



Your ref: SSD-41294067
Our ref: DOC24/389597

Mandana Mazaheri
Principal Planning Officer
Department of Planning, Housing and Infrastructure- NSW Planning Group
Via Major Projects Portal: PAE-41364966

Dear Mandana

Subject: Copi Mineral Sands Mine (SSD-41294067)

Thank you for your email dated 16 May 2024 seeking advice from the Biodiversity, Conservation and Science Group (BCS) of the NSW Department of Climate Change, Energy, the Environment and Water about the Environmental Impact Statement (EIS) for SSD-41294067, Copi Mineral Sands Mine.

We have reviewed the exhibited EIS against the Secretary's Environmental Assessment Requirements (SEARs) issued to the proponent on 19 May 2022.

Following review, BCS considers that the EIS does not meet the Secretary's requirements for flood risk management or biodiversity. The proponent can address flood risk management issues by quantitative flood modelling during detailed design and BCS recommends the proponent consult with Wentworth Shire Council and the NSW State Emergency Service (SES) on a site-specific flood emergency response plan.

BCS considers that significant further work is required for the revised Biodiversity Development Assessment Report (BDAR) to meet the SEARs for biodiversity. Until the proponent completes this assessment, the upper credit liability is unlikely to accurately reflect the impact of the project on biodiversity. The proponent has not correctly applied the Biodiversity Assessment Method (BAM) and there are several matters that will need to be addressed to ensure the final biodiversity credit obligation can be calculated correctly.

In summary, the proponent has not:

- Completed sufficient survey effort for all candidate flora and fauna species, so the impacts for most species are unknown.
- Adequately completed the biodiversity assessment (BAM Stage 1) which is likely to affect the impact assessment (BAM Stage 2).
- Adequately addressed the potential Serious and Irreversible Impacts (SAIL) to *Austrostipa nullanulla*.
- Appropriately assessed the presence and/or absence of Threatened Ecological Communities (TECs) or provided sufficient justification for assuming presence and/or absence of TECs.
- Provided detail on limitations to site access and how this may have affected survey outcomes.
- Appropriately or adequately applied the 'avoid and minimise' hierarchy of the Biodiversity Offsets Scheme (BOS).

- Addressed the prescribed and indirect impacts for threatened entities and has not identified residual impacts.
- Referred the project to the Commonwealth Department of Climate Change, Energy, the Environment and Water which is necessary as there are 466 hectares of impact to 'Mallee Bird Community of the Murray Darling Depression Bioregion' endangered ecological community, and other Matters of National Environmental Significance (MNES), including those recorded on the site, and the proponent has not assessed these impacts.

A summary of our assessment, advice and recommendations to address the matters above are addressed in **Attachment A**. Detailed supporting advice is in **Attachment B**.

BCS requests that the consent authority require, as a condition of consent, that the proponent develops all plans that relate to flood risk management or biodiversity in consultation with BCS so the key matters are adequately addressed.

If you have any questions about this advice, please contact Michael Todd, Senior Conservation Planning Officer, via planning.southwest@environment.nsw.gov.au or 03 5021 8915.

Yours sincerely



Adam Vey

15 July 2024

Director South West

Biodiversity, Conservation and Science Group

NSW Department of Climate Change, Energy, the Environment and Water

ATTACHMENT A – BCS Assessment Summary and Recommendations for Copi Mineral Sands Mine Environmental Impact Statement (SSD 41294067)

ATTACHMENT B – Detailed advice for Copi Mineral Sands Mine Environmental Impact Statement (SSD 41294067)

ATTACHMENT A BCS Assessment Summary and Recommendations for Copi Mineral Sands Mine Environmental Impact Statement (SSD-41294067)

In preparing this advice BCS have reviewed the following documents:

- Copi Mineral Sands Project Environmental Impact Statement (EIS), R.W. Corkery & Co. May 2024
- Copi Mineral Sands Project Biodiversity Development Assessment Report (BDAR), EnviroKey. V4.2, May 2024.
- Copi Mineral Sands Project Surface Water Assessment, R.W. Corkery & Co. March 2024
- Copi Mineral Sands Project Groundwater Impact Assessment, Geo-Eng. February 2024

Key Issues

Flood Risk Management

The flooding assessment in the Surface Water Assessment requires detailed flood modelling and consideration of Emergency Management during construction and operation.

- 1.1. Complete detailed flood modelling in the detailed design stage to appropriately locate and size infrastructure and to inform emergency management plans.
- 2.1. Engage with the local council and the NSW State Emergency Service (SES) to discuss and agree emergency management matters, and to inform a site-specific flood emergency response plan.

Biodiversity

The candidate species assessment does not meet requirements of the BAM

- 3.1. Include the total area of associated PCT(s) that require surveys for each candidate species in s5.3 of the BDAR.
- 3.2. Remove Vegetation Integrity (VI) plot hours from the survey effort calculations for candidate flora species.
- 3.3. Ensure the survey effort for each candidate flora species only includes the surveys conducted in the correct survey month and associated PCT(s).
- 3.4. Remove duplicated fauna survey effort hours from the survey effort calculations for flora.
- 3.5. Complete additional targeted survey effort in the correct months and associated PCTs for each candidate flora and fauna species to meet the minimum effort required by BAM survey guidelines.
- 3.6. Assess the potential SAll impact on the Desert Mouse and consider obtaining an expert report if additional survey effort in associated PCTs is not completed.

Serious and Irreversible Impacts are unknown and likely under-estimated

- 4.1. Provide evidence to support the claim that the project has been designed to avoid and minimise the impact to *Austrostipa nullanulla*.

- 4.2. Improve the assessment of the potential Serious and Irreversible Impacts (SAII) to *Austrostipa nullanulla*, including through completing a more thorough search for available information.
- 5.1. Revise the species polygon for *Austrostipa nullanulla* to match the extent of the associated PCT 253- Gypseous shrubland on rises in the semi-arid and arid plains, in accordance with s5.2.5 of the BAM.
- 5.2. Clarify how areas of the species polygon mapped outside the associated PCT 253 have been generated in the BDAR and revise species polygons in the BDAR and BAM-C where required.

PCT, TEC and vegetation zone identification and mapping need to be revised as they have inaccuracies that can affect the biodiversity credit calculation

- 6.1. Review derived PCT 165 and assign the parent communities from which the derived community has developed.
- 7.1. Provide additional data and include a discussion on how rainfall preceding survey seasons may have impacted survey outcomes.
- 7.2. Consider using of modified dry condition benchmark data for PCTs where VI scores may have been impacted by drought conditions.
- 8.1. Provide additional information in s4.2.2 to 4.2.12 of the BDAR to justify the selection of each PCT.
- 8.2. Where no ground truthing field surveys occurred and selected PCTs differ from the State Vegetation Type Map (SVTM), justify the PCT selection, or retain existing mapped PCTs.
- 9.1. Sample additional VI plots across the vegetation zones to demonstrate that vegetation condition across the subject land has been adequately sampled and considered.
- 9.2. Where vegetation condition is variable across a zone, create additional vegetation zones with different condition states and complete the required VI plots in accordance with s4.3.4 of the BAM.
- 9.3. Resample VI plots where current plot placement does not meet s4.3.4(4) of the BAM.

The presence and extent of Threatened Ecological Communities may be underestimated.

- 10.1. Provide further evidence that PCT 65 *Tecticornia lylei*, Wiry Glasswort, low open-shrubland in the Murray Darling Depression Bioregion and PCT 28 Sandhill Pine Woodland TECs are absent, including through assessing these TECs against the scientific committee determination and other published literature in accordance with s4.2(1) of the BAM.

The effect of access restrictions on the credit obligation has not been explained

- 11.1. Provide further detail about the areas where survey could not be completed, including a map of the area with no access and a corresponding list of candidate species and their associated PCTs where no survey could be completed.
- 11.2. Where surveys for candidate species were not completed due to lack of access, assume species presence in accordance with s5.2.5(4) of the BAM.
- 11.3. Justify the PCTs and vegetation zones selected where access was limited, and no surveys were completed.

It is unclear why species credit species were excluded

- 12.1. Update the BDAR to ensure that where candidate species have been excluded, it is in accordance with s5.2.2 and 5.2.3 of the BAM.
- 12.2. Where it is not possible to justify excluding candidate species, complete targeted surveys for previously excluded candidate species.
- 13.1. Revise Section 7.1 to remove existing protected areas not part of the project assessment area as an example of avoiding impacts to *Austrostipa nullanulla*.
- 13.2. Revise Section 7.1 to remove fencing and 'seed collection of *Austrostipa nullanulla* prior to clearing' as examples of measures to avoid and minimise impacts, and include these as part of project mitigation measures.
- 13.3. Provide additional detail (including maps and supporting data) to support the statement in s7.1.2 and 7.2.2 of the BDAR that multiple design iterations have reduced biodiversity impacts including the accommodation camp and haul route locations.

The prescribed impact assessment needs specific detail and further assessment to meet BAM sections 6, 7.2, 8.3 and 8.4.

- 14.1. Identify individual species subject to each prescribed impact in Table 34 of the BDAR.
- 14.2. Assess the prescribed impacts on threatened entities reliant on both saline and freshwater wetlands.
- 14.3. Provide a more complete assessment of the potential prescribed impacts of vehicle strike on threatened fauna.
- 14.4. Provide more detail in section 8.3 to demonstrate that the prescribed impacts of connectivity, altered hydrology and vehicle strike have been avoided, minimised and mitigated.
- 14.5. Delete the reference to 'removal of gypseous soils' as being a temporary prescribed impact.

The effect of removing salt lakes from the landscape must be assessed, mitigated or offset.

- 15.1. Revise the hydrology prescribed impacts for threatened species to include all threatened species likely to be affected by the proposed development.
- 15.2. Propose avoidance and mitigation measures that contribute to the entities impacted by prescribed impacts recovering.
- 15.3. Identify residual indirect and prescribed impacts to hydrology and connectivity of threatened species.
- 15.4. Propose measures for offsetting residual prescribed impacts if residual prescribed impacts are identified.
- 16.1. Assess the indirect and prescribed impacts to groundwater dependent ecosystems within and outside the development footprint.
- 16.2. Based on this assessment, develop and detail measures to avoid, minimise and mitigate the identified impacts, and ensure that all measures are justified based on peer-reviewed evidence of success in similar or the same vegetation.

- 16.3. Before the project is determined, develop an adaptive management plan to address the impact to Groundwater Dependent Ecosystems outside the development footprint and sample monitoring locations before the impact occurs.

BAM administration

- 17.1. Update s1.2 of the BDAR to show entry into the BOS as a major project required by the SEARs issued for the project.

Matters of National Environmental Significance (MNES)

- 18.1. Assess the implications of the development on all MNES in line with the EPBC Act significant impact guidelines.
- 18.2. Refer the project to the Commonwealth DCCEEW for its consideration under the EPBC Act.

Environmental Impact Statement (EIS)

- 19.1. Correct statements in the EIS and associated summaries that refer to the absence of threatened species on site.

ATTACHMENT B Detailed advice for Copi Mineral Sands Mine, Environmental Impact Statement (SSD-41294067)

Flood Risk Management

BCS has reviewed the Flood component in Section 6.7 of the EIS and the Surface Water Assessment in Appendix 10.

The EIS does not meet the Secretary's requirements for flooding.

The flooding assessment in the Surface Water Assessment requires detailed flood modelling and consideration of Emergency Management during construction and operation.

1. Quantitative flood modelling is required to inform the detailed design process.

The Surface Water Assessment does not include any quantitative flood modelling. Although BCS understands that the flood risk associated with the development are likely to be low, the proponent will need to complete detailed flood modelling in the detailed design process to ensure the infrastructure is appropriately located and sized to limit flood risk. The flood modelling should be used to inform emergency management issues related to site evacuation and access during floods as detailed in issue 2.

Recommendation:

- 1.1. Complete detailed flood modelling in the detailed design stage to appropriately locate and size infrastructure and to inform emergency management plans.

2. The proponent has not consulted with the local Council and the NSW SES on emergency management related flood impacts

Table 2 of the Surface Water Assessment suggests that emergency management issues are 'Not applicable'. Given that there could be up to 480 workers onsite during construction and 240 during operation, and the site could be isolated from nearby population centres for weeks at a time during major floods, it is important that the proponent actively consult with the local council and the NSW SES to ensure that emergency management matters are discussed and supported. This consultation will be necessary to inform a site-specific flood emergency response plan. This plan should be informed by the detailed flood modelling as recommended above.

Recommendation:

- 2.1. Engage with the local council and the NSW State Emergency Service (SES) to discuss and agree emergency management matters, and to inform a site-specific flood emergency response plan.

Biodiversity

The Biodiversity Development Assessment Report (BDAR) at Appendix 5 does not meet the Secretary's requirements for biodiversity

Specific advice on the BDAR and related sections in the EIS are:

The candidate species assessment does not meet requirements of the BAM

3. Survey methods for candidate species are not in accordance with BAM survey guidelines, there has not been enough survey for candidate species and the completed surveys are not well documented.

While the surveys were completed in the correct survey months for some species, others were completed outside the specified survey month. There are 13 species (7 flora, and 6 fauna) in the BAM-C mine site 'Habitat survey' tab that have ticked the 'survey month outside the specified months' box. However the BDAR does not include a justification for why these species were surveyed outside the specific survey months. The BDAR should justify why surveying outside the specified months is appropriate for example by using local reference sites or populations to demonstrate species identification is appropriate outside of the survey season (e.g. flowering for flora and breeding for fauna).

Similarly, some species were not surveyed in the associated PCTs in the required survey months. The spatial data and Table 2 of the BDAR has a list of survey months for flora survey effort but it does not list target species for each survey period or in which PCTs survey transects were completed.

The survey effort for flora in Table 31 of the BDAR is presented as only as hours of effort per flora species with no reference to the area and/or length of any transects. There is also conflicting information about the threatened flora survey effort in the spatial data (Copi_ThreatFloraTransect.shp) compared and s5.3, 5.31, Table 31 and Table 2 of the BDAR.

Given vegetation integrity (VI) plots were placed next to access tracks (see issue 9) searches within the VI plots for threatened flora should not be considered part of targeted threatened flora survey effort (as per BDAR Table 2). The BDAR includes flora transects that were completed outside the development footprint in total survey effort for candidate species. While BCS encourages survey effort in the wider assessment area to inform local population data, this effort does not count towards the required survey effort within the subject land for each candidate species. For these reasons, the threatened flora survey effort presented in multiple locations and formats in the BDAR does not represent the actual survey effort, and most candidate species are under surveyed.

BCS ran a preliminary analysis of the candidate flora species, associated PCTs requiring survey effort, required survey months and actual survey months and effort (see Table 1 below **Error! Reference source not found.**). The BDAR does not present completed surveys, done in accordance with the '*Surveying threatened plants and their habitats. NSW survey guide for the BAM (2020)*', for any of the candidate flora species within the extent of their associated PCTs. BCS notes that the accredited assessor did not consider this guide or apply the large area survey method from this guide which may be suitable for some species and associated PCTs for this project.

There are also several issues with the targeted fauna surveys for candidate species credit species that the proponent should clarify. The BDAR presents call playback surveys as a combined total of 729 minutes, but this does not represent the amount of effort that has been applied to locate each candidate species, where it was applied and in which associated PCTs. The BDAR uses songmeter data as evidence of survey effort yet only two locations were surveyed using this method and only for a combined total of 42 hours. The BDAR does not present any targeted effort for breeding raptors other than general surveys for birds. The survey for Crowned Gecko does not conform with the '*Threatened Reptiles: Biodiversity Assessment Method Survey Guide (2022)*'.

The survey for the critically endangered Desert Mouse (*Pseudomys desertor*), a SAll species, occurred at too few locations, not in associated PCTs and did not include pitfall trapping. The Threatened Biodiversity Data Collection (TBDC) notes that the species is difficult to detect from survey and an expert report may be required to determine presence/absence. Given the minimal survey effort completed in the PCTs associated with the Desert Mouse, an expert report is likely to be required. Table 2 below details the candidate fauna species and the areas where additional assessment is needed.

Recommendations:

- 3.1. Include the total area of associated PCT(s) that require surveys for each candidate species in s5.3 of the BDAR.
- 3.2. Remove Vegetation Integrity (VI) plot hours from the survey effort calculations for candidate flora species.
- 3.3. Ensure the survey effort for each candidate flora species only includes the surveys conducted in the correct survey month and associated PCT(s).
- 3.4. Remove duplicated fauna survey effort hours from the survey effort calculations for flora.
- 3.5. Complete additional targeted survey effort in the correct months and associated PCTs for each candidate flora and fauna species to meet the minimum effort required by BAM survey guidelines.
- 3.6. Assess the potential SAll impact on the Desert Mouse and consider obtaining an expert report if additional survey effort in associated PCTs is not completed.

Table 11: BCS analysis of mine site and access road flora survey effort required in associated PCTs and maximum potential survey effort completed in the BDAR.

Candidate flora species	Associated PCT(s) in subject land	Area of associated PCTs (ha)	Accepted survey months	BDAR surveys that correspond with accepted month in PCT	BDAR Table 31 effort (hours)	BCS estimation of maximum potential effort in correct month and associated PCTs (as presented in the BDAR)*
<i>Acacia acanthoclada</i>	170, 171	466.01	August to November	September 2023	392	1.45 kms
<i>Acacia carneorum</i>	58	549.21	All	All	378	10.25 kms (includes 4.5 kms survey outside subject land)
<i>Atriplex infrequens</i>	154, 157	3824.2	November to February	January 2020, February 2021	102	84 kilometres (includes survey outside subject land)
<i>Austrostipa metatoris</i>	28, 171	439.41	October and November	None	366	None
<i>Austrostipa nullanulla</i>	253	241.95	September to December	September 2018 and 2023	354	1.45 kms
<i>Brachyscome papillosa</i>	154, 157	3824.2	September to November	September 2018 (154 only)	402	10.25 kms (includes 4.5 kms survey outside subject land)

Candidate flora species	Associated PCT(s) in subject land	Area of associated PCTs (ha)	Accepted survey months	BDAR surveys that correspond with accepted month in PCT	BDAR Table 31 effort (hours)	BCS estimation of maximum potential effort in correct month and associated PCTs (as presented in the BDAR)*
<i>Calotis moorei</i>	154, 157	3824.2	September to November	September 2018 (154 only)	378	10.25 kms (includes 4.5 kms survey outside subject land)
<i>Cratystylis conocephala</i>	58, 171, 221	1439.82	All	All	378	29.5 kms
<i>Dodoniaea stenozyga</i>	170, 171	466.01	All	May 2018, January 2020, February 2021, March 2022, September 2023	378	8.5 kms
<i>Kippistia suaedifolia</i>	154, 253	2772.5	All	May and September 2018, January 20, February 2021	378	Unable to be determined
<i>Lasiopetalum behrii</i>	170, 171	466.01	All	May 2018, January 2020, February 2021, March 2022, September 2023	126	8.5 kms
<i>Lepidium monoplocoides</i>	170	32.49	October to December	Not recorded in BDAR but in BAM-C	None	Unknown
<i>Leptorhynchos waitzia</i>	64	104.4	September to November	None	378	None

Candidate flora species	Associated PCT(s) in subject land	Area of associated PCTs (ha)	Accepted survey months	BDAR surveys that correspond with accepted month in PCT	BDAR Table 31 effort (hours)	BCS estimation of maximum potential effort in correct month and associated PCTs (as presented in the BDAR)*
<i>Pterostylis cobarensis</i>	170, 171	466.01	October	None (assumed present)	8	None
<i>Santalum murrayanum</i>	170, 171	466.01	All	May 2018, January 2020, February 2021, March 2022, September 2023	378	8.5 kms
<i>Swainsona colutoides</i>	170, 171	466.01	All	May 2018, January 2020, February 2021, March 2022, September 2023	378	8.5 kms
<i>Swainsona pyrophila</i>	170, 171	466.01	September to November	September 2023	378	1.45 kms
<i>Swainsona sericea</i>	28	5.89	Sep to Nov	None	378	None

* BAM plots have not been included as survey effort for candidate flora species

Table 2: BCS analysis of mine site and access road fauna survey effort required in associated PCTs and maximum potential survey effort completed in the BDAR.

Candidate fauna species	Associated PCT(s) in subject land	Area of associated PCTs (ha)	Accepted survey months	BDAR surveys that correspond with accepted month in PCT	Actual effort in correct PCT and month	Evidence of survey effort
Murray Mallee Striated Grasswren <i>(Amytornis striatus howe)</i> *	171	433.52	August to February	February 2020, September and October 2023, February 2024	None	While the BDAR reports 729 minutes of call playback survey completed this amount includes all the species that were surveyed for via call playback both inside and outside the subject land.
Bush Stone-curlew <i>(Burhinus grallarius)</i>	28, 58, 170, 171, 221	1478.2	All	May 2018, February and March 2020, March 2022, September and October 2023, February 2024 but unclear which involved targeted survey for this species.	Songmeters (2)- March 2022, Playback (1)- same site as one of the songmeters- Mar 2018	Songmeter data is potentially effective but the BDAR states only 42 songmeter hours from two locations within the subject land was completed, one of which was on Nulla Road, a mostly disturbed location unlikely to be representative.
Black-breasted Buzzard <i>(Hamirostra melanosternum)</i>	28, 58, 154, 157, 170, 171, 221	5302.4**	September to November	September 2018 and 2023, October 2023	September 2023 (one general bird survey).	Other surveys were in non-treed habitats therefore cannot be considered targeted surveys for nests

Candidate fauna species	Associated PCT(s) in subject land	Area of associated PCTs (ha)	Accepted survey months	BDAR surveys that correspond with accepted month in PCT	Actual effort in correct PCT and month	Evidence of survey effort
Little Eagle (<i>Hieraaetus morphnoides</i>)	28, 58, 154, 157, 170, 171, 221	5302.4**	August to October	September 2018 and 2023, October 2023	September 2023 (one general bird survey).	Other surveys were in non-treed habitats therefore cannot be considered targeted surveys for nests
Pink Cockatoo (<i>Lophochroa leadbeateri</i>)	221, 58, 170, 171, 253, 154, 28	5544.35**	September to December	September 2018 and 2023, October 2023	September 2023 (one general bird survey).	Other surveys were in non-treed habitats therefore cannot be considered targeted surveys for nests
Square-tailed Kite (<i>Lophoictinia isura</i>)	28, 58, 221	1012.19	September to January	September 2018 and 2023, October 2023	September 2023 (one general bird survey).	Other surveys were in non-treed habitats therefore cannot be considered targeted surveys for nests
Black-eared Miner (<i>Manorina melanotis</i>)	170, 171	466.01	August to January	October 2021, September and October 2023	None	While the BDAR reports 729 minutes of call playback survey completed, this amount includes all the species that were surveyed for via call playback both inside and outside the subject land.
Red-lored Whistler (<i>Pachycephala rufogularis</i>)	171	433.52	All	May 2018, Feb-Mar 2020, Oct 2021, Mar 2022, Sep 2023, Oct 2023, Feb 2024.	Feb 2020 (2), Mar 2020 (2), Mar 2022 (6)	While the BDAR reports 729 minutes of call playback survey completed, this amount includes all the species that were surveyed for via call playback

Candidate fauna species	Associated PCT(s) in subject land	Area of associated PCTs (ha)	Accepted survey months	BDAR surveys that correspond with accepted month in PCT	Actual effort in correct PCT and month	Evidence of survey effort
						both inside and outside the subject land.
Crowned Gecko (<i>Lucasium stenodactylus</i>)	154, 221	2987.94	October to March	February 2020, March 2022, October 2023	None	The survey requirements for species specified in the <i>Threatened Reptiles: Biodiversity Assessment Method survey guide</i> are 72 pitfall trap days and 120-person minutes of nocturnal surveys. However, the BDAR states that surveys for this species have been diurnal reptile surveys, which is not in line with the guideline.
Desert Mouse (<i>Pseudomys desertor</i>)	171	433.52	March to June, August to December	March 2020 and 2022, May 2018	March 2020 (1). In a very small, isolated patch of the correct PCT.	The proponent did not complete survey in the part of the development footprint most likely to support the species.

* Species was formerly considered as Striated Grasswren *Amytornis striatus*, a Species credit species. It is now listed as Murray Mallee Striated Grasswren *Amytornis striatus howei* and will likely be an Ecosystem credit species, but with no change to the associated PCTs.

** Includes associated PCTs for the species that do not support trees and so are unlikely to provide potential nesting habitat.

Serious and Irreversible Impacts are unknown and likely under-estimated

4. SAI to *Austrostipa nullanulla* are possible but unable to be accurately determined due to missing information.

While Section 9.1.1.1 of the BDAR states that the project has been designed to avoid and minimise impacts to *Austrostipa nullanulla*, it does not present any evidence to support this statement. The BDAR refers to managed enclosures already established on a nearby property, but this is not relevant and does not constitute avoidance for this project.

Although the BDAR states that as the species was not previously known to inhabit this location but has been recorded because of the project, that is not relevant and does not provide evidence the proponent has avoided and minimised impacts on this species.

The BDAR does not include evidence that project boundaries or designs have been altered and managed in any way to minimise impacts to this species. While some areas of known habitat remain outside the project boundary, there is no evidence in the BDAR that the project boundaries were designed to avoid these areas. Instead it appears these areas happen to be outside the impact area.

The impacts to this SAI entity are also under-represented in the BDAR as the species polygon is incorrectly mapped (see issue 5). While the SAI assessment states that about 30 hectares of habitat will be impacted, there is a total of 241.95 hectares of associated habitat in PCT 253, but most has not been included in the species polygon.

While BCS recognises that there may be some areas of limited information available for this species, information is available. For example, the Extent of Occurrence (EOO) or Area of Occurrence (AOO) can be sourced through the BOS HelpDesk. Table 44 reports the EOO and AOO for this species based on the general heading information for Principle 3 (i.e. known from ≤ 3 locations and/or an AOO $< 10\text{km}^2$ or EOO $< 100\text{km}^2$), rather than actual data. In addition, the location of the new records of this species found for the project should be used to further develop the EOO and AOO to inform the SAI assessment.

Section 9.1.1.1 (3) of the BDAR concludes that the project is unlikely to have SAI impacts to *Austrostipa nullanulla*. However, this is a matter for the consent authority to determine. The accredited assessor must present all the relevant information so that the consent authority can determine if a SAI is likely.

Given these issues, it is not possible to determine if the project constitutes a SAI, and the proponent needs to provide further information and a more accurate assessment in accordance with s9.1.2 of the BAM to inform the review.

Recommendations:

- 4.1. Provide evidence to support the claim that the project has been designed to avoid and minimise the impact to *Austrostipa nullanulla*.
- 4.2. Improve the assessment of the potential Serious and Irreversible Impacts (SAI) to *Austrostipa nullanulla*, including through completing a more thorough search for available information.

5. The *Austrostipa nullanulla* species polygon needs to be revised

Austrostipa nullanulla is an 'area' candidate flora species. In accordance with s5.2.5(4(b)) of the BAM, the species polygon for 'area' species must be mapped to the extent of the vegetation zone where there are no habitat constraints. The species polygon in the BDAR for *Austrostipa nullanulla* has not been mapped to the extent of PCT 253, and as such it does not comply with the BAM.

The BDAR provides no additional method or justification for why the species is not mapped to the extent of the vegetation zone even though there is a separate spatial data file called 'Copi_AustrostipaNullaNulla_PotHabitat' that maps potential habitat for the species and includes larger areas to the extent of PCT 253. There are other areas of PCT 253 that have not been surveyed (BDAR Figure 51 and 52) and are not included in the *Austrostipa nullanulla* species polygon.

Despite *Austrostipa nullanulla* only being previously known from associated PCT 253, in the mine site this species was also recorded in mapped areas of PCTs 154, 58 and 157. Parts of the species polygon spatial data fall outside the associated PCT 253 vegetation zone. It is unclear from the spatial data how the accredited assessor has developed the species polygon areas and their boundaries that are not in associated PCT 253 when the extent of the other PCTs in which it was mapped are very large (see example in Figure 1 below).

Recommendations:

- 5.1. Revise the species polygon for *Austrostipa nullanulla* to match the extent of the associated PCT 253- Gypseous shrubland on rises in the semi-arid and arid plains, in accordance with s5.2.5 of the BAM.
- 5.2. Clarify how areas of the species polygon mapped outside the associated PCT 253 have been generated in the BDAR and revise species polygons in the BDAR and BAM-C where required.

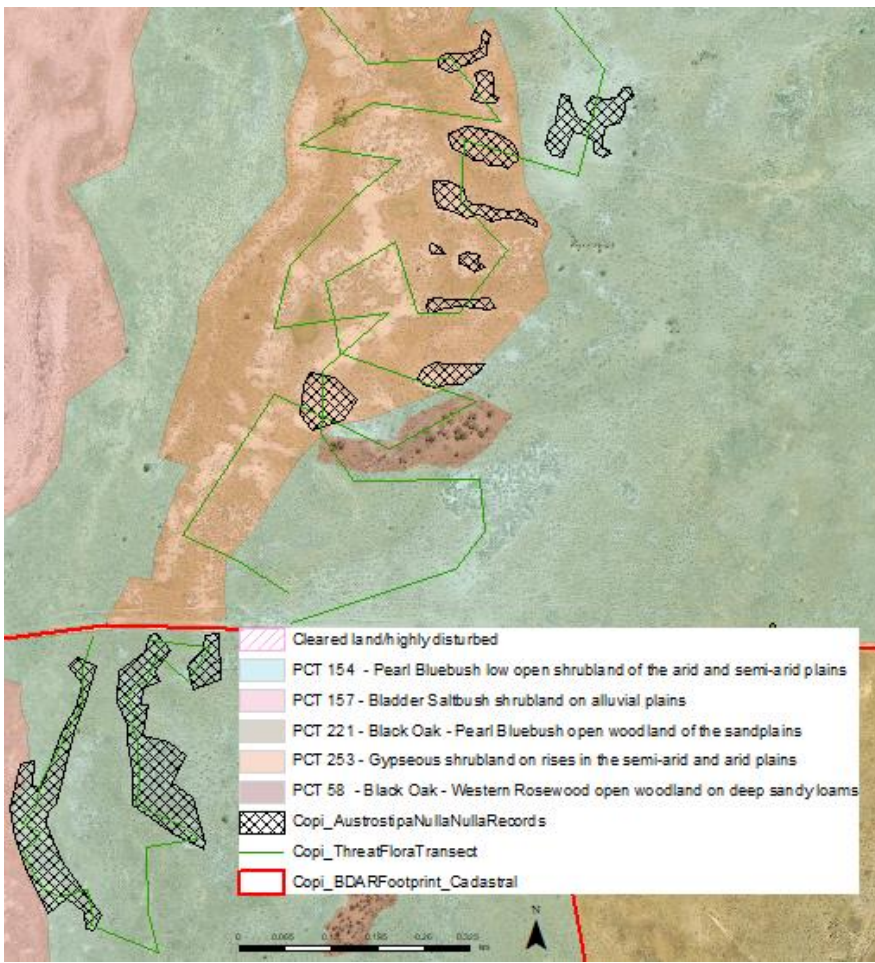


Figure 1: Example of the species polygon for *Austrostipa nullanulla*, not mapped to the extent of the associated PCT in accordance with the BAM.

PCT, TEC and vegetation zone identification and mapping need to be revised as they have inaccuracies that can affect the biodiversity credit calculation

6. Derived grassland PCTs cannot be assigned in BAM 2020

Section 4.2.3 of the BAM 2020 states that when assigning PCTs, assessors cannot identify native vegetation as a derived PCT, but rather assessors must identify the original PCT from which the derived PCT has developed.

There is 104.98 hectares of PCT 165 (Derived corkscrew grass grassland/forbland on sandplains and plains) in vegetation zone 5 of the linear BAM-C case for the mine access. Areas in the linear mine site where the assessor has mapped PCT 165 should be reassessed and mapped as a derived form of the appropriate parent community(s). While s4.2.8 of the BDAR mentions that parts of PCT 165 may be derived from nearby woodland communities, the assessor did not assign the grassland community to a parent PCT. Given that the access road where this derived grassland was assigned covers more than 33 kilometres, it is possible that the parent PCT may vary with location in the landscape and that there may be multiple derived grasslands for different PCTs in that area.

Recommendation:

- 6.1. Review derived PCT 165 and assign the parent communities from which the derived community has developed.

7. Drought conditions may have impacted vegetation integrity over parts of the survey period, affecting the survey results

Section 2.6 of the BDAR briefly mentions the ongoing drought conditions at the site and that this may have impacted the outcomes of the survey results. Appendix E of the BDAR shows that the species composition and structure vary markedly across VI plots from those surveys completed in drought years (2018, 2019, summer 2020) compared to those completed post drought conditions.

BCS acknowledges that the proponent completed additional plots in 2022 and 2023, and these are likely to be more representative of the vegetation zones than the previous surveys. They also may change the vegetation integrity scores for relevant PCTs. Despite this, impacted vegetation composition and structure scores will be influencing the credit outcome.

The BDAR does not discuss how rainfall preceding survey events may have affected survey outcomes particularly for threatened flora and VI plot surveys. BCS has done a preliminary review of annual rainfall at the Wentworth (Nulla) weather station (station number 471111), which shows annual rainfall in 2018 and 2019 as only 85 mm and 47 mm respectively.

BCS published the '*Guidance for assessors and decision-makers in applying modified benchmarks to assessments of vegetation integrity*' in December 2020. This provides guidance for assessors and decision-makers in using modified benchmarks to assess vegetation integrity when applying the BAM. It also recommends that assessors consider using modified benchmarks when extreme climatic variation is adversely affecting the composition and structure of growth form groups important to a PCT. This may include using dry benchmark data for some PCTs and considering the annual rainfall in the year(s) preceding and during collection of affected VI plots.

If the proponent proposes using modified dry benchmarks, the proponent will need to provide information on method used to determine modified benchmarks (including available dry condition benchmarks), and justify any assumption made, in the revised BDAR.

Recommendations:

- 7.1. Provide additional data and include a discussion on how rainfall preceding survey seasons may have impacted survey outcomes.
- 7.2. Consider using of modified dry condition benchmark data for PCTs where VI scores may have been impacted by drought conditions.

8. Additional justification is required for the selection of PCTs.

Section 4.2.2 to 4.2.12 of the BDAR details the profiles for each PCT. The BDAR does not adequately justify how each PCT was assigned. In a revised BDAR, BCS recommends the proponent provide a short-list of candidate PCTs based on the key diagnostic features collected through field survey, and justifies why the selected PCT was the best fit with

reference identifying features like soil types, landscape position, existing mapping or attributes recorded in the field data sheets.

BCS notes that there are large sections of the subject land that have no record of surveys (VI plots, flora or fauna surveys) but where the PCT selected is different from the State Vegetation Type Mapping (SVTM). Section 4.1.1 does not include an evidence-based reason for why 21 SVTM PCTs in the mine footprint were changed and the 11 PCTs in Table 9 of the BDAR were selected.

Recommendations:

- 8.1. Provide additional information in s4.2.2 to 4.2.12 of the BDAR to justify the selection of each PCT.
- 8.2. Where no ground truthing field surveys occurred and selected PCTs differ from the State Vegetation Type Map (SVTM), justify the PCT selection, or retain existing mapped PCTs.

9. The VI plot placements across vegetation zones is unlikely to have captured full variability across zones.

Although the assessor has completed a suitable number of VI plots for each vegetation zone (including one benchmark plot), the location of VI plots within vegetation zones is not likely to reflect the entire zone condition. For example, PCT 221 (moderate-good) is 457 hectares and requires seven plots. Six of the seven plots entered into the BAM-C for this vegetation zone are within about one kilometre of each other and six of the seven are less than 50 metres from a vehicle access track (**Error! Reference source not found.**). Similarly, the 2461 hectare vegetation zone PCT 15 (moderate-good) is spread east to west across the site but VI plots are clustered in three groups and all eight plots are less than 50 metres from access tracks (see Figure 2 and Figure 3).

In accordance with s4.3.4(4) of the BAM *'Plot boundaries should not be established within 50 m of ecotones, vehicle tracks and their edges, or other disturbed areas that are easily distinguishable from the broad condition state of the vegetation zone'*. Most of the vegetation zones in the BDAR do not comply with s4.3.4(4) of the BAM. In addition, there are multiple large sections of the subject land that have no VI plots, and no other flora or fauna surveys points.

As the proponent has not accessed large areas of the subject land, BCS is not confident that the condition zones across some PCTs are consistent with the one condition zone allocated for each PCT (see BAM s4.2.2(3) given the lack of survey effort and as the plots were placed close to the edge of existing access tracks.

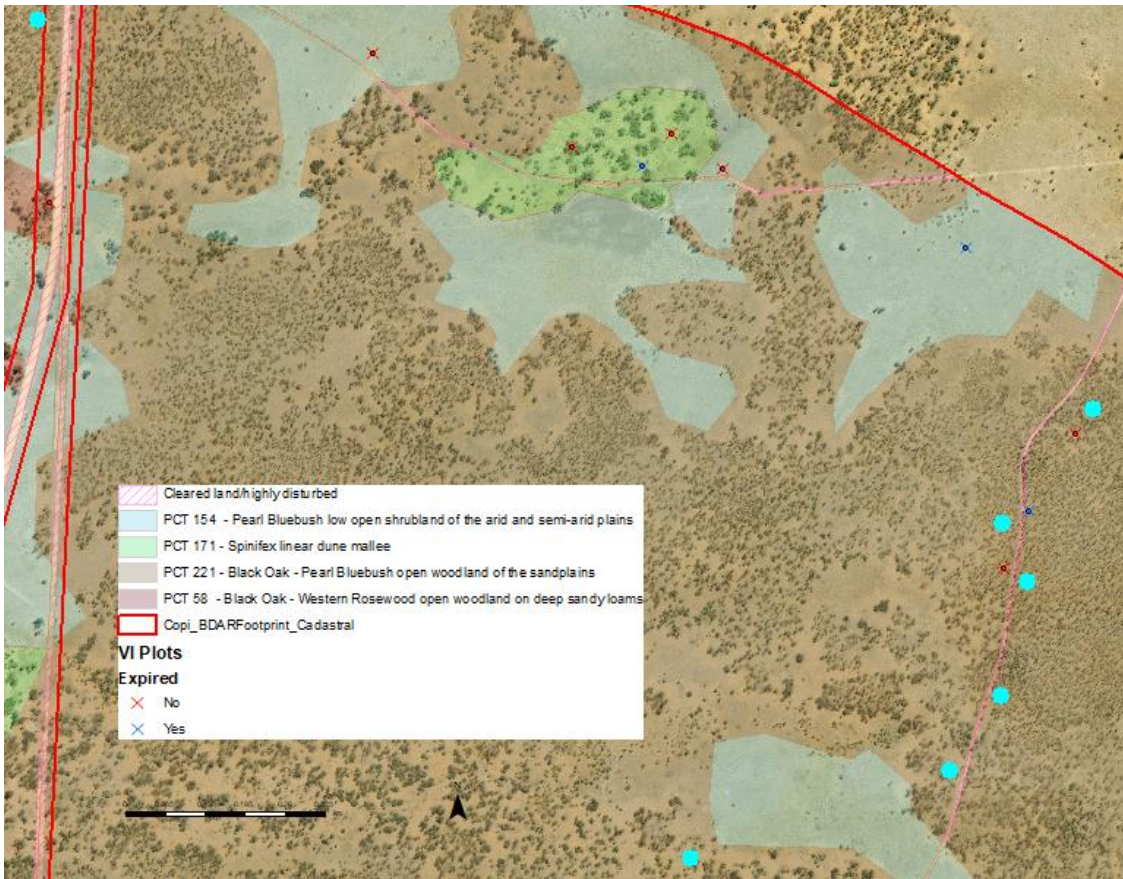


Figure 2: VI plots for PCT 221 where 6 of 7 plots (selected in pale blue) are within 50 metres of access tracks, demonstrating plot placement not in accordance with s4.3.4(4) BAM.

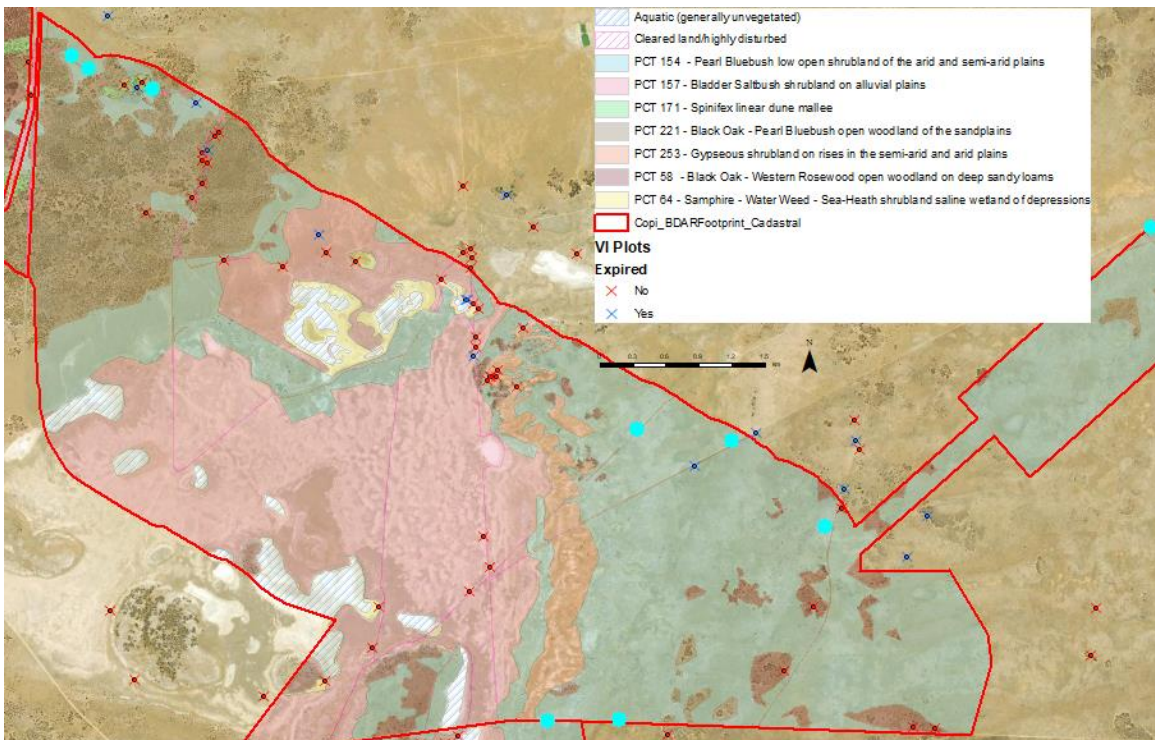


Figure 3: VI plots for PCT 154 where all plots (selected in pale blue) are within 50 metres of access tracks. Large areas of PCT are unsurveyed including more areas to the north west not included on this figure.

Recommendations:

- 9.1. Sample additional VI plots across the vegetation zones to demonstrate that vegetation condition across the subject land has been adequately sampled and considered.
- 9.2. Where vegetation condition is variable across a zone, create additional vegetation zones with different condition states and complete the required VI plots in accordance with s4.3.4 of the BAM.
- 9.3. Resample VI plots where current plot placement does not meet s4.3.4(4) of the BAM.

The presence and extent of Threatened Ecological Communities may be underestimated.

10. Evidence of TEC assessment against listing criteria and the final determination should be provided for all PCTs potentially associated with a TEC

Tecticornia lylei Wiry Glasswort low open-shrubland in the Murray Darling Depression Bioregion

Section 4.3 of the BDAR includes one paragraph to justify that this TEC is absent from the site. Although the justification refers to some plant samples sent to the Australian National Herbarium, the BDAR does not include any further information to support this conclusion. The BDAR does not include information on the number of samples taken and location of these samples across the subject land, or what the specimens sent for determination were identified as. Given other species of *Tecticornia* are known to occur within this community, the revised BDAR should include further discussion against the scientific committee determination and evidence including site data and literature to confirm if the TEC is absent or present.

Sandhill Pine Woodland

Although the s4.3 of the BDAR states that the Sandhill Pine Woodland was identified on site, it does not provide any evidence or provide any justification for this statement. The revised BDAR should justify the conclusion based on the scientific committee determination and field identification guidelines, and provide information from field surveys including VI plots and other landscape information.

Recommendation:

- 10.1. Provide further evidence that PCT 65 *Tecticornia lylei*, Wiry Glasswort, low open-shrubland in the Murray Darling Depression Bioregion and PCT 28 Sandhill Pine Woodland TECs are absent, including through assessing these TECs against the scientific committee determination and other published literature in accordance with s4.2(1) of the BAM.

The effect of access restrictions on the credit obligation has not been explained

11. It is not clear how access limitations affected survey effort and credit obligations

Section 2.6 outlines the limitations of the BDAR including access "... where access to certain areas has been constrained, air photo interpretation, extrapolation of existing knowledge from other portions of the assessment area and viewing from public access points such as Nulla Nulla Road has been adopted".

The BDAR does not provide any maps or descriptions of the areas where access was limited and whether this access was during the entire survey period from 2018 to 2024 or only during certain times or years. In addition, neither the BDAR nor EIS state why access was limited.

BCS acknowledges the BDAR includes the assumed presence species polygon for *Pterostylis cobarensis* as access for survey was limited. However, it is not clear why this limitation only applies to one flora species, and how other flora and fauna candidate species were surveyed in these areas with access limitations. BCS suggests it is likely that the access restrictions apply to multiple species which would mean the credit obligation is underestimated.

Similarly, the BDAR does not discuss how the PCTs were selected, or vegetation zones allocated for areas with access limitations.

Recommendations:

- 11.1. Provide further detail about the areas where survey could not be completed, including a map of the area with no access and a corresponding list of candidate species and their associated PCTs where no survey could be completed.
- 11.2. Where surveys for candidate species were not completed due to lack of access, assume species presence in accordance with s5.2.5(4) of the BAM.
- 11.3. Justify the PCTs and vegetation zones selected where access was limited, and no surveys were completed.

It is unclear why species credit species were excluded

12. It is not clear why candidate species were excluded from survey and how this will impact the credit obligation.

The assessor removed some candidate species from survey, which is not consistent with section 5.2.2 and 5.2.3 of the BAM. The BDAR only provides limited information on why these species credit species were excluded (see Table 33). In addition, the assessor has excluded many candidate species across the entire project site, rather than from specific vegetation zones, despite the diversity of PCTs and habitats within the project site.

Table 33: Some of the candidate species excluded from survey effort or with minimal survey effort

Species	BDAR reason for exclusion from survey	BCS comment	BCS recommendation
<i>Pimelea serpyllifolia</i> subsp. <i>serpyllifolia</i>	Geographic limitations - subject land is more than 50 kilometres from the Murray River.	The subject land at the mine site ranges from 44 to 48 kilometres from the Murray River so cannot be excluded based on geographic limitations.	Complete targeted surveys in associated PCTs where the species cannot be excluded based on geographic limitations.

Species	BDAR reason for exclusion from survey	BCS comment	BCS recommendation
Australian Bustard (<i>Ardeotis australis</i>)	Vagrant and degraded habitat.	No evidence provided including VI scores and supporting literature to support degraded habitat exclusion or vagrancy of species.	Complete targeted surveys in associated PCTs.
Southern Hairy-nosed Wombat (<i>Lasiorhinus latifrons</i>)	Degraded habitat.	No evidence provided including VI scores and supporting literature to support degraded habitat exclusion.	Complete targeted surveys in associated PCTs or provide further evidence for degraded habitat exclusion.
Painted Burrowing Frog (<i>Neobatrachus pictus</i>)	Degraded habitat.	No evidence provided including VI scores and supporting literature to support degraded habitat exclusion.	Complete targeted surveys in associated PCTs and during appropriate seasonal conditions.

Recommendations:

- 12.1. Update the BDAR to ensure that where candidate species have been excluded, it is in accordance with s5.2.2 and 5.2.3 of the BAM.
- 12.2. Where it is not possible to justify excluding candidate species, complete targeted surveys for previously excluded candidate species.

13. The proponent should more clearly show how they have applied the avoid and minimise principles of the BOS

The avoid and minimise hierarchy of the BOS for the project is outlined in section 7 of the BDAR. While BCS recognises that the ore body is located in an area that will cause an unavoidable impact, the BDAR does not include any other information to support the statements that the project has been redesigned to avoid biodiversity impacts. For example, the BDAR says the accommodation camp has been selected based on low VI score and to avoid a ‘patchwork’ approach to native vegetation impacts. However, section 7 of the BDAR does not discuss any alternative locations and it does not specify the VI score of the chosen site.

Section 7.1 of the BAM requires evidence (including maps) to demonstrate how multiple design iterations have reduced biodiversity impacts. Specifically, the BDAR needs to cover the biodiversity values that triggered decisions for each design iteration, how the biodiversity impacts changed between design iterations, and the final avoidance outcome with respect to biodiversity.

While the BDAR notes the proponent will collect seed before clearing and fencing existing *Austrostipa nullanulla* populations that will be impacted, these are not measures to avoid

or minimise the impacts to biodiversity values but rather are mitigation measures and so should be detailed in Table 42 of the BDAR. Similarly, the existing *Austrostipa nullanulla* protected areas on Nulla station that are not part of this project are not avoided land given these areas are already protected under existing conservation agreements.

As the proponent's survey effort for many species (see issue 3) needs to be revised, BCS cannot reliably determine whether the proponent has appropriately applied the BOS avoid and minimise hierarchy given the impacts to species are largely unknown.

Recommendations:

- 13.1. Revise Section 7.1 to remove existing protected areas not part of the project assessment area as an example of avoiding impacts to *Austrostipa nullanulla*.
- 13.2. Revise Section 7.1 to remove fencing and 'seed collection of *Austrostipa nullanulla* prior to clearing' as examples of measures to avoid and minimise impacts, and include these as part of project mitigation measures.
- 13.3. Provide additional detail (including maps and supporting data) to support the statement in s7.1.2 and 7.2.2 of the BDAR that multiple design iterations have reduced biodiversity impacts including the accommodation camp and haul route locations.

The prescribed impact assessment needs specific detail and further assessment to meet BAM sections 6, 7.2, 8.3 and 8.4.

14. The prescribed impact assessment must identify specific impacts and affected entities, justify how the impacts were assessed and consider how to avoid, minimise and mitigate the impacts.

To identify the prescribed impacts in section 6 of the BDAR, Table 34 should include each individual species that could be impacted by each prescribed impact. The BDAR should also include specific, measurable, achievable, realistic and timebound (SMART) measures that address those specific risks and include these in s.8.3 and 8.4. Doing this will also highlight where there are inconsistencies that are the result of using generalised statements in the BDAR. For example, Table 34 identifies that 'waterbirds' use waterbodies present on the site. However, some waterbirds (e.g. Curlew Sandpiper) are assessed as 'unlikely' in the habitat assessment (Appendix C). Table 34 does not include a list of which species are likely to be supported by the salt lakes, or if there are fresh waterbodies in the vicinity that could be relied on by different waterbirds.

The proponent has proposed to avoid and minimise prescribed impacts in Section 7.2. But these are only for impacts to geological features (gypseous lunettes) and relate to impacts to *Austrostipa nullanulla* populations that are already protected by conservation agreements and collection of seed. As discussed in issue 13, these are not 'avoid and minimise' measures.

Sections 7.2 and 8.3 need more detail to demonstrate that the prescribed connectivity, altered hydrology and vehicle strike impacts have been avoided, minimised and mitigated.

For example, Section 8.3.1 states that the project would only temporarily remove gypseous soil through clearing and the soil will be returned to the location and lunettes will be reinstated when the mine closes. However, BCS notes that gypseous soil naturally deposited as lunettes around the salt lakes is habitat for *Austrostipa nullanulla*, which is confirmed to be present, and other threatened plants that were predicted for the site. BCS

does not consider that clearing native vegetation and removing soil is a temporary impact. This means the proposed action is unlikely to be successful at restoring the existing gypseous ecosystems, as clearing and soil removal is a permanent impact and not a temporary prescribed impact.

The information provided in the BDAR about the impact of vehicle strike to threatened biodiversity does not consider the risks to individual species or groups of species. As a result, there is no certainty that the proposed 50 km/h limit in Table 42 will mitigate any strike impacts. Given this, BCS requests the revised BDAR specifically identify and address the threatened species more at risk of vehicle strike, including ecosystem species, and identify high-risk locations. Examples include the Pink Cockatoo, Ringed Brown Snake, Bolam's Mouse and Malleefowl, among others.

Section 8.3.2 recognises the importance of connectivity in the landscape, however the BDAR does not include details about connectivity for individual threatened species or the implications of bisecting habitats with the proposed development footprint. As a result, BCS considers that the proposed mitigation measures are unlikely to successfully address the loss of connectivity for most threatened species.

The prescribed impacts of changes to hydrological processes sustaining threatened entities and connectivity on salt lakes in and outside the development footprint are discussed in issue 15.

Recommendations:

- 14.1. Identify individual species subject to each prescribed impact in Table 34 of the BDAR.
- 14.2. Assess the prescribed impacts on threatened entities reliant on both saline and freshwater wetlands.
- 14.3. Provide a more complete assessment of the potential prescribed impacts of vehicle strike on threatened fauna.
- 14.4. Provide more detail in section 8.3 to demonstrate that the prescribed impacts of connectivity, altered hydrology and vehicle strike have been avoided, minimised and mitigated.
- 14.5. Delete the reference to 'removal of gypseous soils' as being a temporary prescribed impact.

[The effect of removing salt lakes from the landscape must be assessed, mitigated or offset.](#)

15. Indirect impacts to the system of salt lakes must be fully assessed, offset and measures provided to manage residual impacts.

BCS notes that even though Section 8.3.3 of the BDAR provides general comments on the possible impacts to the salt lakes, the BDAR does not address the specific indirect and prescribed impacts of the project on local hydrology. For example the BDAR does not identify key features relevant to assessing how the proposal may affect how the local systems functions. BCS are concerned that removing sections of individual salt lakes will result in complete loss of function for that lake, and potentially for the broader system of lakes (see Figure 4).

S8.2 and s8.3 of the BDAR do not address these indirect and prescribed impacts to the remaining salt lakes adjacent to the development footprint. It is likely that the direct impact to these lakes will lead to the eventual loss of the functioning lake system. The BDAR

should be updated to discuss how the proponent will avoid the prescribed impacts, and measures the proponent will take to help the entities impacted by changes to hydrology and the impacts to the salt lakes recover.

BCS suggests that s8.3.3 and 8.3.2 of the BDAR explicitly identifies if any residual prescribed impacts to the hydrology changes and connectivity of threatened species are likely to occur after the proposed avoidance and mitigation measures are implemented. If prescribed impacts cannot be adequately avoided or mitigated, the residual offset obligation should be increased, or other conservation measures applied consistent with section 7.14(4) of the BC Act and section 6.1(2)(b) of the Biodiversity Conservation Regulation 2017 (BC Regulation).

The proponent should develop a method for calculating residual prescribed impacts in consultation with BCS to identify those ecosystem and species credit species at higher risk of residual impacts. This may include calculating additional biodiversity credits in accordance with s8.6 of the BAM.

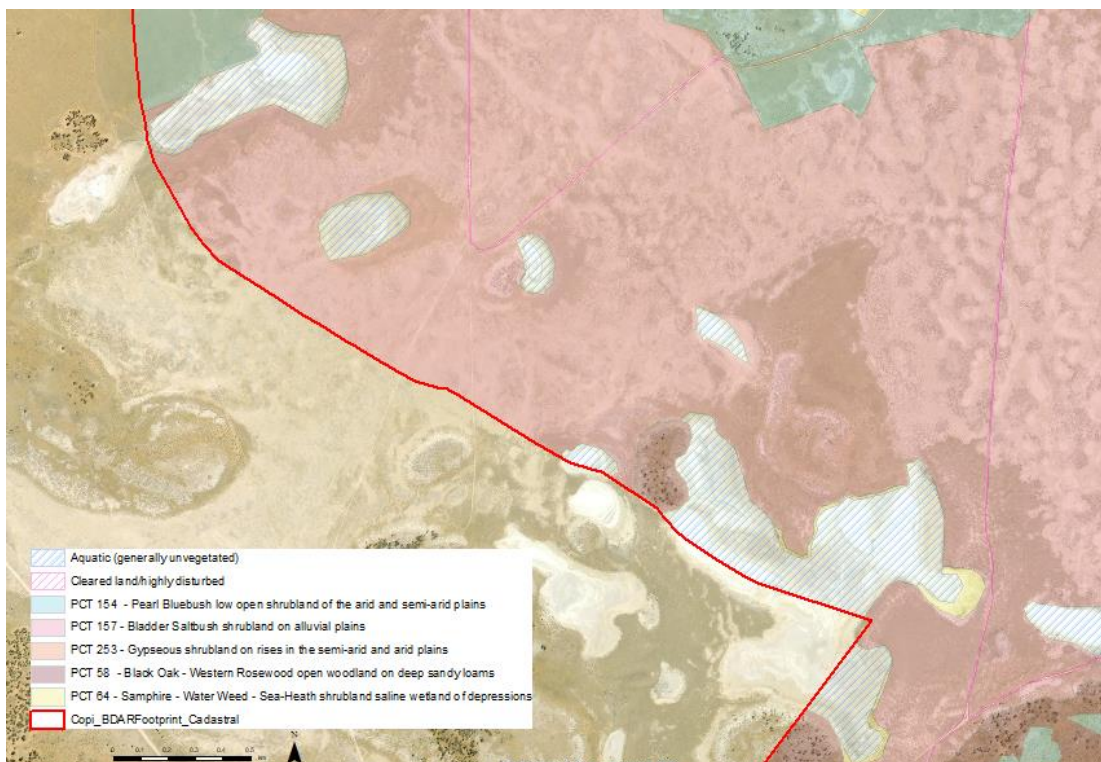


Figure 4: Example of a location where indirect and prescribed impacts have not been considered for salt lakes that will be impacted by the development footprint.

Recommendations:

- 15.1. Revise the hydrology prescribed impacts for threatened species to include all threatened species likely to be affected by the proposed development.
- 15.2. Propose avoidance and mitigation measures that contribute to the entities impacted by prescribed impacts recovering.
- 15.3. Identify residual indirect and prescribed impacts to hydrology and connectivity of threatened species.
- 15.4. Propose measures for offsetting residual prescribed impacts if residual prescribed impacts are identified.

16. Impacts to Groundwater Dependent Ecosystems must be assessed and measures provided to monitor and manage residual impacts.

The Groundwater Impact Assessment (EIS Appendix 5) identifies that PCTs associated with the salt lakes within the development footprint are high priority Groundwater Dependent Ecosystems (GDEs) and offers measures to mitigate the direct impact. However, this information has not been considered in the BDAR. Mitigation measures relating to vegetation rehabilitation are discussed in the Groundwater Impact Assessment that are not carried through to either the EIS or BDAR, so there appears to be no stated commitment to managing potential impacts to GDEs.

According to the Groundwater Impact Assessment:

- the natural saline lakebeds (or salinas) are part of the Scotia Discharge Complex described by Ferguson et al. (1995)¹, and there are "several salinas within and adjacent to the Mine Site".
- Vegetation in the development footprint is identified on the High Priority Groundwater-Dependent Ecosystem Map (GDE023_Version 1)² (High priority GDE) of the Water Sharing Plan for the NSW Murray Darling Basin Porous Rock Groundwater Sources 2020. PCT 64 is a high priority GDE in the development footprint and the project will have a direct impact of 104.4 ha on this GDE.

The Groundwater Impact Assessment section 9.0 identifies PCT 65, which corresponds to the '*Tecticornia lylei*, Wiry Glasswort, low open shrubland in the Murray Darling Depression Bioregion' endangered ecological community, as a GDE. However, the biodiversity assessment states that PCT is not present or impacted by the proposal. As discussed in Issues 9 and 10, the vegetation survey effort does not demonstrate that PCT 65 is absent. If further survey identifies PCT 65 within or near the development footprint, then the potential impacts of the proposal need to be considered and addressed.

The Groundwater Impact Assessment (section 12.6) also identifies the potential for 10% cumulative variation (4.5 cm) in the water table range at GDE locations "near to the mine path" with the statement that the water table would recover after mining and the GDEs would be re-established (where there has been vegetation loss) to match the recorded pre-mine conditions.

The Groundwater Impact Assessment section 12.6 does not include detail about the feasibility of restoring PCT 64 or evidence from sites where it has been achieved. There is also no detail about the GDE locations adjoining and outside the development footprint where changes to hydrology may impact the vegetation integrity. The BDAR does not propose how they will monitoring over the life of the mine and during recovery of the local water table afterwards.

The proposed mitigation measure provided in Groundwater Impact Assessment section 12.6 to address loss of PCT 64 is management "*in accordance with the vegetation management plan*" for "*some samphire locations within the mine path*". No details are

¹ Ferguson J, Radke BM, Jacobson GJ, Evans WR, White IA, Wooding RA, Whitford D & Allan GL (1995) *The Scotia groundwater discharge complex, Murray Basin, SE Australia*. Australian Geological Survey Organisation Record 1995/43. Dept Primary Industries, Canberra

² *High Ecological Values Aquatic Ecosystems datasets* <<https://datasets.seed.nsw.gov.au/dataset/hevae-vegetationgroundwater-dependent-ecosystems-western-division>> 2023

provided about what that management entails or the locations where it will be implemented.

Neither of these measures is included in Groundwater Impact Assessment section 13.0 'Management and mitigation measures' and are also not mentioned in the BDAR (Table 42) or EIS Appendix 4 'Summary of Environmental Management Measures'.

BCS considers these measures to be incomplete and unlikely to identify any changes to vegetation and threatened species habitat in salt lakes outside the development footprint. As the ecological response is uncertain, it would be appropriate to prepare and implement an adaptive management plan as per BAM s8.5.

Recommendations:

- 16.1. Assess the indirect and prescribed impacts to groundwater dependent ecosystems within and outside the development footprint.
- 16.2. Based on this assessment, develop and detail measures to avoid, minimise and mitigate the identified impacts, and ensure that all measures are justified based on peer-reviewed evidence of success in similar or the same vegetation.
- 16.3. Before the project is determined, develop an adaptive management plan to address the impact to Groundwater Dependent Ecosystems outside the development footprint and sample monitoring locations before the impact occurs.

BAM administration

17. Issues with applying the BAM

The project has been correctly entered in the BAM-C as a 'major project'. All major projects require a BDAR or BDAR waiver (where applicable). However, s1.2 of the BDAR highlights the Biodiversity Offset Scheme Entry Threshold (BOSET) test area clearing threshold and Biodiversity Values map as the reason for entry in the BOS, which is not correct.

Recommendations:

- 17.1. Update s1.2 of the BDAR to show entry into the BOS as a major project required by the SEARs issued for the project.

Matters of National Environmental Significance (MNES)

18. MNES need to be appropriately assessed for the Mallee Bird Community of the Murray Darling Depression Bioregion TEC and for other potential EPBC entities

The proponent needs to appropriately assess the Mallee Bird Community of the Murray Darling Depression Bioregion TEC. The mallee specialist bird species, Chestnut Quail-thrush, has not been included in the TEC assessment because it was observed in a non-mallee PCT. The conservation advice for the TEC states that the bird species needs to have been recorded within 20 kilometres of a site; the PCT in which it is observed is irrelevant.

In addition, the Grey-fronted Honeyeater (*Ptilotula plumula*), a mallee dependent species, has been mistakenly listed in the results as the Grey-headed Honeyeater (*Ptilotula keartlandi*), which is a species that does not occur in southern NSW. The surveys clearly

identified the necessary number of species to confirm the occurrence of the TEC on the site.

PCT mapping in the region shows that mallee vegetation occurs to the north-east and south-west of the project, which suggests that the development would result in impact via isolating the TEC, outside the actual footprint.

The proponent has also not assess the risk of impact from the development for any other EPBC species as required under the EPBC Act significant impact guidelines. This includes, but is not limited to, Murray Mallee Striated Grasswren, Southern Whiteface, Sharp-tailed Sandpiper, Curlew Sandpiper, Grey Falcon, Malleefowl, Major Mitchell's Cockatoo (eastern), Black-eared Miner, South-eastern Hooded Robin, Blue-winged Parrot, Red-lored Whistler, Plains-wanderer, Regent Parrot (eastern), Australian Painted Snipe, Diamond Firetail, Common Greenshank and Corben's Long-eared Bat.

BCS notes that the proponent has not referred the project to the Commonwealth DCCEEW. Given the occurrence of the TEC and large area of impact, the project should be referred to the Commonwealth DCCEEW.

Recommendations:

- 18.1. Assess the implications of the development on all MNES in line with the EPBC Act significant impact guidelines.
- 18.2. Refer the project to the Commonwealth DCCEEW for its consideration under the EPBC Act.

Environmental Impact Statement (EIS)

19. There are incorrect statements about the impacts to threatened biodiversity in the Environmental Impact Statement (EIS).

The EIS incorrectly mentions that *Austrostipa nullanulla* was the only threatened species identified on site. However, the BDAR lists sixteen threatened fauna species recorded on site in surveys (Appendix G in BDAR and BDAR Executive Summary).

Recommendation:

- 19.1. Correct statements in the EIS and associated summaries that refer to the absence of threatened species on site.