRS credit report in December 2024 from an open BBR BAM-C case.

The revised BDAR must meet BC Act certification and submission requirements.

1. Ensure certification and data provision meet BAM requirements, and credits in the BDAR and BAM-C cases match

The BDAR must be certified by the accredited assessor within 14 days of submission of the application, and submitted within 14 days of the date shown on the finalised credit report generated from the BAM calculator (BAM-C) case. All supporting data listed in Tables 24 and 25 of Appendix K of the BAM must be supplied at the time of BDAR submission to enable CPHR review.

Table 1 above shows the re-certified EMM BDAR incorporates an earlier un-certified ELA BDAR for Birriwa Bus Route South (BBRS). We have not reviewed this draft version of the ELA BDAR.

Credit summaries within both BDARs submitted do not match the final BAM-C case for the BBRS stage of the modification (see comparisons in Table 2 below). Spatial data was supplied to CPHR in stages, and outstanding spatial data is referenced in the relevant section of this response. We do not have access to the required plot data sheets supporting the BBRS assessment.

Table 2 Comparison of EMM and ELA BDAR summaries and finalised BAM-C case for the Birriwa Bus Route South stage

PCT/species	BBRS finalised BAM-C case and final credit report	ELA BDAR (Table 10-1, 10-2)	EMM BDAR (ES4, table 6.10,6.12,6.13, 6.14)
Ecosystem Credits			
PCT 277	31	25	25
PCT 281	57	60	60
TOTAL	**88**	**85**	**85**
Species Credits			
Southern Myotis	43	47	47 (individual zone figures quoted in Table 6.12 add up to 48)
Masked Owl	27	30	30

Recommendations

1.1 Submit a single consolidated BDAR for the modification, certified in accordance with section 6.15(1) of the BC Act. Finalise and submit the revised BAM-C cases in BOAMS, within 14 days of the date of BDAR certifications and submission.

1.2 Ensure all biodiversity credit summaries within the BDARs match the credit reports generated from the finalised BAM-C cases.

1.3 Ensure the revised BDARs and supporting data meets the minimum information requirements set out in Appendix K of the BAM at the time of resubmission.

Review key assessment information and BAM-C cases to ensure consistency and correct application of the BAM.

2. Clarify the development footprint to confirm the BAM has been applied to the full extent of impact

We are unable to confirm whether the BAM has been applied to the entire area being directly impacted by the modification. Additional direct impact areas are suggested within the Modification Report and Appendix H Traffic Impact Assessment, outside the development footprint depicted within the EMM and ELA BDARs. Some impacts are indicated for areas stated to be avoided.

The modification report and Traffic Impact Assessment state that the proponent will be upgrading the Merotherie Road/Birriwa Bus Route South intersection, in addition to the proposed upgrade of BBRS. Both reports indicate this work forms part of the proposed modification and is subject to final design to the satisfaction of Mid-Western Council. The Modification Report and Traffic Impact Assessment (Figures 1 and 2) indicate potential impacts associated with the road intersection upgrade which are not addressed in either BDAR provided.

d Road safety for Merotherie Road/Birriwa Bus Route South intersection

The sight distances on Merotherie Road from Birriwa Bus Route South have been estimated based on the line of sight, as shown in Figure 6.4. Based on the sight distance analysis, a number of mature trees may require removal on the western side of Merotherie Road as circled in Figure 6.4, as per the final design to the satisfaction of Mid-Western Regional Council.

A 300 m sight distance requirement to the left

A 300 m sight distance requirement to the right

Figure 6.4 Sight distance from Birriwa Bus Route South to Merotherie Road

Figure 1 Birriwa Solar and Battery Project Modification 1 report Figure 6.4.

Figure 2 Birriwa Bus Route South direct disturbance footprint assessed via the BAM, as shown in the EMM BDAR (left) and ELA BDAR (right). This footprint does not encompass the Merotherie Road/Birriwa Bus Route South intersection.

Figure 1.2 of the EMM BDAR marks proposed locations for creek crossings. Figure 1.3 of the Modification Report indicates creek crossings would include electrical cabling and 10 metre-wide access track, to a combined width of 40 metres. The proposed crossing locations are all on land outside of the disturbance footprint assessed under the BAM.

Page 50 of the EMM BDAR also states *'although woodland areas outside of the additional lots are to be retained, isolated paddock trees within the additional lots may be removed to facilitate the project'*. This is the only reference to removal of trees from the additional lots and no trees are

represented in BAM plot data from those lots. It is not clear if this is a reference to impacts from the creek crossings marked outside of the mapped development footprint.

Recommendation

2.1 Clarify the extent of direct impacts associated with the modification and ensure these are assessed in accordance with the BAM.

3. Native vegetation cover percentage requires review

Sections 3.1.2 and 3.2 of the BAM require the assessor to estimate the extent of woody and non-woody native vegetation cover within the applicable assessment area. Native vegetation cover is an important filter for candidate threatened species within the BAM-C, with errors potentially impacting the final credit obligation.

The native vegetation cover percentage may have been under-estimated for both project stages. If reassessment of the native vegetation percent cover within the buffer area for either project stage results in an increase in the applicable cover class (i.e. the estimated percent cover increases to >10%), there may be a change to the predicted threatened species list within the relevant BAM-C case. The BDAR must align with any revisions within the BAM-C cases.

Additional Lots

EMM calculated native vegetation cover of 8.8% (0-10 cover class) within the 1500m assessment area buffer for the additional lots. There are several areas that appear to contain woody native vegetation that have not been included in the native vegetation cover class mapping.

The woody vegetation excluded by EMM as non-native appears to include the native vegetation mapped by ELA within the BBRS disturbance footprint. Also, the EMM-mapped extent of non-woody native vegetation excludes without explanation, some areas mapped as native by EMM in data supplied with the BDAR for the approved Birriwa Solar project. Regardless of any adjacent project approvals, if native vegetation is currently present it should be included in the native vegetation percent cover calculations.

Table 3.1 of the EMM BDAR appears to list the native vegetation communities mapped on the SVTM within the 1500m assessment area. Within that table EMM indicate that the attribute ‘not classified’ in the SVTM was classified as ‘not native’ in their assessment. SVTM attribute ‘not classified’ does not necessarily mean no native vegetation is present.

Birriwa Bus Route South

ELA calculated a native vegetation cover percentage of 3%, with EMM reporting a cover percentage of 5% (0-10 cover class). The ELA BDAR does not explain the approach taken for estimating native vegetation extent within this assessment area.

We do not have the spatial data to verify these calculations. However, comparison with aerial imagery and the EMM vegetation mapping for the additional lots indicates it is likely that ELA have also underestimated the native vegetation percent coverage for the Birriwa Bus Route South stage.

Recommendations

3.1 Re-examine the extent of woody and non-woody native vegetation within the two assessment areas via:

a) undertaking finer scale vegetation extent mapping, including both woody and non-woody vegetation

b) considering all native vegetation mapped for the total Modification 1 disturbance footprint.

3.2 Recalculate the percentage of native vegetation cover within the assessment areas for both project stages. If reassessment of the native vegetation percent cover results in an increase

to the applicable cover class, review the list of candidate species and update the assessment.

3.3 Supply final GIS shapefiles supporting the calculation of native vegetation percent cover for both project stages with the revised BDAR.

4. Review the patch size calculation

The patch size calculation is used within the BAM-C to filter predicted threatened species. Patch size may extend onto adjoining land that is not part of the development site. The EMM BDAR estimates a patch size of 99 hectares for the additional lots stage, and the ELA patch size for the BBRS stage is 5 hectares. Neither BDAR explains how these patch sizes were determined for the vegetation zones assessed, and the required patch size map is not provided. The patch size estimate for the BBRS may not have accounted for the adjacent derived native vegetation mapped on the southern additional lot by EMM.

Recommendation:

4.1 Review and explain the patch size calculations. If patch size estimates change, review the list of candidate species and update the assessment.

5. Review vegetation zone mapping, plot allocation and BAM-C data entry

The assessor should undertake a thorough review of vegetation zone delineation, BAM plot locations relative to mapped vegetation zones, representativeness of plot data and the allocation of plots to zones in the BAM-C to ensure consistency of the two BDARs and BAM-C cases.

Additional lots stage – vegetation zone delineation

It is unclear how areas considered to meet the BAM s.4.1.2 measure of 'not native' (i.e. no native vegetation present) have been distinguished from the single vegetation zone 'Plant Community Type (PCT) 281 derived native vegetation (DNG)' in the additional lots BAM-C case. Rapid plot data points are not available for comparison with the BAM plot data for the mapped vegetation zone. Page ES.5 of the EMM BDAR also indicates a VI score was generated for the 'exotic' that was below the offsetting threshold, however no evidence is provided and no BAM plots are indicated for the 'exotic' area.

EMM Plot 1 on the additional lot north of the BBRS is used to represent the zone PCT 281 DNG but appears to be partly located on land mapped as 'exotic' and excluded from credit calculations.

Birriwa Bus Route South – allocation of BAM plots to vegetation zones

The plot allocation to vegetation zones between the GIS data, BDARs and the BAM-C case for the Birriwa Bus Route South is presented in Table 3 below.

The EMM BDAR does not detail the allocation of BAM plots to the BBRS vegetation zones, deferring instead to the ELA BDAR. However, the plot allocation to zones set out in the ELA BDAR differs from the plots entered for each zone in the BAM-C case for this stage. The BDAR should confirm whether this is an error, or whether EMM have made alternative decisions on the representativeness of plots and vegetation zone delineations to those made by ELA.

A single ELA BAM plot (Plot 6) has not been used in the BAM-C, with the ELA BDAR noting that it spanned two vegetation zones. However, there are two other plots used in the assessment which may also pass through other vegetation zones. No explanation is provided.

Table 3 CPHR comparison of vegetation zones and BAM plot allocation for Birriwa Bus Route South between digital shapefiles, both BDARs and the applicable BAM-C case.

ELA Plot	BAM-C Zone	Zone noted in Plot shapefile attribute table.	Vegetation zone shapefile overlaid with plots*	BDAR (ELA) (Table 3-5)	BDAR (ELA) Figure 3-5 – multiple maps)	CPHR Notes
1	PCT 281 Woodland	*Nil*	Exotic/281 Woodland	281 Woodland	Depicted as just adjacent to PCT 281 Woodland mapping.	Plot likely on land mapped as 'exotic'. PCT 281 Woodland is adjacent. Supply shapefile showing plot direction to assist in confirming position of plot within the vegetation zone.
2	PCT 277 Woodland	*Nil*	277 Woodland	277 Woodland	No PCT mapped. Adjacent to 277 Woodland	
3	PCT 277 Woodland	*Nil*	281 Woodland	281 Woodland	281 Woodland	Plot allocated to different vegetation zone in BAM-C case compared with ELA BDAR. Entered for PCT 277 Woodland in BAM-C, however plot shapefile, vegetation zone shapefile and ELA BDAR link plot with PCT 281 Woodland.
4	PCT 281 DNG	PCT 281 DNG	281 DNG (mostly)	281 DNG	281 DNG (mostly)	ELA BDAR displays plot passing through another zone; spatial data and BDAR figures identify tree patch which are mapped as PCT 281 Woodland. Plot data records 2 tree species. BAM-C case combines plot with Plot 5 (also containing two tree species) for the 281 DNG zone, however Plot 5 appears to be in woodland and ELA allocated it to PCT 281 Woodland. Explain the plot placement in relation to the mapped vegetation zones. .
5	PCT 281 DNG	PCT 281 Woodland	281 Woodland	281 Woodland	281 Woodland	Plot in different vegetation zone in the BAM-C case compared with ELA assessment. Allocated to PCT 281 DNG in BAM-C, but in PCT 281 Woodland in Plot shapefile attribute table and ELA BDAR. Aerial imagery shows plot 5 is in woodland.
6	*Not used – spans two zones*					
7	PCT 277 DNG	PCT 277 DNG	281 Woodland	277 DNG	On edge of 277 DNG	BAM-C, plot shapefile and ELA BDAR allocate plot to PCT 277 DNG. Zone in PCT shapefile attributed to PCT 281 Woodland. Aerial imagery shows zone is likely labelled DNG, no trees recorded in the plot. If PCT polygon is incorrectly named it may be affecting the area totals for both zones PCT 277 DNG and PCT 281 Woodland.
8	PCT 277 DNG	PCT 277 DNG	277 DNG (mostly)	277 DNG	277 DNG (mostly)	BDAR should explain the plot placement in relation to the mapped vegetation zones.

Birriwa Bus Route South – hollow bearing trees are not represented in the plots used in the assessment.

The ELA BDAR states that 53 hollow bearing trees (HBTs) were identified in the BBRS footprint and there will be a reduction in HBTs. Whilst unclear, the EMM BDAR implies that all hollow bearing trees have been avoided. None of the plots in the BAM-C contain HBTs. The only BAM

plot which recorded a HBT was Plot 6 which, as noted above, has not been used within the BAM-C case. Accurately recording the presence of HBTs is important to ensure the credit profile for ecosystem credits records this for offsetting requirements.

Recommendations

5.1 Review the vegetation zone mapping for the additional lots stage BDAR:

a) Include justification in accordance with s.4.1.2 of the BAM (areas that do not contain any native vegetation) for all areas assessed as non-native vegetation. If the exotic pasture mapped is considered a vegetation zone, supply the VI score noted in the BDAR and the supporting data.

b) Confirm the PCT 281 DNG boundaries within the northern lot against aerial imagery and justify the delineation of the zone boundary.

5.2 Check vegetation zone attribution within the vegetation zone shapefile, particularly for plots 3, 5 and 7.

5.3 Explain plot placement in relation to the mapped vegetation zones.

5.4 If hollow bearing trees will be removed, ensure that at least one plot per vegetation zone captures this, to ensure the credit profile for ecosystem credits records this for offsetting requirements.

5.5 For the ELA BAM plots, provide plot data sheets and a digital shapefile which shows start and finish points for the BAM plots.

6. Undertake comprehensive review of the candidate species assessment.

Revision of BDAR tables, supported by spatial data, will be required to clarify and confirm the relevant candidate species, habitat suitability assessment and adequacy of survey effort. CPHR has deferred full review of survey effort until the requested clarifications and revisions have been made. However, additional species polygons may be required for two bat species. It appears that only four predicted threatened species are completely removed from the assessment for the modification due to absent or degraded habitat or microhabitat. The remainder of species exclusions appear to only relate to the additional lots stage of the modification. Table 4 below highlights issues currently identified.

Table 4 Issues with candidate species assessment.

Species	Issues Identified
Bluegrass (*Dichanthium setosum*)	The Threatened Biodiversity Data Collection (TBDC) survey window is November-May three to four weeks after effective rainfall. Confirm in the BDAR whether surveys were undertaken during suitable survey conditions to maximise detection of this species. Also, confirm the suitability of the 'exotic pasture' as habitat in addition to the currently mapped vegetation zones.
Pomaderris cotoneaster	BDAR Table 5.2 indicates this species was included as a candidate species for further assessment, however Table 5.5 of the BDAR does not include this species as a species that had targeted surveys completed. The relevant BAM-C case retains this species as a candidate species and further excludes it based on surveys completed in October. Review this species to ensure the BDAR and BAM-C case are consistent with any surveys undertaken.

Large-eared pied bat (foraging and breeding) (*Chalinobolus dwyeri)*	There is confusion in the assessment for this species. Both BAM-C cases say that this species was not recorded in the ELA surveys but the spatial data and ELA Table 4.11 report the species was positively identified from Anabat results. Spatial data supporting the conclusions of the EMM BDAR and ELA BDAR regarding the presence or absence of the habitat constraint for this species within 2km of the development footprint is not provided. Whilst an EMM shapefile for a species polygon for this species is provided, no species credits have been calculated. The EMM BDAR indicates these credits are not required because they consider the DNG to not provide foraging habitat. This is incorrect. Where this species is recorded or assumed present, prepare a species polygon taking in all associated PCTs within a 2km buffer of the identified habitat constraint.
Eastern Cave Bat (*Vespadelus troughtoni*)	The ELA BDAR Table 4-11 and EMM BDAR Table 5.8 state that this species was potentially recorded in the ELA Anabat results for BBRS. Figure 4-1 of the ELA BDAR shows other recordings of the species within a 10km radius of the site. The ELA BDAR concludes that a species polygon is not required because the development footprint is not located within 2km from *'caves and cliffs'* and *'any cave or cliff line features used by these species'.* The EMM BDAR (Table 6.1) notes that a small building providing a potential roosting site for microbats 'from time to time' will be demolished on the additional lots.Neither the BDAR nor the BAM-C cases include this species as a predicted or candidate species. Further justification is required to explain the lack of s species polygon for this species.
Southern Myotis (*Myotis macropus*)	This species was carried forward as a candidate species in the additional lots BAM-C case but excluded as a candidate species in Table 5.2 of the EMM BDAR. Farm dams are present and a potential detection of this species is noted in the ELA BDAR along BBRS. Ensure the BDARs and BAM-C cases are consistent.
Keys matchstick grasshopper (*Keyacris scurra*)	The ELA BDAR indicates September surveys for this species. The BAM-C case for the BRS records surveys for this species being undertaken in January, March, April, July and November. Clarify survey timing and ensure the BDAR and BAM-C are consistent.

Recommendations

6.1 Undertake a review of candidate species assessments in the BDARs and BAM-C cases for the entire modification development footprint, correcting all inconsistencies and inaccuracies ensuring survey adequacy against relevant survey guides, and providing a consolidated candidate species assessment across the development site.

6.2 Ensure all species habitat suitability assessments and exclusions provide clear justification in relation to habitat constraints or known microhabitats required being absent or degraded to the point the species is unlikely to occur (BAM s.5.2.3).

6.3 Present evidence within the BDAR for adequate surveys being undertaken during optimal conditions to detect bluegrass.

6.4 For the large-eared pied bat provide a shapefile of the suitable habitat identified within Barney's reef, with a 2km buffer applied. Include any associated PCTs on the development site in the 2km buffer in the species polygon.

6.5 Provide adequate justification for not creating an eastern cave bat species polygon, otherwise generate a species polygon in accordance with the BAM species credit threatened bat guide.

Clarify and confirm avoidance measures, indirect and prescribed impacts and mitigation measure.

7. Provide additional detail to document and justify all efforts to avoid or minimise, and to describe direct, indirect and prescribed impacts.

Sections 7.1 and 7.2 of the BAM require consideration of strategies and actions that may be taken to avoid or minimise impacts on biodiversity values.

Whilst unclear, the modification report suggests final road upgrade design endorsement by Mid-Western Regional Council is still pending. The ELA BDAR states that the road upgrade footprint has been refined based on consultation with the council. ELA report that the BBRS footprint has been modified to avoid the removal of as many trees as possible, resulting in avoidance of 3.45 ha of native vegetation (page 65). The original and revised footprint extent are not provided for comparison. It is not clear whether this avoidance accounts for the difference in the extent of the *'subject land (modification development footprint)'* and the '*Study area (modification area)'/ 'Birriwa Bus Route South (Assessed by ELA)'* mapped along BBRS in Figure 1.2 of the EMM BDAR (excerpt in Figure 3 under Issue 2 above).

The ELA BDAR (page 66) also states that alternative locations and routes were assessed, however those alternatives, the relative biodiversity impacts, and reasons for rejection are not indicated in the BDARs or modification report.

Recommendation

7.1 Detail and justify avoidance and minimisation measures in accordance with the requirements of sections 7.1 and 7.2 of the BAM, including a summary of alternatives considered.

8. Revision of the indirect and prescribed impact assessments and proposed mitigation measures is required to address inconsistencies and meet BAM requirements.

The assessment of indirect impacts, prescribed impacts and identification of mitigation measures does not meet BAM requirements. Inconsistencies and incomplete integration exist between the two BDARs.

Indirect impact assessment

An assessment of indirect impacts for the BBRS stage is presented in Table 8-4 of the ELA BDAR. The EMM BDAR does not provide an equivalent assessment covering the entire modification. The EMM BDAR provides a high-level list of indirect impacts on page 59 and also notes some indirect impacts within a table of suggested avoidance and minimisation strategies (Table 6.2). Most references within that table appear focussed on the additional lots stage.

Prescribed impact assessment

The prescribed impact assessment requires consolidation and review against BAM requirements.

The EMM BDAR indicates the prescribed impacts of the project include vehicle strikes and acknowledges there will be increased traffic during construction activities, but the 'description and location' and the associated threatened species stated to be 'N/A'. The ELA BDAR acknowledges an expected increase in traffic in both construction and operational phases of the project and specifically identifies the masked owl as a threatened species at risk of vehicle strike.

Neither assessment acknowledges the actual extent and degree of traffic increase, presented in Table 4.1 of the Traffic Impact Assessment. It is not clear from either BDAR whether the full extent of traffic increase under the modification has been considered within the prescribed impact assessment, or only that specifically associated with the section of BBRS proposed for upgrade.

Mitigation measures are proposed to address vehicle strike risks – for the construction phase only in the EMM BDAR, and for the construction and operation phases in the ELA BDAR. Neither assessment identifies the residual impact post implementation of proposed mitigation measures.

Mitigation measures

The proposed mitigation measures require review and consolidation to ensure clarity, consistency and compliance with the BAM.

ELA present a list of specific mitigation measures for the BBRS upgrade (page 74 and Table 8-5). Table 6.2 of the EMM BDAR presents 'minimisation measures'. Not all of the ELA proposed mitigation measures are represented in the EMM BDAR, which was to cover both stages of the proposed modification. For example, EMM Table 6.2 does not specifically address tree removal as the additional lots stage only impacts groundcover. In contrast ELA propose staged tree removal and 2:1 replacement of hollows removed with nest boxes. Nest boxes are not mentioned in the EMM BDAR. Similarly, the EMM BDAR Table 6-3 'Adaptive Management Strategy' only proposes protective fencing for 'PCT 281_poor' to be retained on the additional lots, and monitoring this Box-Gum Woodland CEEC condition against a baseline assessment.

It is unclear in the EMM BDAR if exclusion of some ELA proposed mitigation measures is in error, or the exclusions indicate those ELA measures are not proposed for implementation by the proponent. Similarly, it is unclear if measures only referencing the additional lots will also be implemented for BBRS.

Recommendations

8.1 Ensure all requirements of the BAM have been met for assessment of indirect impacts, prescribed impacts and mitigation measures.

8.2 Present consolidated and consistent evaluations of indirect and prescribed impacts for the entire modification, ensuring the full extent of the impacts are defined and assessed.

8.3 Present a single consolidated and consistent set of mitigation measures that will be implemented for the modification.

Update the evaluation of the serious and irreversible impact (SAII) risk

9. CPHR evaluation and advice on the risk of serious and irreversible impacts is deferred until re-submission of a revised BDAR

There are several recommendations made in this submission which must be addressed before CPHR can complete an evaluation of SAII. We request a consolidated presentation of the required SAII information for the entire modification in relation to any impacts to entities at risk of SAII

The EMM BDAR states that as the SAII information requirements for Box Gum Woodland CEEC were independently addressed by the two consultancies for the separate stages, they have not been combined and are presented in separate tables. Addressing the SAII information requirements separately for each stage has resulted in inconsistencies and omissions. Provision of the required information should be based on the cumulative impact to Box Gum woodland CEEC.

Recommendation

9.1 Update the SAII information (BAM s 9.1) based on the cumulative impact of the modification.