

# ATTACHMENT D: EPBC ACT SIGNIFICANT IMPACT CRITERIA ASSESSMENTS

One Threatened Ecological Community and two threatened fauna species listed under the EPBC Act have been assessed against the EPBC Act Significant Impact Criteria guidelines (DEC 2013). The Natural Temperate Grassland of the South Eastern Highlands ecological community is listed as Critically Endangered. One of the species is listed as Endangered, the Monaro Grassland Earless Dragon. The other species, the Diamond Firetail, is listed as Vulnerable.

## Natural Temperature Grassland of the South Eastern Highlands CEEC

The Conservation Advice (including listing advice) for Natural Temperate Grassland of the South Eastern Highlands (NTG-SEH) CEEC describes the TEC as follows:

A] naturally treeless or sparsely treed community characterised by a dominance of native perennial tussock grasses, the tallest stratum of which is typically up to 1.0 m in height, when present.

. . .

The species composition of a site at any one time is influenced by the season of the year, previous or current rainfall or drought conditions and by the prior or on-going disturbances occurring at the site, particularly prior or current grazing regimes and the presence or absence of fertiliser application . . . . The number of species and above-ground relative abundance of species may change with time since disturbance . . . . Many of the disturbance-sensitive species only occur in NTG–SEH sites that have had no or very little grazing, such as cemeteries and roadside reserves . . . .

(TSSC 2016).

This TEC occurs within the project area and disturbance area as PCT 3414: Monaro Snowgrass-Kangaroo Grass Grassland. Some but not all of the areas of PCT 3414 within the project area meet the condition thresholds for inclusion in the EPBC listing. A detailed description of the TEC and its attributes in relation to diagnostic criteria and condition thresholds is at Sections 3.4 and 3.8 of Appendix D: Field survey and impact summary for EPBC referral application.

Potential impacts of the Project on the TEC are summarised in Table 1.

*Table 1: Potential impacts of the Project*

MNES	EPBC condition class	Impacts in indicative development footprint (ha)	Impacts in indicative transmission corridor (ha)	Total impacts in subject land (ha)
Natural Temperate Grassland of the South Eastern Highlands (NTG-SEH)	High to Very High	3.72	0.00	3.72
	Moderate to High	4.14	0.00	4.14
Total impacts to NTG-SEH				7.87

## Natural Temperate Grassland of the South Eastern Highlands CEEC SIC

Assessment against the MNES Significant Impact Guidelines (DoE, 2013) for the CEEC is outlined below –

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:	Response criteria
Reduce the extent of an ecological community	<p><b>NTG-SEH – UNLIKELY</b></p> <p>Approximately 7.87 ha of vegetation consistent with this TEC will be impacted by the Project. Although any removal reduces the extent of a TEC, the impact is considered to be relatively minor for the following reasons:</p> <ul style="list-style-type: none"> <li>• The Project will result in a relatively small impact on the extent of the TEC as a percentage of the remaining extent of the community within southeastern Australia. Estimates of the extent of the ecological community cited in the Conservation Advice (TSSC 2016) for the TEC range from 15,000 ha, which is considered likely to be an underestimate, to 94,500 ha, which is considered likely to be an overestimate. The Threatened Species Scientific Committee judges that likely approximately 50,000 ha or less of the ecological community remains. Taking 50,000 ha as a rough middle-ground estimate, 7.87 ha represents approximately 0.02% of the remaining extent of the community.</li> <li>• The Project will result in a relatively small impact on the extent of the TEC as a percentage of the remaining extent of the community within NSW. Within the NSW BioNet Vegetation Classification, the following PCTs are associated with NTG-SHE: <ul style="list-style-type: none"> <li>– 3413: Monaro Kangaroo Grass Woodland-Grassland Complex (67,834 ha remaining)</li> <li>– PCT 3414: Monaro Snowgrass-Kangaroo Grass (34,714 ha remaining)</li> <li>– 3416: Southern Tableland Valley Flats Damp Grassland (3,471 ha remaining)</li> <li>– PCT 3378: Yass Gorge Rhyolite Grassland (211 ha).</li> </ul> <p>Taking these PCTs as surrogates for the extent of NTG-SHE, there could be as much as 106,230 ha of NTG-SEH in NSW. This figure is likely to be an overestimate of the extent of the TEC in NSW, as a substantial proportion of these PCTs likely do not meet condition thresholds. With this caveat, 7.87 ha represents approximately less than 0.01% of a high-end estimate of the remaining extent of the community.</p> </li> <li>• The Project will result in a relatively small impact on the extent of the TEC as a percentage of the remaining extent of the community within the local area. Within 1.5 kilometres of the project area there is approximately 1,488 ha of PCT 3414 (considered here as a surrogate for NTG-SHE). This extends to approximately 11,916 hectares within 10 kilometres of the study area. The removal of 7.87 ha is approximately removing 0.5% of the PCT 3414 within 1.5 ha of the project area and 0.07% of PCT 3414 within 10 ha of the project area.</li> <li>• As discussed in detail in Section 3.8 of Appendix D to this referral application, the patches of the TEC within the disturbance area are generally not fully structured, high-quality examples of the NTG-SEH. Most of the patches are not dominated by medium to tall tussock grasses that are the typical dominant species of NTG-SEH, but are instead dominated by lower-growing species such as <i>Chloris truncata</i> and <i>Panicum effusum</i>. Most patches within the TEC are within pastures that are heavily grazed and have been improved (sown) in the past and are likely to be heavily disturbed in the future. The quality of the vegetation in these plots is lower as measured by Floristic Value Score than the quality of NTG-SHE within the project area but outside the disturbance area.</li> <li>• Although installation of solar panels within the areas of NTG-SEH will undoubtedly have an impact on the TEC, it will not require total removal of all native vegetation. During construction and installation, vegetation will need to be removed for access to panel sites and for the footings of the solar panels. However, this will not require total removal of native vegetation. Following construction and installation of the solar panels, native grasses</li> </ul>

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:	Response criteria
	<p>and forbs will continue to occur within the disturbance area, both in areas between the panels and areas shaded by the panels. Research from the United States indicates that solar arrays may be compatible with native grassland conservation and restoration (Walston et al. 2021). It is understood that the NSW Government has prepared but not yet publicly released guidelines for the assessment of partial loss on native vegetation communities, including retained vegetation beneath utility scale solar arrays. If available, these guidelines will be utilised in the BDAR.</p>
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	<p><b>NTG-SEH – UNLIKELY</b></p> <p>The Project would result in the removal of 7.87 ha of this TEC in the construction footprint. However, of the three patches within the disturbance area that would be removed, two patches, comprising 2.33 ha (represented by Plot 6, Figure 3-12 in Appendix D) and 4.14 ha of vegetation (represented by Plot 17, Figure 3-12 in Appendix D) are islands within improved exotic pasture. The third patch, abutting Middle Flat Creek (represented by Plot 2, Figure 3-12 in Appendix D), will have only 1.39 ha of a 2.36 ha patch removed. None of these patches provide connectivity between larger adjacent patches on either side.</p>
Adversely affect habitat critical to the survival of an ecological community	<p><b>NTG-SEH – UNLIKELY</b></p> <p>The impact to 7.87 hectares of vegetation will result in a minor reduction of extent of the ecological community, however the areas to be impacted are small and occur either in isolation from or along the edges of larger adjacent patches. existing patches. Furthermore, as discussed, the patches to be removed are in heavily disturbed pasture that is likely to continue to be disturb whether or not the Project proceeds. Given the remaining extent of the TEC within southeastern Australia, NSW and the locality, it is unlikely that removal of relatively small, isolated patches would adversely affect habitat critical to the survival of the ecological community.</p>
Modify or destroy abiotic (non-living) factors (such as water, nutrients or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	<p><b>NTG-SEH – UNLIKELY</b></p> <p>This TEC can be affected by soil nutrient level increases, and inappropriate grazing regimes which can lead to changes in abiotic factors critical to this community. No fertilisers are proposed for this Project, and during construction stock will be removed from the areas of this TEC. It is proposed that stock will continue to graze the site during operation of the Project. The effects of soil compaction via stock can be controlled through an effective grazing management plan, which can include rotational grazing patterns. Additionally, standard control measures for sedimentation and erosion will be implemented through a CEMP, which is further mitigation any risks association with soil, groundwater or surface drainage patterns. It is considered unlikely that the Project would modify or destroy abiotic factors necessary for survival of this ecological community.</p>
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	<p><b>NTG-SEH – UNLIKELY</b></p> <p>Areas of this TEC adjacent to the development footprint will be mitigated from construction impacts through fencing, signage, and sediment control. The removal of 7.87 hectares of this TEC may result in a reduction of suitable habitat for flora and fauna species associated with the community. The areas to be impacted are along the edges of existing patches of the TEC. Here the species diversity decreases as isolated patches grade outwards into exotic pasture. As the impacts are concentrated along the edges of TEC patches, it is anticipated that the species to be removed will be common grassland species and exotic pasture species. Therefore, the Project is unlikely to substantially change the species composition of this TEC.</p>

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:	Response criteria
<p>Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including but not limited to:</p> <ul style="list-style-type: none"> <li>Assisting invasive species, that are harmful to the listed ecological community, to become established, or</li> <li>Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community</li> </ul>	<p><b>NTG-SEH – UNLIKELY</b></p> <p>The Project will be removing 7.87 hectares of this TEC. Impacts are occurring on the edge of larger patches, where the vegetation community is already exposed to edge effects from the adjunct exotic grasslands and improved pasture paddocks. These patches all occur within a heavily grazed and already disturbed portion of the disturbance area. They are themselves host to a large number of weed species, and they are surrounded by pastures that are heavily weed-infested.</p> <p>Most of the Project, including the indicative development footprint, the indicative transmission corridor and access tracks, will be carried out in areas that are already subject to substantial invasive species occurrence, especially <i>Eragrostis curvula</i> (African Lovegrass). As some impacts associated with this TEC are for dirt access road improvement, there is the chance that exotic species could further spread via foot and vehicle traffic. This can effectively be managed through a construction environmental management plan for the study area, which dictates appropriate hygiene controls. Additionally, these controls would extend into the operational phase of the Project.</p> <p>Fertilisers, herbicides and other chemical pollutants are not anticipated to be used. However, in the event that weed control requires the above, standard control measures for herbicide application will be in place to avoid non-target species being impacted, or potential run-off impacting waterways.</p> <p>It is not anticipated that the construction or operational phases of this Project will substantially reduce the quality or integrity of this TEC through invasive weed introduction or the use of chemical pollutants.</p>
<p>Interfere with the recovery of an ecological community</p>	<p><b>NTG-SEH – UNLIKELY</b></p> <p>There is no recovery plan for this TEC, as the existing Conservation Advice is considered to be 'an effective, efficient and responsive document to guide the implementation of priority management actions, mitigate key threats, and support the recovery' of the TEC (DCCEW 2023). However, the SPRAT profile for the TEC notes that the recovery plan for a previous listing of the community still contains relevant actions, although it is no longer current. The main objective of this recovery plan for the TEC (Environment ACT 2006) is to arrest the decline in extent and quality of the TEC, with subsidiary actions including identification and evaluation of the extent and quality of NTG-SEH and further developing information resources. Although the Project will impact a small area of the TEC, given the areas to be impacted are relatively small, isolated and along edges of existing patches, the Project is unlikely to interfere with halting the decline in extent and quality of NTG-SEH across southeastern Australia.</p>
<p><b>Conclusion:</b> The Project will impact 7.87 ha of NTG-SHE; however, native grasses and forbs are expected to continue to persist within the disturbance area after construction and installation of solar panels. The native vegetation impacted occurs in isolated patches and on the edges of existing patches. Although it meets EPBC condition thresholds, the patches of the TEC within the disturbance area are generally not fully structured, high-quality examples of the TEC. The Project is unlikely to have significant fragmentation, critical habitat, abiotic or invasive species impacts. In place, it is considered unlikely that impacts to 7.87 ha of NTG-SEH will significantly impact on this critically endangered ecological community.</p>	

## Monaro Grassland Earless Dragon (*Tympanocryptis osbornei*)

### Monaro Grassland Earless Dragon ecology

The Monaro Grassland Earless Dragon (MGED) (*Tympanocryptis osbornei*) is listed as Endangered under the EPBC Act and NSW BC Act.

The MGED is endemic to the Monaro high plains of New South Wales and is restricted to an area of approximately 20 x 60 kilometres, bounded by the MacLaughlin and Murrumbidgee Rivers to the south and north, the Monaro Highway to the east and Berridale to the west. The MGED Dragon occurs mostly on freehold agricultural land, but has also been recorded in several travelling stock reserves (TSRs) and in Kuma Nature Reserve ('Kuma NR') near Cooma (DCCEEW 2023b).

The MGED has been detected beneath rocks in burrows, rock crevices and depressions. Burrows excavated by wolf spiders (*Lycosidae* spp.) that are associated with partially embedded surface rocks are of critical importance to this species. These burrows provide shelter sites for overwintering, refuge from trampling by livestock and predation, and as locations where eggs can be laid. The MGED has been recorded from 755 to 1240 m above sea level, although sites at higher elevations are more likely to contain the species. This species occurs in rocky open grasslands on predominantly basalt derived heavy clay soils that are dominated by *Poa sieberiana* and *Austrostipa scabra* with sub-dominant *Rytidosperma caespitosum* or *R. racemosum*). It has also been recorded in areas that are dominated by *Eragrostis curvula* in the north of its range and around Bunyan. Grasslands dominated by *Themeda triandra* may have lower rates of occupancy by the MGED.

Surveys involving the closely related Canberra Grassland Earless Dragon indicate that the species prefers grasslands that are relatively unimproved and with minimal pasture improvement, and that the species is generally not present where native grassland has been substantially modified through cultivation (Robertson & Evans 2009).

The MGED is oviparous, laying clutches of 3–6 eggs in shallow nests in late spring or early summer that develop over 9–12 weeks before hatching in late summer or early autumn. The young probably disperse soon after hatching. Juveniles grow quickly to adult size (by late autumn-early winter), with males maturing earlier than females and mating occurring the following spring.

The MGED is a 'sit-and-wait' predator, feeding mainly on small invertebrates including ants, beetles, spiders and moths

The key threats to this species include:

- Loss, degradation and fragmentation of habitat
- Severe drought interacting with climate change and grazing
- Invasive weeds
- Inappropriate fire regimes

### Monaro Grassland Earless Dragon habitat in the project area

BioNet searches identified 94 records of MGEDs within 10 kilometres of the project area. There are a total of 440 records for the MGED in the Snowy Monaro Regional LGA. Two MGEDs were recorded just to the south of the study area during due diligence surveys for the Project (Ecolink 2020). Although the area where the MGEDs were previously recorded is not part of the project area or the disturbance area, those records have been considered during the preparation of this assessment.

Within the study area for this Project, a single MGED was recorded during targeted surveys, sheltering within one of the arthropod tubes targeting the species. This record was in the potential

southern access, within the project area but outside the disturbance area as currently defined. This record indicates that the far southern part of the project area is currently providing habitat.

### **Monaro Grassland Earless Dragon SIC**

Assessment against the MNES Significant Impact Guidelines (DoE, 2013) for Endangered species is outlined in the table below.

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
Lead to a long-term decrease in the size of a population	<p><b>Monaro Grassland Earless Dragon – POTENTIALLY LIKELY</b></p> <p>A 'population of a species' is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to:</p> <ul style="list-style-type: none"> <li>• a geographically distinct regional population, or collection of local populations, or</li> <li>• a population, or collection of local populations, that occurs within a particular bioregion.</li> </ul> <p>There are 94 records of Monaro Grassland Earless Dragons within 10 kilometres of the Study Area. Two MGEDs were recorded in 2020 just to the south the project area within rocky-ridgeline habitat (Ecolink 2020). An additional Monaro Grassland Earless Dragon was recorded during targeted surveys within the project area but outside of the proposed disturbance area.</p> <p>The Monaro Grassland Earless Dragon was not recorded within the disturbance area, although it was recorded in the project area near the potential southern access route (see <b>Error! Reference source not found.</b> in Appendix D to this application referral).</p> <p>Although the Monaro Grassland Earless Dragon was recorded within the project area outside the disturbance area, it is considered to be unlikely to occur, or to occur infrequently, within the disturbance area. The Project is unlikely to lead to a long-term decrease in the size of the population of the MGED for the following reasons:</p> <ul style="list-style-type: none"> <li>• <b>The MGED was not recorded within the disturbance area for the Project.</b> Targeted surveys for the MGED were conducted throughout the project area, which includes areas within the disturbance footprint and areas under consideration for but not to date included within the Project. Targeted surveys consisted of installation of 200 arthropod tubes were placed at 10 metre intervals along five 400 metre transects (Figure 4-2 in Appendix D). Arthropod tubes were inspected by two ecologists using a torch at least every three days, over four non-consecutive weeks. Two of the arthropod tube transects were located wholly within the disturbance area where solar arrays will be placed. Two additional transects were located in the portion of the project area where the transmission corridor will be located; one of those is partially within the disturbance area. No dragons were recorded within any of these transects in the disturbance area.</li> <li>• <b>The MGED that was identified was recorded outside the disturbance area within habitat that is not characteristic of the disturbance area.</b> The one transect where a dragon was recorded was located approximately 500 m to the south of the location of the proposed solar array, within the corridor where the southern access route could be located (but has not been to date). The transect where the Monaro Grassland Earless Dragon was recorded was situated within the highest quality habitat occurring within the project area as measured by vegetation quality and presence of rock habitat. Portions of the transect, including the arthropod tube where the species was recorded, were located in areas with reasonable rock cover where the species could bask and shelter. The vegetation within the disturbance area, particularly within the indicative development footprint where the solar arrays will be located, is not typically fully structured and rocky habitat is uncommon, apart from the ridgetop that the transmission corridor crosses.</li> <li>• <b>Habitat quality within the indicative development footprint where the solar arrays will be located is poor.</b> Grassland Earless Dragons are tussock grassland specialists (Melville et al. 2019). Their habitat is characterised by open-structured tussock grasslands with few or no trees and shrubs, limited or no fertilisation or pasture improvement, and comprising slightly higher ground in well-drained areas. The species does poorly in pastures modified by heavy grazing, fertilisation, use of pesticides and herbicides, improved for cropping, and dominated by exotic species such as <i>Eragrostis curvula</i> (African Lovegrass) (McGrath 2015). The indicative development footprint where the solar arrays will be located is heavily disturbed, largely exotic pasture (see Sections 3.4 and 3.5, Appendix D). Although some portions of the development footprint comprise native grassland, this grassland is generally dominated by low-growing grass species such as <i>Chloris truncata</i> (Windmill Grass) and <i>Cynodon dactylon</i> (Couch), rather than the mid-to-tall grasslands dominated by <i>Austrostipa</i> spp. (Speargrasses) and <i>Bothriochola macra</i> (Red Grass) favoured by the MGED, and where the MGED identified during targeted surveys was recorded, outside</li> </ul>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	<p>the disturbance area. This pasture is heavily grazed, modified and managed. It is sown periodically by such species as <i>Medicago sativa</i> (Lucerne) and <i>Brassica</i> spp., has been invaded by such pasture weeds as <i>Cirsium vulgare</i> (Spear Thistle) and <i>Centaurea solstitialis</i> (St. Barnaby's Thistle), and is sprayed regularly for weeds. These pasture characteristics make it unlikely that the development footprint for solar panels is used by the MGED.</p> <ul style="list-style-type: none"> <li> <p><b>The species is unlikely to move between the high-quality habitat where it was recorded and the low-quality habitat within the indicative development footprint for the solar arrays.</b> The MGED is a small lizard (9-12 cm total length) (DCCEEW 2023) that does not range a great distance from its home burrow. A study of the closely related Canberra Grassland Earless Dragon (CGED) found that the home range area of the CGED ranged from 925 m<sup>2</sup> to 4,768 m<sup>2</sup>, which works out to a radius of approximately 17 – 39 m from the home burrow if a circular home range is assumed. The MGED record in the project area was found more than 500 m south of the southern boundary of the disturbance area where the solar panels will be sited. It is very unlikely that this MGED would travel to the disturbance area. Because the habitat quality within the disturbance area is low, it is also unlikely that other MGEDs would occur within the disturbance area.</p> </li> <li> <p><b>Current management of the land within the indicative development footprint for the solar arrays is inconsistent with habitat requirements of the MGED.</b> The habitat of all grassland earless dragons is characterised by open-structured tussock grasslands with few or no trees and shrubs, limited or no fertilisation or pasture improvement, and comprising slightly higher ground in well-drained areas (Melville et al. 2019). Several authorities have indicated that population declines of grassland earless dragons may be related to overgrazing and weed incursions (Dimond et al. 2012, McGrath 2015). The species has never been captured in grassland that has been plowed (Hoehn et al. 2013), and McGrath (2015) states that pasture improvement through ploughing, application of fertiliser and removal of rocks is not compatible with the conservation of MGED.</p> <p>Existing and historical management of lands within the indicative development footprint for the solar arrays suggests that the MGED is unlikely to occur within this area. The pastures within the indicative development footprint are periodically cultivated with <i>Medicago sativa</i> (Lucerne) and <i>Brassica</i> spp., although they are not ploughed. Exotic weeds are common and are periodically controlled through the application of selective herbicides. The pastures are heavily grazed with sheep in the south and cattle in the north. It is likely that rocks have been removed in the past to facilitate management. Overall, the pastures are currently and have historically been highly managed. It is unlikely that the MGED persists on such highly managed land.</p> </li> <li> <p><b>Installation of solar panels within the areas of native grassland within the disturbance area will not require total removal of all native vegetation.</b> Whilst the species has not been recorded in vegetation within the disturbance area, even if it is assumed that the poor-quality habitat within the disturbance area could serve as marginal habitat, much of this habitat will remain after installation of the solar panels. Installation of those panels will require removal of the native vegetation at the base of the panels, and access improvements for construction and later operational and maintenance vehicles, but much of the existing pasture will remain and continue to be grazed as before. In the unlikely event that pasture within the disturbance area could serve as MGED habitat, it could continue to do so during operation of the Project.</p> </li> <li> <p><b>Habitat within some of the indicative development footprint where the transmission corridor will be located is poor.</b> The area of the indicative development footprint where the transmission corridor will be located is 2.04 ha. Of this, 0.59 ha is dominated by <i>Eragrostis curvula</i> (African Lovegrass) with coverages in excess of 90%, and 1.45 ha is rocky-ridgeline habitat dominated by exotic species, of which <i>E. curvula</i> is the most common. MGED is much less likely to occur in exotic-dominated grassland than native grassland, and McGrath (2015) recommends control of Lovegrass in the Cooma region as a priority conservation measure for the MGED. In those areas of the transmission corridor where Lovegrass occurs in high concentrations, it is unlikely that the MGED occurs.</p> </li> </ul>



Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	<ul style="list-style-type: none"> <li>• <b>Installation of transmission lines within the areas of native grassland within the disturbance area will not require total removal of all native vegetation.</b> Whilst the species has not been recorded in vegetation within the indicative transmission corridor even if it is assumed that the habitat within the disturbance area could serve as marginal habitat, much of this habitat will remain after installation of the transmission line connecting the solar panels and BESS with the grid. Installation of transmission towers will require removal of the native vegetation at the base of the panels, and access improvements for construction and later operational and maintenance vehicles, but much of the existing pasture will remain and continue to be grazed as before. In the event that pasture within the disturbance area could serve as MGED habitat, it could continue to do so during operation of the Project.</li> </ul> <p>For all these reasons, it is considered unlikely that the Project would lead to a long-term reduction in the size of a population of the Monaro Grassland Earless Dragon if impacts are limited to the disturbance area as currently defined.</p> <p>However, should the southern access corridor be required for the Project, and the existing farm tracks near the Monaro Grassland Earless Dragon record are upgraded, it is considered likely that the Project would lead to a long-term reduction in the size of a population of the Monaro Grassland Earless Dragon. In this case, the existing higher quality habitat would be impacted by clearing and construction required for access road improvements, and construction and operational traffic would pass through areas of known habitat, creating risk of vehicle strike.</p>
Reduce the area of occupancy of a population	<p><b>Monaro Grassland Earless Dragon – POTENTIALLY LIKELY</b></p> <p>The Project is unlikely to substantially reduce the area of occupancy of the MGED if impacts are limited to the disturbance area as currently defined. The species' extent of occupancy is approximately 20 x 60 km, with actual occupancy scattered through this area. The species has 94 records within 10 km of the Project and 440 records within the LGA, indicating that a number of currently occupied sites are within the locality. Removal of 7.87 ha of Natural Temperate Grassland as defined by EPBC thresholds, or 39.47 ha of PCT 3414: Monaro Snowgrass-Kangaroo Grass Grassland as defined by the NSW BioNet Vegetation Classification, is unlikely to reduce the area of occupancy of the species over the long term, given that the species was not detected within the current disturbance footprint and habitat is considered marginal at best. For the same reasons that the Project is unlikely to lead to a long-term decrease in the size of a population, it is also unlikely to reduce the area of occupancy of a population.</p> <p>However, should the southern access corridor be required for the Project, and the existing farm tracks near the Monaro Grassland Earless Dragon record are upgraded, it is considered likely that the Project would reduce the area of occupancy of the Monaro Grassland Earless Dragon. In this case, the existing higher quality habitat would be impacted by clearing and construction required for access road improvements, and construction and operational traffic would pass through areas of known habitat, creating risk of vehicle strike.</p>
Fragment an existing population into two or more populations	<p><b>Monaro Grassland Earless Dragon – POTENTIALLY LIKELY</b></p> <p>The Project is unlikely to fragment an existing population if impacts are limited to the disturbance area as currently defined. The species was recorded along a potential southern access corridor that is not currently defined as being within the disturbance area. The native grassland along this corridor connects two larger patches of native grassland, as mapped by the NSW State Vegetation Type Map (2022) and will likely do so after construction and installation of the Project.</p> <p>In addition, the native vegetation within the disturbance area that could potentially serve as habitat for the species are already fragmented. Of the three patches Natural Temperate Grassland of the South Eastern Highlands within the disturbance area that would be impacted, two patches, comprising 2.33 ha and 4.14 ha of vegetation, are islands within improved exotic pasture. The third patch, abutting Middle Flat Creek, will have only 1.39 ha of a 2.36 ha patch removed. None of these patches provide connectivity between larger adjacent patches on either side.</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	<p>Finally, following construction and installation of the solar panels, native grasses and forbs will be able to regenerate in and around the solar panels. The Monaro Grassland Earless Dragon will be able to continue to use any habitat available within the disturbance area and will continue to be able to move about and through the site.</p> <p>However, should the southern access corridor be required for the Project, and the existing farm tracks near the Monaro Grassland Earless Dragon record are upgraded, it is considered potentially likely that the Project fragment an existing population of the species. In this case, a north-south access road for construction and operational traffic would pass through areas of known habitat, creating risk of vehicle strike and potentially limiting connectivity between populations in the areas of mapped grassland to the east and the west.</p>
Adversely affect habitat critical to the survival of a species	<p><b>Monaro Grassland Earless Dragon – POTENTIALLY LIKELY</b></p> <p>Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:</p> <ul style="list-style-type: none"> <li>• for activities such as foraging, breeding, roosting, or dispersal</li> <li>• for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)</li> <li>• to maintain genetic diversity and long-term evolutionary development, or</li> <li>• for the reintroduction of populations or recovery of the species or ecological community.</li> </ul> <p>The Project is unlikely to adversely affect habitat critical to the survival of the Monaro Grassland Earless Dragon if impacts are limited to the disturbance area as currently defined. As discussed above, any habitat within the disturbance area is likely to be marginal, and impacts will be substantially limited to the period of construction and installation. It is possible that some indirect impacts such as edge effects may impact on the surrounding habitats through increased noise and vibration during construction. However, these impacts are considered be unlikely to substantially impact on the species.</p> <p>However, should the southern access corridor be required for the Project, and the existing farm tracks near the Monaro Grassland Earless Dragon record are upgraded, it is considered likely that the Project would adversely affect habitat critical to the survival of the of the Monaro Grassland Earless Dragon. In this case, the existing higher quality habitat would be impacted by clearing and construction required for access road improvements, and construction and operational traffic would pass through areas of known habitat, creating risk of vehicle strike.</p>
Disrupt the breeding cycle of a population	<p><b>Monaro Grassland Earless Dragon – POTENTIALLY LIKELY</b></p> <p>As no occupied Grassland Earless Dragon habitat is proposed to be removed, the works are unlikely to disrupt the breeding cycle of any local dragon populations outside of the proposed development area if impacts are limited to the disturbance area as currently defined. As discussed above, it is unlikely that the species occurs, or if it does occur it likely occurs infrequently, within the disturbance area. Any habitat within the disturbance area is considered to be marginal.</p> <p>However, should the southern access corridor be required for the Project, and the existing farm tracks near the Monaro Grassland Earless Dragon record are upgraded, it is considered potentially likely that the Project would disrupt the breeding cycle of a population of the Monaro Grassland Earless Dragon. In this case, the existing higher quality habitat would be impacted by clearing and construction required for access road improvements, and construction and operational traffic would pass through areas of known habitat, creating risk of vehicle strike.</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	<p><b>Monaro Grassland Earless Dragon – POTENTIALLY LIKELY</b></p> <p>As described above, if the species occurs within the disturbance area, it is likely to occur infrequently as the habitat within this area is already disturbed through grazing operations. Impacts to the species' habitat are likely to be temporary, as native grasses and forbs will be able to regenerate following construction and installation of the solar panels. The Project will have limited impacts on connectivity. For these reasons, it is considered unlikely that the Project will modify, destroy, remove, isolate or decrease habitat to the extent the species is likely to decline if impacts are limited to the disturbance area as currently defined.</p> <p>However, should the southern access corridor be required for the Project, and the existing farm tracks near the Monaro Grassland Earless Dragon record are upgraded, it is considered potentially likely that the Project would modify, destroy, remove, isolate or decrease habitat to the extent the species is likely to decline. In this case, the existing higher quality habitat would be impacted by clearing and construction required for access road improvements, and construction and operational traffic would pass through areas of known habitat, creating risk of vehicle strike and potentially isolating one area of habitat from another.</p>
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat	<p><b>Monaro Grassland Earless Dragon – UNLIKELY</b></p> <p>Most of the Project, including the indicative development footprint, the indicative transmission corridor and access tracks, will be carried out in areas that are already subject to substantial invasive species occurrence, especially <i>Eragrostis icurvula</i> (African Lovegrass). As some impacts associated with the Project are for dirt access road improvement, there is the chance that exotic species could further spread via foot and vehicle traffic, which could have an impact on habitat for the Monaro Grassland Earless Dragon. However, this potential impact can effectively be managed through a construction environmental management plan (CEMP) for the study area, which dictates appropriate hygiene controls. Additionally, these controls would extend into the operational phase of the Project.</p>
Introduce disease that may cause the species to decline	<p><b>Monaro Grassland Earless Dragon – UNLIKELY</b></p> <p>As above, the CEMP would include measures to minimise the risk of disease being brought onto the site that is not already present.</p>
Interfere substantially with the recovery of the species.	<p><b>Monaro Grassland Earless Dragon – POTENTIALLY LIKELY</b></p> <p>There is no recovery plan expressly for the Monaro Grassland Earless Dragon; however, a National Recovery Plan for the Grassland Earless Dragon <i>Tympanocryptis pinguicollis</i> exists (Roberston &amp; Evans 2009). That recovery plan includes information and sets out objectives relating to grassland earless dragons generally, including the Monaro Grassland Earless Dragon (which was classified as <i>Tympanocryptis pinguicollis</i> at the time of publication), although these objectives do not exclusively apply to the Monaro Grassland Earless Dragon (<i>Tympanocryptis osbornei</i>).</p> <p>The primary, long-term recovery object of the earlier recovery plan 'is to ensure the ability of the Grassland Earless Dragon to survive, flourish and maintain its potential for evolutionary development in the wild, across its natural geographic range'. As discussed throughout this assessment, the Monaro Grassland Earless Dragon was not recorded within the disturbance area; if habitat exists in the disturbance area it is likely marginal and infrequently used.</p> <p>However, should the southern access corridor be required for the Project, and the existing farm tracks near the Monaro Grassland Earless Dragon record are upgraded, it is considered potentially likely that the Project would interfere with the recovery of the species. In this case, the existing higher quality habitat would be impacted by clearing and construction required for access road improvements, and construction and operational traffic would pass through areas of known habitat, creating risk of vehicle strike and potentially isolating one area of habitat from another.</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	<p><b>Conclusion:</b> Although the Monaro Grassland Earless Dragon was recorded within the project area, the species was not recorded within the disturbance area. The species is considered unlikely to occur, or to occur infrequently, within the area of disturbance because the pasture within the disturbance area is heavily grazed and the habitat for the species is degraded. The Project is unlikely to have significant fragmentation, critical habitat, abiotic or invasive species impacts. With standard environmental mitigation measures in place, it is considered unlikely that impacts to potential habitat for the Monaro Grassland Earless Dragon will significantly impact this endangered species if impacts are limited to the disturbance area as currently defined.</p> <p>However, should the southern access corridor be required for the Project, and the existing farm tracks near the Monaro Grassland Earless Dragon record are upgraded, it is considered potentially likely that the Project would interfere with the recovery of the species. In this case, the existing higher quality habitat would be impacted by clearing and construction required for access road improvements, and construction and operational traffic would pass through areas of known habitat, creating risk of vehicle strike and potentially isolating one area of habitat from another.</p>

## Diamond Firetail (*Stagonopleura guttata*)

### Diamond Firetail ecology

The Diamond Firetail (*Stagonopleura guttata*) is listed as Vulnerable under the EPBC Act and NSW BC Act.

The Diamond Firetail is distributed along the south-east mainland of Australia from the southeast of Queensland to the south of South Australia and spreads 300km inland from the sea (DCCEEW 2023b).

Diamond Firetails occur in a variety of habitats including eucalypt, acacia or casuarina woodlands and open forests. They have a preference for habitats with low tree and log densities and with high grass cover. Flocks range from 5 to 40 individuals and do not move far away from their local areas (DCCEEW 2023b).

Diamond Firetails use dense shrubs to roost or for building small nests, where females lay a clutch of 4-5 eggs per season. The diet of Diamond Firetails consists of grass, herb seeds and green leaves, as well as insects (DCCEEW 2023b).

The key threats to this species include:

- Habitat loss and fragmentation due to land clearing
- Territory competitions from noisy miners
- Inappropriate fire regimes.

### Diamond Firetail habitat in the project area

BioNet searches identified eight records of Diamond Firetails within 10km of the project area. There were no targeted surveys for the Diamond Firetail conducted and the species was not observed on site.

### Summary of Project impacts

The Project will impact 39.47 ha of potential foraging habitat for Diamond Firetail (PCT 3414 in all condition classes, 31.60 of which does not meet condition thresholds for Natural Temperate Grassland of the South Eastern Highlands). Most of this habitat is likely to be used by the species rarely, if at all, because Diamond Firetails generally occur in eucalypt, acacia or casuarina woodlands and other lightly timbered habitats, and the only trees within the project area are non-native pines and cottonwoods. Diamond Firetails may very occasionally forage within the project area, as they feed at ground level on grass and forb seeds, but it is likely that if the species ever visits the project area, it quickly returns to habitat with at least scattered trees. There is no breeding habitat within the disturbance area, as there are no native shrubs or trees.

There will be some indirect impacts, mostly temporary, during construction. They consist of: construction impacts such as increased vehicle movement and noise during construction and indirect impacts on retained vegetation, including increased edge effects and minor fragmentation of habitat.

There will be increased vehicle movement and some construction noise and activity during the construction phase of the Project. This will mainly be associated with the BESS facility which is located in an area of non-native grassland. The construction of the solar arrays requires a lower level of construction activity, since they are manufactured offsite and just require installation and connection.

Indirect impacts to retained vegetation will be minimal but include increased light and dust. These are considered minor for this particular Project, given that construction centres on the BESS facility, where there is no adjacent native vegetation. The installation of the solar arrays will be confined to the

disturbance area and is not expected to significantly increase light exposure or dust in surrounding vegetation. Solar panels will only be installed during the day, so there will be no artificial light impacts and require minimal excavation, therefore minimising the generation of dust. If installation is during very dry periods, dust will be managed as part of the implementation of a construction environmental management plan.

The Project will have little impact on the fragmentation of existing native vegetation. Further, no sealed roads are proposed and much of the areas around the solar panels during operation will continue to provide grassland habitat.

### Diamond Firetail SIC

Assessment against the MNES Significant Impact Guidelines (DEWHA 2013) for Vulnerable species is outlined in the table below –

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
Lead to a long-term decrease in the size of an important population of a species	<p><b>Diamond Firetail – UNLIKELY</b></p> <p>An 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:</p> <ul style="list-style-type: none"> <li>• Key source populations either for breeding or dispersal.</li> <li>• Populations that are necessary for maintaining genetic diversity and/or;</li> <li>• Populations that are near the limit of the species range.</li> </ul> <p>There are eight records of Diamond Firetails within 10 kilometres of the project area, with no records within the project area. No Diamond Firetails were identified on site during the field surveys.</p> <p>Habitat for the species within the project area is marginal, and it is considered that if the species uses the project area it would only be intermittently, as no trees or shrubs are available for sheltering. Similar habitat would be available on most properties in the area, as there are substantial patches of native grassland mapped on surrounding properties.</p> <p>For these reasons, it is considered unlikely that the Project would lead to a long-term decrease in the size of an important population of a species.</p>
Reduce the area of occupancy of an important population	<p><b>Diamond Firetail – UNLIKELY</b></p> <p>The direct impacts of the Project would be to marginal habitat that would be used infrequently if at all by the species. In addition, there is sufficient suitable habitat in the locality, as there are 122 records of the species in the BioNet Atlas distributed widely across the Snowy-Monaro LGA. The Project is unlikely to reduce the occupancy of this species in the area.</p> <p>The removal of habitat from the study area would not fragment an existing population into two or more populations.</p>
Fragment an existing population into two or more populations	
Adversely affect habitat critical to the survival of a species	<p><b>Diamond Firetail – UNLIKELY</b></p> <p>Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:</p> <ul style="list-style-type: none"> <li>• for activities such as foraging, breeding, roosting, or dispersal</li> <li>• for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)</li> <li>• to maintain genetic diversity and long-term evolutionary development, or</li> <li>• for the reintroduction of populations or recovery of the species or ecological community.</li> </ul> <p>The project would be impacting approximately 7.87 ha of native vegetation that is marginal at best for foraging and is unlikely to be used at all for breeding by the Diamond Firetail. No habitat to be impacted by the Project is therefore considered critical habitat to the survival of the Diamond Firetail.</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
Disrupt the breeding cycle of an important population	<p><b>Diamond Firetail – UNLIKELY</b></p> <p>The proposed works would not have impact on the breeding cycle of the Diamond Firetail. The species breeds within dense shrubs. There are no shrubs within the disturbance area.</p>
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	<p><b>Diamond Firetail – UNLIKELY</b></p> <p>The Project would not significantly decrease availability or quality of habitat such that the species is likely to decline. Habitat for the species within the project area is marginal, and it is considered that if the species uses the project area it would only be intermittently, as no trees or shrubs are available for sheltering. Similar habitat would be available on most properties in the area, as there are substantial patches of native grassland mapped on surrounding properties.</p>
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	<p><b>Diamond Firetail – UNLIKELY</b></p> <p>The Project could result in further spread of invasive species, especially if soil or vegetation is brought onto the site. The risk of this will be minimised through the implementation of a Construction Environmental Management Plan (CEMP), which will detail measures to reduce the risk of new invasive species becoming established, and also to prevent further spread of weeds and pests already present within the study area. These measures would minimise the risk of invasive species to Diamond Firetail and any habitat they may use.</p>
Introduce disease that may cause the species to decline	<p><b>Diamond Firetail – UNLIKELY</b></p> <p>As above, the CEMP would include measures to minimise the risk of disease being brought onto the site that is not already present.</p>
Interfere substantially with the recovery of the species.	<p><b>Diamond Firetail – UNLIKELY</b></p> <p>In Conservation Advice for Diamond Firetail (DCCEEW 2023b), a recovery plan is required, but has not been developed as yet. However, threats to this species are identified in DCCEEW (2023b) and summarised as: habitat loss, degradation and fragmentation, specifically from land clearing, invasive exotic grasses and rabbits, agriculture, climate change, and altered fire regimes, in addition to competition with Noisy miners and predation. The Project will have impacts on potential Diamond Firetail habitat, however this habitat is marginal, and it is considered that if the species uses the project area it would only be intermittently, as no trees or shrubs are available for sheltering. Similar habitat would be available on most properties in the area, as there are substantial patches of native grassland mapped on surrounding properties. The Project is unlikely to interfere substantially with the recovery of the species.</p>
<p><b>Conclusion:</b> There are no records of Diamond Firetail within the project area, and no Diamond Firetails were recorded during field survey. The population of Diamond Firetails within the project area is not considered to constitute an important population of the species. It is considered that if the species uses the project area it would only be intermittently, as no trees or shrubs are available for sheltering. Similar habitat would be available on most properties in the area, as there are substantial patches of native grassland mapped on surrounding properties. The Project is unlikely to have significant fragmentation, critical habitat, abiotic or invasive species impacts. With standard environmental mitigation measures in place, it is considered unlikely that impacts to potential habitat for the Diamond Firetail within the project area will significantly impact this vulnerable species.</p>	



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