

## Appendix B – Threatened Species Significant Impact Criteria Assessments

### Threatened Flora

#### *Lepidium monoplocoides* (Winged Pepper-cress)

#### **Lepidium monoplocoides ecology**

*Lepidium monoplocoides* is listed as Endangered under the BC Act and EPBC Act.

It is known to occur in NSW and Victoria, mainly in mallee scrub and semi-arid areas. Sites where this species occurs are seasonally moist to water-logged with heavy, fertile soils and a mean annual rainfall of around 300 to 500 mm.

#### **Lepidium monoplocoides habitat in the Project area**

BioNet identified no records of *Lepidium monoplocoides* within 10km of the Project area. There are a total of 135 records for the *Lepidium monoplocoides* in the Edward River LGA. It is possible that the Project area could provide habitat for the species.

Within the Project area, four PCTs are associated with this species. PCT 13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion), PCT 26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion, PCT 46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion and PCT 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains.

#### **Lepidium monoplocoides 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><i>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:</i></p> <ul style="list-style-type: none"> <li>• <i>A geographically distinct regional population, or collection of local populations, or</i></li> <li>• <i>A population, or collection of local populations, that occurs within a particular bioregion.</i></li> </ul> <p>The removal of 1184.31 hectares of habitat could lead to a long-term decrease in the size of a population. Targeted surveys will be conducted Project areato determine if a population of this species occurs in the Project area as part of the BDAR being prepared to support the project EIS.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
<i>Reduce the area of occupancy of the species</i>	The removal of 1184.31 hectares of habitat could reduce the area of occupancy of the species.
<i>Fragment an existing population into two or more populations</i>	<p>It is currently unknown whether a population of this species is present in the Project area that could be fragmented by the project as targeted surveys for this species has not been undertaken. If the species was found to be present, the project could fragment an existing population into two or more populations.</p> <p>There are no known populations (BioNet records) in properties immediately adjoining the Project area that would be at risk of being fragmented by the project.</p> <p>Project area</p>
<i>Adversely affect habitat critical to the survival of a species</i>	While the removal of 1184.31 hectares of habitat may affect the species, there are no records of this species within 10 km of the Project area and no habitat has been described on the register of critical habitat for this threatened species. As such, the habitat proposed to be impacted is unlikely to be critical, and its removal is unlikely to critically affect the survival of the species.
<i>Disrupt the breeding cycle of a population</i>	The removal of 1184.31 hectares of habitat may disrupt the breeding cycle of a population.
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i>	The reduction of 1184.31 hectares of habitat will decrease the availability and quality of habitat. However, given the extent of available habitat within the locality of the Project area, it is unlikely that it will cause the species to decline.
<i>Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat</i>	The Project is unlikely to result in the establishment of invasive species that aren't already present in the area. Any risk will be minimised through the implementation of a CEMP with relevant hygiene protocols, which will detail measures to reduce the risk of invasive species spread within the Project area.
<i>Introduce disease that may cause the species to decline</i>	The Project is unlikely to introduce disease that may cause the species to decline.
<i>Interfere substantially with the recovery of the species.</i>	The removal of 1184.31 hectares of habitat is unlikely to interfere substantially with the recovery of the species.
<p><b>Conclusion:</b> The removal of 1184.31 hectares of habitat has the potential to reduce the area of occupancy of <i>Lepidium monoplooides</i> if a population is present within the Project area. As detailed surveys have not yet been carried out, significant impacts to this species cannot be ruled out.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.</p>	

## *Sclerolaena napiformis* (Turnip Copperburr)

### **Sclerolaena napiformis ecology**

*Sclerolaena napiformis* is listed as Endangered under the BC Act and EPBC Act.

The distribution of this species is restricted to the Riverina and Murray-Darling Depression IBRA bioregions of New South Wales and Victoria. It grows in native grasslands and grassy woodlands and can tolerate occasional waterlogging. In NSW, the species occurs in Knotty Spear-Grass and Windmill Grass tussock grasslands on grey to red-brown cracking clays and clay loams.

### **Sclerolaena napiformis habitat in the Project area**

BioNet identified no records of *Sclerolaena napiformis* within 10 km of the Project area or within the Edward River LGA. Although there are no records, it is possible that the Project area could provide habitat for the species.

Within the Project area, two PCTs are associated with this species - PCT 26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion and PCT 46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion.

### **Sclerolaena napiformis 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>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>The removal of 1175.85 hectares of habitat could lead to a long-term decrease in the size of a population. Targeted surveys will be conducted Project areato determine if a population of this species occurs in the Project area. as part of the BDAR being prepared to support the project EIS.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>
Reduce the area of occupancy of the species	The removal of 1175.85 hectares of habitat could reduce the area of occupancy of the species.
Fragment an existing population into two or more populations	It is currently unknown whether a population of this species is present in the Project area that could be fragmented by the project as targeted surveys for this species has not been undertaken. If the species was found to be present, the project could fragment an existing population into two or more populations.

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	<p>There are no known populations (BioNet records) in properties immediately adjoining the Project area that would be at risk of being fragmented by the project.</p> <p>Project area</p>
<i>Adversely affect habitat critical to the survival of a species</i>	<p>While the removal of 1175.85 hectares of habitat may affect the survival of the species, there are no records of this species exist within 10 km of the Project area or the LGA. No habitat has been described on the register of critical habitat for this threatened species. As such, the habitat proposed to be impacted is unlikely to be critical, and its removal is unlikely to critically affect the survival of the species.</p>
<i>Disrupt the breeding cycle of a population</i>	<p>The removal of 1175.85 hectares of habitat may disrupt the breeding cycle of a population.</p>
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i>	<p>The reduction of 1175.85 hectares of habitat will decrease the availability and quality of habitat. However, it is unlikely that it will cause the species to decline.</p>
<i>Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat</i>	<p>The Project is unlikely to result in the establishment of invasive species that aren't already present in the area. Any risk will be minimised through the implementation of a CEMP with relevant hygiene protocols, which will detail measures to reduce the risk of new invasive species becoming established.</p>
<i>Introduce disease that may cause the species to decline</i>	<p>The Project is unlikely to introduce disease that may cause the species to decline.</p>
<i>Interfere substantially with the recovery of the species.</i>	<p>The removal of 1175.85 hectares of habitat is unlikely to interfere substantially with the recovery of the species.</p>
<p><b>Conclusion:</b> The removal of 1175.85 hectares of habitat has the potential to reduce the area of occupancy of <i>Sclerolaena napiformis</i> if a population is present in the Project Area. As detailed surveys have not yet been carried out, significant impacts to this species cannot be ruled out.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.</p>	

## *Austrostipa wakoolica*

### ***Austrostipa wakoolica* ecology**

*Austrostipa wakoolica* is listed as Endangered under the BC Act and EPBC Act.

The distribution of *Austrostipa wakoolica* is confined to the floodplains of the Murray River tributaries of central-western and south-western NSW where it grows in open woodland, on grey silty clay or sandy loam soils. Known habitats include the edge of a lignum swamps in brown loam with box and mallee, creek banks in grey silty clay, mallee and lignum sandy loam flat, open cypress pine forest on low range in sandy soil.

### ***Austrostipa wakoolica* habitat in the Project area**

BioNet identified no records of *Austrostipa wakoolica* within 10 km of the Project area. There are a total of three records for the *Austrostipa wakoolica* in the Edward River LGA. It is possible that the Project area could provide habitat for the species.

Within the Project area, one PCT is associated with this species. PCT 26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion.

### ***Austrostipa wakoolica* 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
<i>Lead to a long-term decrease in the size of a population</i>	<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>The removal of 6.30 hectares of habitat is unlikely to lead to a long-term decrease in the size of a population. Targeted surveys will be conducted Project areato determine if a population of this species occurs in the Project area as part of the BDAR being prepared to support the project EIS.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>
<i>Reduce the area of occupancy of the species</i>	The removal of 6.30 hectares of habitat could reduce the area of occupancy of the species.
<i>Fragment an existing population into two or more populations</i>	It is currently unknown whether a population of this species is present in the Project area that could be fragmented by the project as targeted surveys for this species has not been undertaken. If the species was found to be present, the project could fragment an existing population into two or more populations.

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	There are no known populations (BioNet records) in properties immediately adjoining the Project area that would be at risk of being fragmented by the project.
<i>Adversely affect habitat critical to the survival of a species</i>	The removal of 6.30 hectares of habitat is unlikely to affect the survival of the species.
<i>Disrupt the breeding cycle of a population</i>	The removal of 6.30 hectares of habitat is unlikely to disrupt the breeding cycle of a population.
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i>	The reduction of 6.30 hectares of habitat will decrease the availability and quality of habitat. However, it is unlikely that it will cause the species to decline.
<i>Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat</i>	The Project is unlikely to result in the establishment of invasive species that aren't already present in the area. Any risk will be minimised through the implementation of a CEMP with relevant hygiene protocols, which will detail measures to reduce the risk of new invasive species becoming established.
<i>Introduce disease that may cause the species to decline</i>	The Project is unlikely to introduce disease that may cause the species to decline.
<i>Interfere substantially with the recovery of the species.</i>	The removal of 6.30 hectares of habitat is unlikely to interfere substantially with the recovery of the species.
<p><b>Conclusion:</b> The removal of 6.30 hectares of habitat has the potential to reduce the area of occupancy of <i>Austrostipa wakoolica</i> if a population is present within the Project area. As detailed surveys have not yet been carried out, significant impacts to this species cannot be ruled out.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.</p>	

## *Swainsona plagiotropis*, *Maireana cheelii* and *Swainsona murrayana*

### Species ecology

*Swainsona plagiotropis* is listed as Vulnerable under the BC Act and EPBC Act. The distribution of *Swainsona plagiotropis* is restricted to the riverine plains of inland south-eastern Australia, in Victoria and New South Wales where it is endemic. About 60 populations of *Swainsona plagiotropis* are currently known, with NSW populations centred around Jerilderie with an outlier 250 km to the north-west in the Willandra National Park and a recently discovered population near Warren, 480 km north-east of Jerilderie. *Swainsona plagiotropis* occurs within the 350–450mm average annual rainfall band, in relatively open native grassland vegetation on seasonally waterlogged red–brown clay and clay loam soils. Typical vegetation is dominated by perennial native grasses including Wallaby-grasses, Spear-grasses and Spider-grass.

*Maireana cheelii* is listed as Vulnerable under the BC Act and EPBC Act. *Maireana cheelii* populations remain in around 30 sites in Victoria and NSW with most occurring on roadsides, private land and reserves. These remaining populations occur between Hay and Deniliquin and can extend west to Moulamein and east to Morundah. Habitat for *Maireana cheelii* includes chenopod shrubland and grassland communities which occur on heavy clays soils. *Maireana cheelii* usually occupies sparsely vegetated sites, with a high proportion of bare ground though will occur in low-lying sites that become waterlogged during the winter months and may be slightly saline.

*Swainsona murrayana* is listed as Vulnerable under the BC Act and EPBC Act. The species is known from South Australia through south-west Victoria and central NSW to south-east Queensland. In NSW, this species occurs in the central western slopes, the Western Division, and the Riverina area in habitat such as grassland, herb land and open Black-box woodland. *Swainsona murrayana* grows in heavy grey or brown clay, loam or red cracking clays. It has been known to occur in paddocks that have been moderately grazed or cultivated.

### Species habitat in the Project area

BioNet identified no records of *Swainsona plagiotropis* within 10 km of the Project area or in the Edward River LGA.

BioNet identified no records of *Maireana cheelii* within 10 km of the Project area. There are a total of 1043 records for *Maireana cheelii* in the Edward River LGA.

BioNet identified no records of *Swainsona murrayana* within 10 km of the Project area. There are a total of 326 records for *Swainsona murrayana* in the Edward River LGA.

It is likely that the Project area could provide habitat for the species.

Within the Project area, two PCTs are associated with these species. PCT 26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion and PCT 46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion.

### Species SIC

Assessment against the MNES Significant Impact Guidelines (DoE, 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:	<i>Swainsona plagiotropis</i> (Red Darling-pea) <i>Maireana cheelii</i> (Chariot Wheels) <i>Swainsona murrayana</i> (Red Darling-pea)
<p><i>Lead to a long-term decrease in the size of an important population of a species</i></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>The removal of 1175.85 hectares of habitat from the Project area could lead to a long-term decrease in the size of an important population of these species. Targeted surveys will be conducted to determine if a populations of these species area present in the Project area as part of the BDAR being prepared to support the project EIS.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>
<p><i>Reduce the area of occupancy of an important population</i></p>	<p>The removal of 1175.85 hectares will reduce the area of occupancy of the species. Project area</p>
<p><i>Fragment an existing population into two or more populations</i></p>	<p>It is currently unknown whether a population of this species is present in the Project area that could be fragmented by the project as targeted surveys for this species has not been undertaken. If the species was found to be present, the project could fragment an existing population into two or more populations.</p> <p>There are no known populations (BioNet records) in properties immediately adjoining the Project area that would be at risk of being fragmented by the project.</p>
<p><i>Adversely affect habitat critical to the survival of a species</i></p>	<p>The Project is proposed to removal 1175.85 hectares of potential habitat for these species. Given the extent of the potential habitat available for these species in the locality, it is unlikely that the Project will adversely affect habitat critical to the survival of these species. However, the removal of this extent of habitat may still constitute a significant impact.</p>
<p><i>Disrupt the breeding cycle of an important population</i></p>	<p>The removal of 1175.85 hectares of habitat may disrupt the breeding cycle of these species.</p>
<p><i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i></p>	<p>The removal of 1175.85 hectares of habitat will decrease the availability and quality of habitat for these species. This impact may cause the species to decline, however no records of these species exist within 10 km of the Project area.</p>
<p><i>Result in invasive species that are harmful to a vulnerable species becoming established</i></p>	<p>The Project is unlikely to result in the establishment of invasive species that aren't already present in the area. Any risk will be minimised through the</p>

<b>Criteria if there is a real chance or possibility that the action (the proposed works) will:</b>	<i>Swainsona plagiotropis</i> (Red Darling-pea) <i>Maireana cheelii</i> (Chariot Wheels) <i>Swainsona murrayana</i> (Red Darling-pea)
<i>in the vulnerable species' habitat</i>	implementation of a CEMP with relevant hygiene protocols, which will detail measures to reduce the risk of new invasive species becoming established.
<i>Introduce disease that may cause the species to decline</i>	The Project is unlikely to introduce disease that may cause the species to decline.
<i>Interfere substantially with the recovery of the species.</i>	It is unlikely that the removal of 1175.85 hectares of habitat will substantially interfere with the recovery of the species given that no records of the species exist within 10km of the Project area.
<b>Conclusion:</b>	
<p>The removal of 1175.85 hectares of habitat of <i>Swainsona plagiotropis</i>, <i>Maireana cheelii</i> and <i>Swainsona murrayana</i> has the potential to reduce the area occupancy if a population is present within the Project area. As detailed surveys have not yet been carried out, significant impacts to this species cannot be ruled out.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.</p>	

## *Amphibromus fluitans* (River Swamp Wallaby-grass)

### ***Amphibromus fluitans* ecology**

*Amphibromus fluitans* is listed as Vulnerable under the BC Act and EPBC Act.

The distribution of *Amphibromus fluitans* occurs across southern NSW, Victoria, South Australia and Tasmania. In NSW, it occurs near Albury, Narranderra and Mathoura. *Amphibromus fluitans* occurs in both natural and human-made water-bodies, including swamps, lagoons, billabongs and dams. The distribution of this species is not known to overlap with any EPBC Act listed threatened ecological communities.

### ***Amphibromus fluitans* habitat in the Project area**

BioNet identified no records of *Amphibromus fluitans* within 10 km of the Project area. There is a total of one record for *Amphibromus fluitans* in the Edward River LGA.

Within the Project area, one PCT is associated with this species: PCT 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains.

### ***Amphibromus fluitans* SIC**

Assessment against the MNES Significant Impact Guidelines (DoE, 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
<p><i>Lead to a long-term decrease in the size of an important population of a species</i></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>The removal of 39.16 hectares of habitat is unlikely to lead a long-term decrease in the size of an important population of the species. Targeted surveys will be conducted to determine if a population of this species occurs in the Project area as part of the BDAR being prepared to support the project EIS.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>
<p><i>Reduce the area of occupancy of an important population</i></p>	<p>River Swamp Wallaby-grass is associated with PCT 160. The removal of 39.16 hectares will reduce the area of occupancy of the species. No records of these species exist within 10 km of the Project area, so the removal of habitat is unlikely to affect an important population.</p>
<p><i>Fragment an existing population into two or more populations</i></p>	<p>It is currently unknown whether a population of this species is present in the Project area that could be fragmented by the project as targeted surveys for this species has not been undertaken. If the species was found to be present, the project could fragment an existing population into two or more populations.</p> <p>There are no known populations (BioNet records) in properties immediately adjoining the Project area that would be at risk of being fragmented by the project.</p>
<p><i>Adversely affect habitat critical to the survival of a species</i></p>	<p>The removal of 39.16 hectares of habitat may adversely affect habitat critical to the survival of this species if they occur in the Project area. Further surveys are required to confirm this species presence.</p>
<p><i>Disrupt the breeding cycle of an important population</i></p>	<p>The removal of 39.16 hectares of habitat suitable to River Swamp Wallaby-grass may disrupt the breeding cycle of this species.</p>
<p><i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i></p>	<p>The removal of 39.16 hectares of PCT 160 is unlikely to decrease the availability or quality of habitat to the extent that the species is likely to decline. This is considering that no population has been identified within the locality (10 km surroundings).</p>
<p><i>Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat</i></p>	<p>The Project is unlikely to result in the establishment of invasive species that aren't already present in the area. Any risk will be minimised through the implementation of a CEMP with relevant hygiene protocols, which will detail measures to reduce the risk of new invasive species becoming established.</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
<i>Introduce disease that may cause the species to decline</i>	The Project is unlikely to introduce disease that may cause the species to decline.
<i>Interfere substantially with the recovery of the species.</i>	It is unlikely that the removal of 39.16 hectares of habitat will substantially interfere with the recovery of the species given that no records of the species exist within 10 km of the Project area.
<p><b>Conclusion:</b></p> <p>The removal of 39.16 hectares of habitat has the potential to reduce the area of occupancy of <i>Amphibromus fluitans</i> if a population is present within the Project area. As detailed surveys have not yet been carried out, significant impacts to this species cannot be ruled out.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.</p>	

## *Brachyscome muelleroides* (Mueller Daisy)

### ***Brachyscome muelleroides* ecology**

*Brachyscome muelleroides* is listed as Vulnerable under the BC Act and EPBC Act.

The distribution of this species is restricted to the floodplains of the Murray and Murrumbidgee Rivers and their tributaries in northern Victoria and southern New South Wales, in the Riverina and South Western Slopes IBRA bioregions. Habitat for this species includes seasonally damp shallow depressions as well as the margins of swamps, lagoons and claypans. *Brachyscome muelleroides* grows on heavy grey cracking clats to lighter clat loams soils in grassland, grassy woodland and open forest habitats.

### ***Brachyscome muelleroides* habitat in the Project area**

BioNet identified no records of *Brachyscome muelleroides* within 10 km of the Project area or in the Edward River LGA. However, it is possible that the Project area could provide habitat for the species.

Within the Project area, one PCT is associated with this species: PCT 46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion.

### ***Brachyscome muelleroides* SIC**

Assessment against the MNES Significant Impact Guidelines (DoE, 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>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>Clearing of suitable habitat could lead to a long-term decrease in <i>Brachyscome muelleroides</i>. The key threats identified to <i>Brachyscome muelleroides</i> include clearing for improved pasture and agricultural practices such as grazing.</p> <p>As targeted surveys have not been conducted in the Project area, the presence of this species is unconfirmed. It is considered unlikely considering the long-term grazing regime in the Project area, and the lack of BioNet records in the locality. Additionally, the distribution of this species is not known to overlap with any EPBC Act listed threatened ecological community including the Natural Grassland of the Murray Valley Plains which most of the Project area is associated with.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>
Reduce the area of occupancy of an important population	<p>Populations of high-conservation priority have been identified at Morundah Station, 100 km+ from the Project area. Despite the Project decreasing the size of potential habitat suitable to a population, the Project will not reduce the area of occupancy of an 'important population'.</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
<i>Fragment an existing population into two or more populations</i>	<p>It is currently unknown whether a population of this species is present in the Project area that could be fragmented by the project as targeted surveys for this species has not been undertaken. If the species was found to be present, the project could fragment an existing population into two or more populations.</p> <p>There are no known populations (BioNet records) in properties immediately adjoining the Project area that would be at risk of being fragmented by the project.</p> <p>Project area.</p>
<i>Adversely affect habitat critical to the survival of a species</i>	<p>No habitat has been described on the register of critical habitat for this threatened species. Recovery actions include survey for habitat critical to survival of <i>Brachyscome muelleroides</i> and for the long-term maintenance of the ecological community important factors include genetic diversity and pollination.</p> <p>Despite the removal of 1169.55 hectares of potentially suitable habitat, the Project is unlikely to affect pollination and the genetic diversity of the species. Considering the presence of <i>Brachyscome muelleroides</i> in the Project area is unconfirmed and considered unlikely, due to the lack of records within the locality, the Project is considered unlikely to affect habitat critical to <i>Brachyscome muelleroides</i> survival.</p>
<i>Disrupt the breeding cycle of an important population</i>	<p>Beetle mediated pollination is important for fertilisation in the breeding cycle of <i>Brachyscome muelleroides</i>. Seeds are dispersed by wind, or if ingested, through animal mediated seed dispersal. The Project may disrupt <i>Brachyscome muelleroides</i> pollination or seed dispersal through the reduction in habitat, as it is considered likely that beetles exist in the Project area.</p>
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i>	<p>There is abundant potential habitat within the locality for this species, as such the removal of 1169.55 hectares within the Project area is unlikely to impact <i>Brachyscome muelleroides</i> to the point that the species is likely to decline. The Project area has been subject to long-term grazing pressures which are identified as a Key Threatening Process (KTP) to <i>Brachyscome muelleroides</i>.</p>
<i>Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat</i>	<p>The construction of wind turbines and increase vehicle and foot traffic have the potential to increase the biosecurity hazard risk of invasive species introduction. However, this is considered unlikely as hygiene protocols will be established to negate this risk.</p>
<i>Introduce disease that may cause the species to decline</i>	<p>The Project is unlikely to result in the establishment of invasive species that aren't already present in the area. Any risk will be minimised through the implementation of a CEMP with relevant hygiene protocols, which will detail measures to reduce the risk of new invasive species becoming established.</p>
<i>Interfere substantially with the recovery of the species.</i>	<p>It is unlikely that the removal of 1169.55 hectares of habitat will substantially interfere with the recovery of the species given that no records of the species exist within 10 km of the Project area.</p>
<p><b>Conclusion:</b> While this impact area will decrease with the final footprint, an initial estimate of 1169.55 hectares of habitat is proposed to be removed. This will reduce the available habitat for <i>Brachyscome muelleroides</i>. As detailed surveys have not yet been carried out, significant impacts to this species cannot be ruled out.</p>	

Criteria if there is a real chance or possibility that the action (the proposed works) will:

Response criteria

The removal of 1184.31 hectares of habitat has the potential to reduce the area of occupancy of *Brachyscome muelleroides* if a population is present within the Project area. As detailed surveys have not yet been carried out, significant impacts to this species cannot be ruled out.

The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.

## *Brachyscome papillosa* (Mossgiel Daisy)

### ***Brachyscome papillosa* ecology**

*Brachyscome papillosa* is listed as Vulnerable under the BC Act and EPBC Act.

The distribution of *Brachyscome papillosa* is known to occurring from Mossgiel to Urana, with sites around Jerilderie, Hay Plain, Willandra Lakes, and north to Ivanhoe. It grows primarily in clays soils in Bladder Saltbush plains but also in grassland and in Grey Box–Cypress Pine woodland.

### ***Brachyscome papillosa* habitat in the Project area**

BioNet identified no records of *Brachyscome papillosa* within 10 km of the Project area. There are a total of 3686 records for *Brachyscome papillosa* in the Edward River LGA.

Within the Project area, three PCTs are associated with this species: PCT 13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion), PCT 46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion and PCT 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains.

### ***Brachyscome papillosa* SIC**

Assessment against the MNES Significant Impact Guidelines (DoE, 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>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>Project areaProject areaThe removal of 1178.01 hectares of habitat could lead to a long-term decrease in the size of a population. Targeted surveys will be conducted to determine if a population of this species occurs in the Project area as part of the BDAR being prepared to support the project EIS.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>
Reduce the area of occupancy of an important population	No 'important populations' exist within the Project area, or within the locality. Although the Project is proposed to removal 1178.01 hectares of potentially suitable habitat for <i>Brachyscome papillosa</i> , it will not reduce the area of occupancy of an important population.
Fragment an existing population into two or more populations	It is currently unknown whether a population of this species is present in the Project area that could be fragmented by the project as targeted surveys for this species has not been undertaken. If the species was found to be

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	<p>present, the project could fragment an existing population into two or more populations.</p> <p>There are no known populations (BioNet records) in properties immediately adjoining the Project area that would be at risk of being fragmented by the project.</p> <p>Project area</p>
<p><i>Adversely affect habitat critical to the survival of a species</i></p>	<p>No habitat has been described on the register of critical habitat for this threatened species. Recovery actions include survey for habitat critical to survival of <i>Brachyscome papillosa</i> and for the long-term maintenance of the ecological community important factors include genetic diversity and pollination.</p> <p>Despite the removal of 1178.01 hectares of potentially suitable habitat, the Project is unlikely to affect pollination and the genetic diversity of the species. Considering the presence of <i>Brachyscome papillosa</i> in the Project area is unconfirmed and considered unlikely, due to the lack of records within the locality, the Project is considered unlikely to affect habitat critical to <i>Brachyscome papillosa</i> survival.</p>
<p><i>Disrupt the breeding cycle of an important population</i></p>	<p>Beetle mediated pollination is important for fertilisation in the breeding cycle of <i>Brachyscome papillosa</i>. Seeds are dispersed by wind, or if ingested, through animal mediated seed dispersal. The Project may disrupt <i>Brachyscome papillosa</i> pollination or seed dispersal through the reduction in habitat, as it is considered likely that beetles exist in the Project area.</p>
<p><i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i></p>	<p>There is abundant potential habitat within the locality for this species, as such the removal of 1178.01 hectares within the Project area is unlikely to impact <i>Brachyscome papillosa</i> to the point that the species is likely to decline. The Project area has been subject to long-term grazing pressures which are identified as a Key Threatening Process (KTP) to <i>Brachyscome papillosa</i>.</p>
<p><i>Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat</i></p>	<p>The construction of wind turbines and increase vehicle and foot traffic have the potential to increase the biosecurity hazard risk of invasive species introduction. However, this is considered unlikely as hygiene protocols will be established to negate this risk.</p>
<p><i>Introduce disease that may cause the species to decline</i></p>	<p>The Project is unlikely to result in the establishment of invasive species that aren't already present in the area. Any risk will be minimised through the implementation of a CEMP with relevant hygiene protocols, which will detail measures to reduce the risk of new invasive species becoming established.</p>
<p><i>Interfere substantially with the recovery of the species.</i></p>	<p>It is unlikely that the removal of 1178.01 hectares of habitat will substantially interfere with the recovery of the species given that no records of the species exist within 10 km of the Project area.</p>
<p><b>Conclusion:</b></p>	
<p>The removal of 1178.01 hectares of habitat has the potential to reduce the area of occupancy of <i>Brachyscome papillosa</i> if a population is present within the Project area. As detailed surveys have not yet been carried out, significant impacts to this species cannot be ruled out.</p>	

**Criteria if there is a real chance or possibility that the action (the proposed works) will:**

**Response criteria**

The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.

# Threatened Fauna

## Plains Wanderer (*Pedionomus torquatus*)

### Plains Wanderer ecology

The Plains Wanderer (*Pedionomus torquatus*) is listed as Critically Endangered under the EPBC Act.

The distribution of Plains Wanderer stretches across north-central Victoria, southern NSW, eastern South Australia and west-central Queensland.

Preferred habitat for the Plains Wanderer consists of 50 per cent bare ground with vegetation growing to less than five centimetres in height with some widely spaced plants growing up to 30cm. The Plains Wanderer will use lower-quality habitat, such as cereal stubble in an agricultural landscape. The species will remain sedentary while habitat is suitable. Plains Wanderers breed in solitary pairs and nest in hollows or scrapes which have been scratched into the ground and lined. Nests tend to be placed amongst native grasses, herb and even crops, and may have grasses pulled over to form a roof-like structure. Clutch sizes range from two to five eggs, with the male Plains Wanderer the primary incubator and carer for the offspring.

### Plains Wanderer habitat in the Project area

BioNet identified 484 records of Plains Wanderer within 10km of the Project area, with one record occurring within the Project area. There are a total of 1055 records for the Plains Wanderer in the Edward River LGA. The Project area is therefore has a high likelihood to provide habitat to Plains Wanderers.

Within the Project area, one Plant Community Type (PCT) is associated with the Plains Wanderer which is PCT 46- Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion. PCT 46 is the dominant vegetation community across the Project area, is in good condition, and has areas which are consistent with the preferred habitat of Plain Wanderer.

### Plains Wanderer SIC

Assessment against the MNES Significant Impact Guidelines (DoE, 2013) for Critically 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>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>BioNet identified 484 records of Plains Wanderer within 10km of the Project area, with one record occurring within the Project area. The Project area supports habitat which may be considered critical to the survival of this species and could be inhabited by a local population. If a local population is present it would extend beyond the Project area onto adjoining properties where suitable higher quality habitat is mapped.</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	<p>Removal of habitat from the Project area may disrupt a local population and cause individuals to move into adjoining areas of habitat, however is considered unlikely to cause the population to decline.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>
<i>Reduce the area of occupancy of the species</i>	A total of 1169.55 hectares of habitat is proposed to be removed. Removal of suitable habitat will reduce the area of occupancy the species.
<i>Fragment an existing population into two or more populations</i>	Although 1169.55 hectares of habitat are proposed to be removed, as the species is mobile and known to move across the landscape to find more suitable habitat, the removal of habitat within the Project area is unlikely to fragment an existing population into two or more populations.
<i>Adversely affect habitat critical to the survival of a species</i>	<p><i>Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:</i></p> <ul style="list-style-type: none"> <li>• <i>for activities such as foraging, breeding, roosting, or dispersal</i></li> <li>• <i>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)</i></li> <li>• <i>to maintain genetic diversity and long-term evolutionary development, or</i></li> <li>• <i>for the reintroduction of populations or recovery of the species or ecological community</i></li> </ul> <p>Of the 1169.55 hectares of habitat proposed to be removed, which may be considered critical to the survival of the species , a small portion (1.85 hectares) is also mapped as "important habitat" to the species. "Important habitat" maps have been prepared as part of the NSW Biodiversity Offset Scheme and identify areas that are considered essential to support critical life stages of the species. The plains-wanderer important habitat map is based on 2001 plains-wanderer primary habitat mapping completed for NPWS (DPIE 2024).</p> <p>For this reason, the project is to considered to adversely impact habitat critical to the survival of Plains Wanderer.</p>
<i>Disrupt the breeding cycle of a population</i>	<p>A total of 1169.55 hectares of habitat which could be used for breeding by this species, is proposed to be removed. Of this area, 1.85 hectares is mapped as "important habitat" as per the NSW Biodiversity Offset Scheme which is considered essential to support critical life stages of the species.</p> <p>Therefore, the proposal has the potential to disrupt the breeding cycle of a population in areas considered essential to this species.</p>
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i>	The removal of 1169.55 hectares of habitat which may be considered critical to the survival of the species will decrease the availability of habitat to Plains Wanderer in the locality of the Project areaarea. Of the total area to be removed, 1.85 hectares is also mapped as "important habit" and is considered essential to this species survival and therefore its removal could results in the species to decline.

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
<p><i>Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat</i></p>	<p>The Project could result in the introduction and/or further spread of invasive species at the Project area.</p> <p>Exotic grass species and aggressive weeds present a risk to the habitat of Plains Wanderer and could be introduced or spread across to the site during construction and operation. 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 novel species becoming established, and also to prevent further spread of weeds already present within the Project area.</p> <p>Red Fox was sighted on multiple occasions at the Project area and feral cat is presumed to occur. The project is considered unlikely to exacerbate the impact of these pest animal species or any others on Plains Wanderer.</p>
<p><i>Introduce disease that may cause the species to decline</i></p>	<p>The removal of 1169.55 hectares of habitat is unlikely to introduce disease that may cause the species to decline.</p>
<p><i>Interfere substantially with the recovery of the species.</i></p>	<p>The removal of 1169.55 hectares of habitat which may be considered critical to the survival of the species, of which 1.85 hectares is mapped as "important habitat" for Plain Wandered, has the potential to interfere with the recovery of the species.</p>
<p><b>Conclusion:</b> The removal of 1169.55 hectares of habitat which may be considered critical to the survival of this species, of which 1.85 hectares is also mapped as "important habitat", will reduce the area of occupancy for the species, remove critical habitat, and may disrupt the breeding cycle. Therefore, it is not possible to rule out a significant impact to this species.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.</p>	

## Superb Parrot (*Polytelis swainsonii*) and Diamond Firetail (*Stagonopleura guttata*)

### Superb Parrot ecology

The Superb Parrot (*Polytelis swainsonii*) is listed as Vulnerable under the EPBC Act and NSW BC Act. It primarily occurs west of the Great Dividing Range in New South Wales (NSW) from Canberra (Australian Capital Territory, ACT), Goulburn and as far west as Nyngan and Swan Hill.

There are three main breeding areas: an area of the south-west slopes bounded by Molong, Rye Park, Yass, Coolac, Cootamundra and Young (NSW); along the Murrumbidgee River, between Wagga Wagga and Toganmain Station, and farther north at Goolgowi (NSW); and along the Murray and Edward Rivers, from east of Barmah and Millewa State Forest to south of Taylors Bridge (NSW and Victoria). In the Riverina, the superb parrot nests in loose colonies in large, living or dead trees with many hollow branches, typically near a watercourse. The same nest hollows are used in successive years and most nest sites tend to occur within 10km of box-gum woodland.

Superb parrots use a variety of woodland types and other habitat types, including artificial habitats such as crops and recreation reserves. They mostly feed on the ground, where they take a variety of native and introduced seeds, but also in shrubs and trees on seeds and blossom.

### 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.

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. Diamond Firetails use dense shrubs to roost or for building small nests. The diet of Diamond Firetails consists of grass, herb seeds and green leaves, as well as insects.

### Habitat in the Project area

BioNet identified one record of Superb Parrot within 10km of the Project area. There are a total of 209 records for the Superb Parrot in the Edward River LGA.

BioNet identified no records of Diamond Firetail within 10km of the Project area. There are a total of 23 records for the Diamond Firetail in the Edward River LGA.

It is possible that the Project area could provide habitat for these species.

Within the Project area, four PCTs are associated with these species. PCT 10- River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion), PCT 13- Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion), PCT 26- Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion and PCT 46- Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion are PCTs associated with habitat for these species.

### Species SIC

Assessment against the MNES Significant Impact Guidelines (DoE, 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:	Superb Parrot ( <i>Polytelis swainsonii</i> )	Diamond Firetail ( <i>Stagonopleura guttata</i> )
Lead to a long-term decrease in the size of an important population of a species	<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 two main Superb Parrot populations in New South Wales: Riverina population, and South West Slopes and Southern Tablelands population. Both are considered to be important as they are key source populations and important to the genetic diversity of the species.</p> <p>BioNet identified one record of Superb Parrot within 10km of the Project area and 209 records in the Edward River LGA. These records would likely be for individuals from the Riverina population.</p> <p>The proposal will remove up to 11.29 hectares of woodland vegetation that supports potential breeding (including hollow-bearing trees) and foraging habitat for Superb Parrot and an additional 1175.84 hectares of suitable foraging habitat.</p> <p>Due to the scale of impacts to breeding habitat in large hollow-bearing trees, it is possible that the project could lead long-term decrease in the size of an important population of these species.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>	<p>There are no listed "important populations" for Diamond Firetail in existing management plans or advice. This species comprises many smaller sub-populations that extend across its distribution. If a population is present on the Project area it is unlikely to be considered an important population.</p> <p>There are a no records (Bionet) of Diamond Firetail within 10km of the Project area and 23 records in the Edward River LGA.</p> <p>Potential breeding (dense shrubs) and foraging habitat occurs across 1187.13 hectares of the Project area. This habitat is general in nature and is extensive across the region.</p> <p>The Project is unlikely to result in the long-term decrease in size of an important population, however has potential to impact individuals of local population.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>
Reduce the area of occupancy of an important population	<p>The removal of 1187.13 hectares of habitat may reduce the area of occupancy of an important population of Superb Parrot.</p> <p>There are no listed "important populations" for Diamond Firetail.</p>	

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Superb Parrot ( <i>Polytelis swainsonii</i> )	Diamond Firetail ( <i>Stagonopleura guttata</i> )
	The removal of 1187.13 hectares of potential habitat may reduce the area of occupancy of a population of Diamond Firetail, however it is unlikely that the population would meet the criteria to be considered "important".	
<i>Fragment an existing population into two or more populations</i>	These species are mobile and the removal of 1187.13 hectares of habitat is unlikely to fragment any existing population into two or more populations	
<i>Adversely affect habitat critical to the survival of a species</i>	<p><i>Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:</i></p> <ul style="list-style-type: none"> <li>• <i>for activities such as foraging, breeding, roosting, or dispersal</i></li> <li>• <i>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)</i></li> <li>• <i>to maintain genetic diversity and long-term evolutionary development, or</i></li> <li>• <i>for the reintroduction of populations or recovery of the species or ecological community.</i></li> </ul> <p>While 1187.13 hectares of breeding and foraging habitat are proposed to be removed, this is unlikely to affect the survival of these species.</p>	
<i>Disrupt the breeding cycle of an important population</i>	<p>If individuals of Superb Parrot are present on the Project area, they are considered to be part of an important population, individuals of Diamond Firetail would not. It is possible that the removal of breeding habitat will disrupt the breeding cycle of an important population of Superb Parrot.</p> <p>These species require hollows, woodlands and dense shrubbery for nest building and breeding. A total of 11.29 hectares of woodland supporting specific breeding habitat (large hollows bearing trees) for Superb Parrot will be removed by the proposal. A total of 1187.13 hectares supporting general breeding habitat (dense shrubbery) of Diamond Firetail will be removed by the proposed works.</p>	
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i>	The removal of 1187.13 hectares of habitat will remove and decrease the availability of habitat to Superb Parrot and Diamond Firetail in the locality of the Project area. However, the removal of this area is considered unlikely to cause the species to decline.	
<i>Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat</i>	The Project is unlikely to result in the establishment of invasive species that aren't already present in the area. Any risk will be minimised through the implementation of a Construction Environmental Management Plan (CEMP),, which will detail measures to reduce the risk of novel species becoming established, and also to prevent further spread of weeds already present within the Project area.	
<i>Introduce disease that may cause the species to decline</i>	<p>While Psittacine beak and feather disease is a key threat to the Superb Parrot the nature of the works involved with the Project (construction) makes it unlikely to introduce it to a population if present.</p> <p>This disease is transmitted through contact, feed sharing and excrement. The project is not considered likely to increase contact between parrot species.</p>	

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Superb Parrot ( <i>Polytelis swainsonii</i> )	Diamond Firetail ( <i>Stagonopleura guttata</i> )
<i>Interfere substantially with the recovery of the species.</i>	<p>There is a National Recovery Plan for the Superb Parrot. The removal of habitat is not consistent with recovery actions included in the plan.</p> <p>However, the removal of 1187.13 hectares of habitat is unlikely to interfere substantially with the recovery of this species.</p>	
<p><b>Conclusion:</b> The project will removal of 1187.13 hectares which supports potential breeding and foraging habitat of these species. If individuals of Superb Parrot are present on the Project area, impacts to 11.29 hectares of woodland supporting important breeding habitat in hollow-bearing trees, has the potential adversely impact an important population. An important population of Diamond Firetails is considered unlikely to occur on the Project area.</p> <p>Although the Project could adversely impact these species, the localised scale of impacts and the high mobility of these species make it unlikely to be considered significant; and unlikely to place either species at risk of extinction.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>		

## Grey Falcon (*Falco hypoleucos*)

### Grey Falcon ecology

The Grey Falcon (*Falco hypoleucos*) is listed as Vulnerable under the EPBC Act and the NSW BC Act. The distribution of the species includes the Murray-Darling Basin, Eyre Basin, central Australia and Western Australia and generally occurs in arid and semi-arid Australia. The species prefers timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses. The species has also been observed in treeless areas such as tussock grassland. The diet of the Grey Falcon consists mainly of birds such as doves, pigeons, small parrots and cockatoos but also can include small mammals and lizards. Grey Falcons will nest in old nests made by other birds but will chose a nest that is located in a tall tree or structure.

### Grey Falcon habitat in the Project area

BioNet identified no records of Grey Falcon within 10km of the Project area. There are a total of 2 records for the Grey Falcon in the Edward River LGA.

It is possible that the Project area could provide habitat for this species.

Within the Project area, five PCTs are associated with this species. PCT 10- River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion), PCT 13- Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion), PCT 26- Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion, PCT 46- Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion and PCT 160 Nitre Goosefoot shrubland wetland on clays of the inland floodplains are PCTs associated with habitat for this species.

### Grey Falcon SIC

Assessment against the MNES Significant Impact Guidelines (DoE, 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:	Grey Falcon ( <i>Falco hypoleucos</i> )
Lead to a long-term decrease in the size of an important population of a species	<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>BioNet identified no records of Grey Falcon within 10km of the Project area and 2 records in the Edward River LGA. There are no identified "important populations" for Grey Falcon in existing management plans or advice. This species at low densities across inland Australia and it is considered unlikely that the project will impact individuals or habitat important to their persistence in the region. For these reasons, the removal of 1226.29 hectares of potential habitat is considered unlikely to lead to a long-term decrease in the size of an important population of this species.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Grey Falcon ( <i>Falco hypoleucos</i> )
	preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.
	Project area
<i>Reduce the area of occupancy of an important population</i>	There are no listed “important populations” for Grey Falcon. The removal of 1226.29 hectares of potential habitat is considered unlikely to reduce the area of occupancy of a population of Grey Falcon, that may meet the criteria to be considered “important”.
<i>Fragment an existing population into two or more populations</i>	This species is mobile and the removal of 1226.29 hectares of habitat is unlikely to fragment any existing population into two or more populations.
<i>Adversely affect habitat critical to the survival of a species</i>	<p><i>Habitat critical to the survival of a species or ecological community’ refers to areas that are necessary:</i></p> <ul style="list-style-type: none"> <li>• <i>for activities such as foraging, breeding, roosting, or dispersal</i></li> <li>• <i>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)</i></li> <li>• <i>to maintain genetic diversity and long-term evolutionary development, or</i></li> <li>• <i>for the reintroduction of populations or recovery of the species or ecological community.</i></li> </ul> <p>While 1226.29 hectares of habitat are proposed to be removed, this is unlikely to be considered habitat critical to the survival of this species. Similar habitat values are present and abundant in the region. Therefore, impacts to potential habitat of Grey Falcon from the Project is considered unlikely to adversely affect the survival of the species.</p>
<i>Disrupt the breeding cycle of an important population</i>	There are no listed “important populations” for Grey Falcon. Raptor nests were identified on site in semi-arid woodlands and forested wetlands which may be used by this species. These nests may be removed as part Project. If these nest are found to be occupied by Grey Falcon, the project may impact the breeding cycle of a population of Grey Falcon, that may meet the criteria to be considered “important”.
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i>	Up to 1226.29 hectares of potential habitat fo Grey Falcon is proposed to be removed by the Project. While the project will decrease the availability habitat, it is unlikely that it will to the extent that it will cause this species to decline because of the extensive area of similar habitat in the region and high mobility of the species.
<i>Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species’ habitat</i>	The Project is unlikely to result in the establishment of invasive species that aren’t already present in the area. Any risk will be minimised through the implementation of a Construction Environmental Management Plan (CEMP), which will detail measures to reduce the risk of novel species becoming established, and also to prevent further spread of invasive species already present within the Project area.

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Grey Falcon ( <i>Falco hypoleucos</i> )
<i>Introduce disease that may cause the species to decline</i>	The Project is unlikely to introduce any disease that may cause the species to decline.
<i>Interfere substantially with the recovery of the species.</i>	A Recovery Plan has not been prepared for the species. The removal of 1226.29 hectares of habitat is unlikely to interfere substantially with the recovery of this species.
<p><b>Conclusion:</b> The project will remove up to 1226.29 hectares of potential breeding and foraging habitat of the Grey Falcon. If individuals are present, impacts to 1226.29 hectares of habitat has the potential adversely impact a population. Although the Project could adversely impact this species, the localised scale of impacts and the high mobility of the Falcon make it unlikely to be considered significant; and unlikely to place the species at risk of extinction.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.</p>	

## Swift Parrot, Eastern Major Mitchell's Cockatoo and South-eastern Hooded Robin

### Species ecology

The Swift Parrot (*Lathamus discolor*) is listed as endangered under the BC Act and critically endangered under the EPBC Act. The Swift Parrot occurs as a single migratory population that breeds in Tasmania and migrates to the mainland in autumn and winter; extending from Victoria to the eastern parts of South Australia and south-east Queensland. In NSW, the species mostly occurs on the coast and south-west slopes. Key habitat for Swift Parrots on the coast and coastal plains of NSW includes Spotted Gum *Corymbia maculata*, Swamp Mahogany *Eucalyptus robusta* and Forest Red Gum *E. tereticornis* forests. The Swift Parrot is a highly mobile species able to utilise a variety of nectar sources over large areas. On the mainland they occur in areas where prolific eucalypt flowering events occur, or where there is an abundance of sap-sucking bug (Ierp) infestations.

The Eastern Major Mitchell's Cockatoo (*Lophochroa leadbeateri leadbeateri*) is listed as Endangered under the EPBC Act. The distribution of the Eastern Major Mitchell's Cockatoo ranges from the Murray-Darling, Eyre and Bulloo River basins, from Isisford and Roma in the north, through western New South Wales to north-west Victoria and west to eastern South Australia. Within these vegetation types, the main requirements are fresh surface water, and trees with suitable nesting hollows. The species prefer to feed in or close to wooded areas, and they also use wooded areas for travel between feeding areas and nesting or roosting sites. In fragmented landscapes, the birds tend to travel along vegetated corridors to move between nesting and feeding sites, including roadside remnants. Eastern Major Mitchell's Cockatoos feeds on seeds of native shrubs and trees and on occasion, roots, bulbs, insect larvae and seeds of crops and weeds.

The South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) is listed as Endangered under the EPBC Act and NSW BC Act. The Hooded Robin is found across Australia except for driest and wettest areas. Rarely found on the coast, it occurs throughout most of inland NSW. Breeding and foraging habitat includes woodland, mallee or open forest with occasional to frequent patches of trees or shrubs with open areas of native grasses and fallen or standing dead timber. The diet of South-eastern Hooded Robins consists of insects and lizards.

### Species habitat in the Project area

BioNet identified no records of Swift Parrot within 10km of the Project area or within the Edward River LGA. The Project area is outside of the important habitat mapping for this species

BioNet identified no records of Eastern Major Mitchell's Cockatoo within 10km of the Project area or in the Edward River LGA. However, this may be due the lack of differentiation of sub species on BioNet. *Lophochroa leadbeateri* has 9 BioNet records within the LGA. There is no habitat data for *Lophochroa leadbeateri leadbeateri*, but habitat data for *Lophochroa leadbeateri* does exist. Two PCTs (PCT 13 and 26) in the Project area are associated with *Lophochroa leadbeateri*.

BioNet identified no records of South-eastern Hooded Robin within 10km of the Project area. There are a total of 11 records for the South-eastern Hooded Robin in the Edward River LGA. It is possible that the Project area could provide habitat for the species.

Three PCTs are associated with these species. PCT 10- River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion), PCT 13- Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion), PCT 26- Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion are PCTs associated with habitat for these species.

## Species SIC

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

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Swift Parrot ( <i>Lathamus discolor</i> )	Eastern Major Mitchell's Cockatoo ( <i>Lophochroa leadbeateri leadbeateri</i> )	South-eastern Hooded Robin ( <i>Melanodryas cucullata cucullata</i> )
Lead to a long-term decrease in the size of a population	<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>The Swift Parrot occurs as a single, panmictic migratory population.</p> <p>BioNet identified no records of Swift Parrot within 10km of the Project area or within the Edward River LGA.</p> <p>Despite no recent, proximal records (Bionet) for Swift Parrot within 10km of the Project area, this species was returned on PMST searches as having potential to occur in the locality. In lieu of targeted survey being undertaken, this species is considered to have potential to utilise suitable habitat within the Project area.</p> <p>The Project will remove up to 17.58 hectares of potential foraging habitat in forested woodland vegetation. This species is not known to breed on the Australian mainland, and therefore no impacts to breeding habitat will occur.</p> <p>The removal of this area of foraging habitat is considered unlikely to lead to a long-term decrease in the size of the single Swift Parrot population.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm</p>	<p>It is unclear whether the population of Major Mitchell Cockatoo is a single population or comprises several sub-populations.</p> <p>BioNet identified no records of Eastern Major Mitchell's Cockatoo within 10km of the Project area or in the Edward River LGA.</p> <p>Despite no recent, proximal records (Bionet) for eastern Major Mitchell's Cockatoo within 10km of the Project area, this species was returned on PMST searches as having potential to occur in the locality. In lieu of targeted survey being undertaken, this species is considered to have potential to utilise suitable habitat within the Project area.</p> <p>The Project will remove up to 17.58 hectares of potential foraging and specific breeding habitat (including hollow-bearing trees) in forested woodland vegetation.</p> <p>Due to the scale of impacts to specific breeding habitat in large hollow-bearing trees, it is possible that the project could lead long-term decrease in the size of a population of this species, if present in the Project area.</p> <p>The current disturbance footprint, for which impacts to</p>	<p>The population of South—eastern Hooded Robin is made up of at least 10 sub-populations. Genetic exchange is assumed between most sub-populations, however there are some which are some which are considered to be genetically isolated.</p> <p>BioNet identified no records of South-eastern Hooded Robin within 10km of the Project area and 11 records in the Edward River LGA.</p> <p>Potential breeding (dense shrubs) and foraging habitat occurs across 17.58 hectares of the Project area.</p> <p>Due to the scale of impacts to breeding habitat, it is possible that the project could lead long-term decrease in the size of a population of this species, if present in the Project area.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Swift Parrot ( <i>Lathamus discolor</i> )	Eastern Major Mitchell's Cockatoo ( <i>Lophochroa leadbeateri leadbeateri</i> )	South-eastern Hooded Robin ( <i>Melanodryas cucullata cucullata</i> )
	presence or absence of the species, and as the project design is developed further.	this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.	absence of the species, and as the project design is developed further.
<i>Reduce the area of occupancy of the species</i>	<p>The removal of 17.58 hectares of habitat is unlikely to reduce the area of occupancy for Swift Parrot as they have wide foraging ranges and are likely to use the habitat within the Project area infrequently.</p> <p>It is possible that a local populations of Major Mitchells Cockatoo and South-eastern Hooded Robin occurs within the Project area and removal of 11.29 hectares of foraging and breeding habitat could reduce the area of occupancy of this species.</p>		
<i>Fragment an existing population into two or more populations</i>	<p>These species are mobile and so the removal of 17.58 hectares of habitat is unlikely to fragment an existing population into two or more populations.</p>		
<i>Adversely affect habitat critical to the survival of a species</i>	<p>The Project area is outside of the important habitat mapping for this species. "Important habitat" maps have been prepared as part of the Biodiversity Offset Scheme and identify areas that are considered essential to support critical life stages of the species. Swift Parrot important habitat includes areas with sightings of five or more birds recorded over any two or more years, or single sightings of 40 or more birds.</p> <p>For this reason, the project is considered unlikely to adversely impact habitat critical to the survival of Swift Parrot.</p>	<p>Both South-eastern Hooded Robin and Major Mitchells Cockatoo area mobile bird species, capable of moving between extensive areas of similar breeding and foraging habitat within the region. Therefore, removal of 17.58 hectares of potential habitat from the Project area is considered unlikely to adversely impact habitat critical to the survival of these species.</p>	
<i>Disrupt the breeding cycle of a population</i>	<p>This species does not breed on mainland Australia, therefore impacts to the breeding cycle of Swift Parrot will not occur.</p>	<p>A total of 11.29 hectares of breeding habitat is proposed to be removed by the Project, which has the potential to disrupt the breeding cycle of local populations of South-eastern Hooded Robin and Major Mitchells Cockatoo if present.</p>	

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Swift Parrot ( <i>Lathamus discolor</i> )	Eastern Major Mitchell's Cockatoo ( <i>Lophochroa leadbeateri leadbeateri</i> )	South-eastern Hooded Robin ( <i>Melanodryas cucullata cucullata</i> )
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i>	Up to 17.58 hectares of potential habitat to Swift Parrot, Major Mitchells Cockatoo and South-eastern Hooded Robbin is proposed to be removed by the Project. While the project will decrease the availability habitat, it is unlikely that it will to the extent that it will cause these species to decline because of the extensive area of similar habitat in the region and high mobility of the species.		
<i>Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat</i>	The Project is unlikely to result in the establishment of invasive species that aren't already present in the area. Any risk will be minimised through the implementation of a Construction Environmental Management Plan (CEMP), which will detail measures to reduce the risk of novel species becoming established, and also to prevent further spread of invasive species already present within the Project area.		
<i>Introduce disease that may cause the species to decline</i>	While Psittacine beak and feather disease is a key threat to the Swift Parrot the nature of the works involved with the Project (construction) makes it unlikely to introduce it to a population if present. This disease is transmitted through contact, feed sharing and excrement. The project is not considered likely to increase contact between parrot species	The Project is unlike to introduce disease that may cause Major Mitchell's Cockatoo and South-eastern Hooded Robin to decline.	
<i>Interfere substantially with the recovery of the species.</i>	There is a National Recovery Plan for the Swift Parrot ( <i>Lathamus discolor</i> ). The removal of habitat is not consistent with recovery actions included in the plan.  Although, the removal of 17.58 hectares of habitat is unlikely to interfere substantially with the recovery of these species, especially as clearing is proposed outside of important habitat mapped areas.	There is currently no Recovery Plan for South-eastern Hooded Robin or cause Major Mitchell's Cockatoo despite the decision that a Recovery Plan is required.  The removal of 17.58 hectares of habitat is unlikely to interfere substantially with the recovery of these species.	

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Swift Parrot ( <i>Lathamus discolor</i> )	Eastern Major Mitchell's Cockatoo ( <i>Lophochroa leadbeateri leadbeateri</i> )	South-eastern Hooded Robin ( <i>Melanodryas cucullata cucullata</i> )
<p><b>Conclusion:</b> The removal of 17.58 hectares of potential foraging habitat of Swift Parrot, outside of areas mapped as “important habitat”, is unlikely to constitute a significant impact.</p> <p>The Project will removal of 17.58 hectares which supports potential breeding and foraging habitat of these species. If individuals of Major Mitchell’s Cockatoo are present on the Project area, impacts to 11.29 hectares of woodland supporting breeding habitat, has the potential adversely impact a population.</p> <p>Although the Project could adversely impact these species, the localised scale of impacts, extensive areas of similar habitat in the region, and the high mobility of these species make it unlikely to be considered significant; and unlikely to place either species at risk of extinction.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.</p>			

## Koala, Australian Painted Snipe, Australasian Bittern

### Species ecology

The Koala (*Phascolarctos cinereus*) is listed as Endangered under the EPBC Act. The Koala is a herbivorous arboreal marsupial with a broad distribution along Australia's east coast. Koalas are known to primarily eat foliage from *Eucalyptus* species, however *Angophora*, *Melaleuca*, *Corymbia* and *Lophostemon*, may occasionally be consumed with browse preference variable across their geographic range. Additionally, Koalas may utilise non-eucalypt species for their specific thermal properties to help Koalas thermoregulate.

The Australian Painted Snipe (*Rostratula australis*) is listed as Endangered under the EPBC Act and NSW BC Act. The distribution of the Australian Painted Snipe is spread across all states and territories but is most common in east Australia. Important areas for this species include the Murray-Darling Basin, Queensland Channel Country, Fitzroy Basin of Central Queensland, south-eastern South Australia and adjacent parts of Victoria. The habitat for the Australian Painted Snipe includes shallow freshwater wetlands such as lakes, swamps, claypans, inundated or waterlogged grassland/saltmarsh, dams, rice crops, sewage farms and bore drains, generally with a good cover of grasses, rushes and reeds, low scrub or open timber.

The Australasian Bittern (*Botaurus poiciloptilus*) is listed as Endangered under the EPBC Act and NSW BC Act. The distribution of the Australasian Bittern ranges from south-east Queensland to south-east South Australia as far as the Adelaide Region, southern Eyre Peninsula, Tasmania and in the southwest of Western Australia. In New South Wales, it occurs along the coast and is also frequently recorded in the Murray Darling Basin, notably in floodplain wetlands of the Murray, Murrumbidgee, Lachlan, Macquarie and Gwydir Rivers. The Australasian Bittern favours wetlands with tall, dense vegetation but will inhabit modified environments such as rice fields. Its diet consists of aquatic animals including small fish, frogs, spiders and small reptiles. The Australasian Bittern is capable of moving between habitats as suitability changes.

### Species habitat in the Project area

BioNet identified no records of Koala within 10km of the Project area or within the Edward River LGA.

BioNet identified no records of Australian Painted Snipe within 10km of the Project area. There are a total of 6 records for the Australian Painted Snipe in the Edward River LGA. It is possible that the Project area could provide habitat for the species.

BioNet identified no records of Australian Bittern within 10km of the Project area. There are a total of 17 records for the Australian Bittern in the Edward River LGA. It is possible that the Project area could provide habitat for the species.

Within the Project area, three PCTs are associated with these species. PCT 10- River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion), PCT 13- Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) and PCT 160 Nitre Goosefoot shrubland wetland on clays of the inland floodplains are associated with habitat for these species.

### Species 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:	Koala ( <i>Phascolarctos cinereus</i> )	Australian Painted Snipe ( <i>Rostratula australis</i> )	Australasian Bittern ( <i>Botaurus poiciloptilus</i> )
<p><i>Lead to a long-term decrease in the size of a population</i></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>BioNet identified no records of Koala within 10km of the Project area or within the Edward River LGA. As such, it is unclear whether there is a population present.</p> <p>The removal of 50.44 hectares of habitat is unlikely to lead to a long-term decrease in the species considering the extensive areas of similar habitat in the region.</p> <p>At the state level, New South Wales has identified critical koala populations as "areas of currently known high koala occupancy" (DPIE 2020). Considering there is unknown occupancy, the Project area is not considered unlikely to support an important population.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>	<p>BioNet identified no records of Australian Painted Snipe within 10km of the Project area and 6 records in the Edward River LGA.</p> <p>As such, it is unclear whether there is a population present and if present as to if the Painted Snipe acts as a single population or comprises several sub-populations.</p> <p>The removal of 50.44 hectares of habitat is unlikely to lead to a long-term decrease in the species considering the extensive areas of similar habitat in the region, and the high mobility of this species.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>	<p>BioNet identified no records of Australian Bittern within 10km of the Project area and 17 records in the Edward River LGA.</p> <p>As such, it is unclear whether there is a population present and if present as to if the Australian Bittern acts as a single population or comprises several sub-populations.</p> <p>The removal of 50.44 hectares of habitat is unlikely to lead to a long-term decrease in the species considering the extensive areas of similar habitat in the region, and the high mobility of this species.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Koala ( <i>Phascolarctos cinereus</i> )	Australian Painted Snipe ( <i>Rostratula australis</i> )	Australasian Bittern ( <i>Botaurus poiciloptilus</i> )
<i>Reduce the area of occupancy of the species</i>	<p>It is possible that a local population of Koala, Australian Painted Snipe and Australasian Bittern occurs within the Project area and removal of 50.44 hectares of foraging and breeding habitat could reduce the area of occupancy of this species. However, no records of these species exist within 10km of the Project area.</p> <p>The removal of 50.44 hectares of habitat is unlikely to reduce the area of occupancy for Australian Painted Snipe and Australasian Bittern as they have wide foraging ranges and are likely to use the habitat within the Project area infrequently.</p>		
<i>Fragment an existing population into two or more populations</i>	<p>No known population is present within the LGA. Therefore, the Project is unlikely to fragment any existing population.</p>	<p>These removal of 50.44 hectares of potential habitat is unlikely to fragment any existing populations of these species considering the localised scale of impacts, extensive areas of similar habitat in the region, and the high mobility of these bird species.</p>	
<i>Adversely affect habitat critical to the survival of a species</i>	<p>The removal of 50.44 hectares of habitat is unlikely to adversely affect habitat critical to the survival of this species considering the extensive areas of similar habitat in the region.</p>	<p>Both Australian Painted Snipe and Australasian Bittern are mobile bird species, capable of moving between extensive areas of similar breeding and foraging habitat within the region. Therefore, removal of 50.44 hectares of potential habitat from the Project area is considered unlikely to adversely impact habitat critical to the survival of these species.</p>	
<i>Disrupt the breeding cycle of a population</i>	<p>Koalas are territorial and need to set up a territory in which to breed.</p> <p>It is unlikely that the full 50.44 hectares of habitat suitable to Koalas is suitable breeding habitat. As such, the breeding cycle is unlikely to be impacted by the proposed works.</p> <p>Furthermore, most of the <i>Eucalypt</i> vegetation will be retained by the project and is adjoining contiguous vegetation. This accommodates female Koala movement to breeding territories.</p>	<p>Australian Painted-Snipe breed in recently flooded wetlands, with shallow water and exposed mud. It is unlikely that the full 50.44 hectares of habitat suitable for Painted-Snipe is suitable breeding habitat.</p> <p>As such, the breeding cycle is unlikely to be impacted by the proposed works considering the abundance of similar habitat within the region.</p>	<p>The Australasian Bittern nest is a shallow structure within a clump of reeds in water or a swamp and is built on a platform of bent-over reeds.</p> <p>Considering that the identified 50.44 hectares of habitat suitable to the Australasian Bittern is not swamp it is unlikely that this is representative of suitable breeding habitat. Furthermore, there is an abundance of similar habitat within the region. As such, the breeding cycle is unlikely to be impacted by the proposed</p>
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat</i>	<p>Up to 50.44 hectares of habitat for these species are proposed to be removed, by the Project. While the project will decrease the availability habitat, it is unlikely that it will to the extent that it will cause these species to decline because of the extensive area of similar habitat.</p>		

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Koala ( <i>Phascolarctos cinereus</i> )	Australian Painted Snipe ( <i>Rostratula australis</i> )	Australasian Bittern ( <i>Botaurus poiciloptilus</i> )
<i>to the extent that the species is likely to decline</i>			
<i>Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat</i>	The Project is unlikely to result in the establishment of invasive species that aren't already present in the area. Any risk will be minimised through the implementation of a CEMP, which will detail measures to reduce the risk of new invasive species becoming established.		
<i>Introduce disease that may cause the species to decline</i>	The Project is unlikely to introduce disease that may cause the species to decline. Identified key threats to Koalas include: Koala retrovirus (KoRV) and Chlamydia ( <i>Chlamydia pecorum</i> ). Considering these diseases are transmitted via Koala contact and this Project is unlikely to increase the interaction of Koalas, the Project is not considered likely to introduce disease or increase the risk of transmission.		
<i>Interfere substantially with the recovery of the species.</i>	<p>There is a National Recovery Plan for the Koala. The removal of habitat is not consistent with recovery actions included in the plan.</p> <p>However, the removal of 50.44 hectares of habitat is unlikely to interfere substantially with the recovery of this species.</p>	<p>There is a National Recovery Plan for the <i>Rostratula australis</i>.</p> <p>The removal of habitat is not consistent with recovery actions included in the plan.</p> <p>However, the removal of 50.44 hectares of habitat is unlikely to interfere substantially with the recovery of this species.</p>	<p>There is a National Recovery Plan for the <i>Botaurus poiciloptilus</i>.</p> <p>The removal of habitat is not consistent with recovery actions included in the plan.</p> <p>However, the removal of 50.44 hectares of habitat is unlikely to interfere substantially with the recovery of this species.</p>
<p><b>Conclusion:</b> The Project will removal of 50.44 hectares which could support potential breeding and foraging habitat of these species. If individuals of Koala (<i>Phascolarctos cinereus</i>), Australian Painted Snipe (<i>Rostratula australis</i>) and Australasian Bittern (<i>Botaurus poiciloptilus</i>) are present on the Project area, impacts to 50.44 hectares of woodland supporting breeding habitat, has the potential adversely impact a population.</p> <p>Although the Project could adversely impact these species, the localised scale of impacts, extensive areas of similar habitat in the region, and the high mobility of the bird species make it unlikely to be considered significant; and unlikely to place either species at risk of extinction.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.</p>			

## Grey Snake (*Hemiaspis damelii*)

### Grey Snake ecology

The Grey Snake (*Hemiaspis damelii*) is listed as Endangered under the EPBC Act and NSW BC Act.

The distribution of the Grey Snake ranges from southern NSW to south-eastern Queensland but is likely only to occur in fragmented populations throughout these areas. These populations have been recorded in the lower reaches of major rivers including the Gwydir, Namoi, Castlereagh, Macquarie, Lachlan and Murrumbidgee River systems.

In inland northern NSW, the Grey Snake's habitat is unknown. In the Lowbidgee floodplain region of NSW the Grey Snake's habitat includes the margins of ephemeral wetlands within River Red Gum and Black Box vegetation communities and from Tangled Lignum swamps. Key attributes of grey snake habitat are the floodplains and ephemeral wetlands which provide breeding habitat for the frog species that are its main prey, the presence of the frog species themselves, and the heavy clay soils which provide and cracks and crevices that the species uses in its hunting strategy and for shelter.

The grey snake gives birth to between 4-16 live young between January and March. Their diet mainly consists of frogs. The Grey Snake is mostly active at dusk or night and may be found sheltering under cover or in soils cracks during the day. The Grey Snake forages for floodplain frogs within soil cracks, in the open or beneath vegetation, typically during warm weather and especially after heavy rain or when soil cracks become inundated.

### Grey Snake habitat in the Project area

There are no BioNet records for the Grey Snake within 10km of the Project area or within the Edward River LGA. However, given that there are only 68 BioNet records for the entirety of NSW, and the lack of available habitat data, it is difficult to conclude whether the Grey Snake would or would not be using resources in the Project area.

### Grey Snake 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>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>In NSW this species occurs as separate sub-populations predominantly associated with the lower reaches of major westerly flowing rivers, including the Gwydir, Namoi, Castlereagh, Macquarie, Lachlan and Murrumbidgee River systems.</p> <p>There are no BioNet records for the Grey Snake within 10km of the Project area or within the Edward River LGA.</p> <p>Despite no recent, proximal records (Bionet) for Grey Snake within 10km of the Project area, this species was returned on PMST searches as having potential to</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	<p>occur in the locality. In lieu of targeted survey being undertaken, this species is considered to have potential to utilise suitable habitat within the Project area.</p> <p>The proposal will remove up to 39.16 hectares of habitat which may be used by this species for foraging and breeding. Due to the scale of impacts to potential breeding habitat, the low mobility of this species, it is possible that the project could lead long-term decrease in the size of a population of this species, if present in the Project area.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>
<i>Reduce the area of occupancy of the species</i>	The removal of 39.16 hectares of habitat in floodplains and ephemeral wetlands may reduce the area of occupancy for Grey Snake, if a population is present in the Project area.
<i>Fragment an existing population into two or more populations</i>	Components of the Project will transect areas of habitat and may form barriers to movement of individuals of Grey Snake. Therefore, impacts from the Project has the potential to fragment an existing population into two or more populations.
<i>Adversely affect habitat critical to the survival of a species</i>	While 39.16 hectares of potential breeding habitat may be impacted by the Project, it is unlikely to affect the survival of the species as a whole.
<i>Disrupt the breeding cycle of a population</i>	The removal of 39.16 hectares of potential habitat may disrupt the breeding cycle of a population if one is present.
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i>	While 39.16 hectares of potential habitat may be impacted, it is unlikely that this impact would cause the species to decline.
<i>Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat</i>	The Project is unlikely to result in the establishment of invasive species that aren't already present in the area. Any risk will be minimised through the implementation of a Construction Environmental Management Plan (CEMP), which will detail measures to reduce the risk of novel species becoming established, and also to prevent further spread of invasive species already present within the Project area.
<i>Introduce disease that may cause the species to decline</i>	The Project is unlikely to introduce disease that may cause the species to decline.
<i>Interfere substantially with the recovery of the species.</i>	<p>A Recovery Plan has not been prepared for the species.</p> <p>The removal of suitable habitat for Grey Snake by the Project adversely impacts this species, and if individuals are found to be present, has the potential to substantially interfere with the recovery of the species.</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	<p><b>Conclusion:</b> Habitat for the Grey Snake occurs across 39.16 hectares of the Project area. Due to the low mobility of this species and the large scale of impacts to potentially occupied habitat, it is not possible to rule out a significant impact to this species.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.</p>

## Southern Bell Frog (*Litoria raniformis*)

### Southern Bell Frog ecology

The Southern Bell Frog (*Litoria raniformis*) is listed as Vulnerable under the EPBC Act.

The Southern Bell Frog is distributed from NSW and the ACT to Victoria, South Australia and Tasmania. In NSW, the range is centred on the Murray and Murrumbidgee River valleys and their tributaries. Habitat for species is found amongst aquatic emergent vegetation, in or at the edges of still or slow-flowing water bodies. The species can occur in a range of environments including clays or well-watered sandy soils, open grassland, open forest, and ephemeral and permanent non-saline marshes and swamps, montane eucalypt forest, steep-banked water edges and gently graded edges containing fringing plants.

Southern Bell Frogs are active during both day and night throughout the warmer months and can be seen basking out of water amongst vegetation or on rocks and logs. Submerged vegetation is important habitat for breeding success and grassland provides habitat for foraging, dispersal and shelter. The species can also inhabit agricultural and higher rainfall pastoral lands so long as permanent and non-permanent water sites are available with dense emergent or fringing vegetation. They generally breed between November and March, following local flooding. Females lay an average of approximately 3400 eggs, with a maximum of approximately 4500 eggs. The species feeds on invertebrates such as beetles, termites, cockroaches as well occasionally other frogs, lizards, snakes and small fish.

### Southern Bell Frog habitat in the Project area

BioNet identified no records of Southern Bell Frog within 10km of the Project area. There are a total of 520 records for the Southern Bell Frog in the Edward River LGA. It is possible that the Project area could provide habitat for the species.

Two PCTs in the Project area are associated with the Southern Bell Frog. PCT 10- River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) and PCT 13- Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) are associated with habitat for this species.

### Southern Bell Frog SIC

Assessment against the MNES Significant Impact Guidelines (DoE, 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>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>Any viable population of Southern Bell Frog is considered to be an important population for the persistence and recovery of the species. A viable population is one which is not isolated from other populations or waterbodies, such that it has the opportunity to interact with other nearby populations or has the ability to establish new populations when the suitability or availability of waterbodies changes.</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	<p>The removal of 11.28 hectares of potential habitat, which may support individuals, has the potential to impact the size of an important population in the short term. However, if this species is present on the Project area it is likely to occur in similar habitat on adjoining properties and in the region. As such, impacts to population size in the short term, would likely recover and therefore not lead to a long-term decrease.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>
<i>Reduce the area of occupancy of an important population</i>	<p>If a viable population of Southern Bell Frog is present in the Project area, the removal of of 11.28 hectares of habitat will reduce the area of occupancy of an important population.</p> <p>A detailed survey campaign is required to determine whether Southern Bell Frog occurs on the Project area.</p>
<i>Fragment an existing population into two or more populations</i>	<p>The removal of 11.28 hectares of habitat is unlikely to fragment an existing population of Southern Bell Frog into two or more populations. The habitat to be impacted by the project is located on the edge of Yanco Creek. No patches of habitat, which could be occupied, will become isolated as a result of the project, Large areas of adjoining habitat will be retained along Yanco Creek which will movement and dispersal of this species in the broader property.</p>
<i>Adversely affect habitat critical to the survival of a species</i>	<p>Critical habitat for Southern Bell Frog comprises both permanent and ephemeral waterbodies that undergo regular flooding, and are surrounded by areas containing suitable refugia in the form of ground debris, vegetation cover and cracking soils.</p> <p>The project will remove 11.28 hectares of forested wetland which meets the criteria for critical habitat of Southern Bell Frog. However, it is likely that a large portion of this area is less suitable for the species, based on distance from Yanco Creek and lack of holding waterbodies.</p>
<i>Disrupt the breeding cycle of an important population</i>	<p>The project will not impact Yanco Creek or adjoining natural ephemeral waterbodies which could be used by Southern Bell Frog for breeding. As such, it is unlikely the unlikely that the project will disrupt the breeding cycle of an important population, if present.</p>
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i>	<p>Up to 11.28 hectares of potential habitat to Southern Bell Frog is proposed to be removed by the Project. While the project will decrease the availability habitat, it is unlikely that it will to the extent that it will cause these species to decline because of the extensive area of similar habitat presnet along Yanco Creek in the broader property and in the region .</p>
<i>Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat</i>	<p>The Project is unlikely to result in the establishment of invasive species that aren't already present in the area. Any risk will be minimised through the implementation of a Construction Environmental Management Plan (CEMP), which will detail measures to reduce the risk of novel species becoming</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	established, and also to prevent further spread of invasive species already present within the Project area
<i>Introduce disease that may cause the species to decline</i>	While Chytrid fungus is a key threat to this species, the Project is unlikely to introduce it to any population present. Chytrid fungus spores are transferred between waterbodies and can be transported from infected sites to clean sites through a variety of vectors (animals, human movement, dirty equipment and plant). The project will not disturb or remove vegetation within natural waterways which will minimise the risk of transferring this disease, and water discharge from the Project area will be managed as per CEMP. The CEMP will include measures to ensure plant and equipment is clean when arriving to site to minimise the risk of pathogens being transported from offsite areas.
<i>Interfere substantially with the recovery of the species.</i>	There is a National Recovery Plan for the <i>Litoria raniformis</i> . The removal of habitat is not consistent with recovery actions included in the plan.  Although, the removal of 11.28 hectares of habitat is unlikely to interfere substantially with the recovery of these species.
<p><b>Conclusion:</b> The Project will removal of 11.28 hectares of habitat for Southern Bell Frog. If individuals of Southern Bell Frog are present on the Project area, impacts to 11.28 hectares of forested wetland supporting potential breeding and foraging breeding habitat, has the potential adversely impact a population.</p> <p>Although the Project could adversely impact this species, the localised scale of impacts and extensive areas of similar habitat within the broader property and region along Yanco Creek, make it unlikely to be considered significant; and unlikely to place the species at risk of extinction.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.</p>	

## Blue-winged Parrot and Southern Whiteface

### Species ecology

The Blue-winged Parrot (*Neophema chrysostoma*) is listed as Vulnerable under the EPBC Act.

During breeding season, the Blue-winged Parrot occurs on mainland Australia south of the Great Dividing Range in southern Victoria from Port Albert in Gippsland west to Nelson, and sometimes in the far south-east of South Australia, and the north-western, central and eastern parts of Tasmania. During non-breeding season, birds are recorded from northern Victoria, eastern South Australia, south-western Queensland and western New South Wales, with some birds reaching south-eastern New South Wales and eastern Victoria. Their preferred habitat includes grasslands and grassy woodlands, and they are often found near wetlands both near the coast and in semi-arid zones. The species can also be seen in disturbed environments such as airfields, golf-courses and paddocks. The species feeds on the seeds of a wide range of native and introduced grasses, herbs and shrubs.

The Southern Whiteface (*Aphelocephala leucopsis*) is listed as Vulnerable under the EPBC Act and the NSW BC Act.

The Southern Whiteface is distributed across the majority of Australia, stretching from south of the tropics to Western Australia, though South Australia and Victoria and east of the Great Dividing Range. Preferred habitat for the Southern Whiteface includes a range of open woodlands and shrublands with a grassy understorey. The species builds nests in hollows or crevices in woodlands.

### Species habitat in the Project area

BioNet identified no records of Blue-winged Parrot within 10km of the Project area. There are a total of 11 records for the Blue-winged Parrot in the Edward River LGA. It is possible that the Project area could provide habitat for the species.

BioNet identified no records of Southern Whiteface within 10km of the Project area. There are a total of 87 records for the Southern Whiteface in the Edward River LGA. It is possible that the Project area could provide habitat for the species.

These species lack vegetation habitat data on BioNet and thus it is difficult to conclude whether they would or would not be using resources in the Project area. For this assessment, PCTs 10,13,26,44,46 and 160 have been included as potential habitat.

### Species SIC

Assessment against the MNES Significant Impact Guidelines (DoE, 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:	Blue-winged Parrot ( <i>Neophema chrysostoma</i> )	Southern Whiteface ( <i>Aphelocephala leucopsis</i> )
Lead to a long-term decrease in the size of an important population of a species	<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>	

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Blue-winged Parrot ( <i>Neophema chrysostoma</i> )	Southern Whiteface ( <i>Aphelocephala leucopsis</i> )
	<p>There are no identified “important populations” for Blue-winged Parrot or Southern Whiteface in existing management plans or advice.</p> <p>Preferred habitat for these species includes woodlands, shrublands, grasslands and grassy woodlands. Impacts to habitat important to these species persistence in the region are considered unlikely. For these reasons, the removal of 1278.92 hectares of potential habitat is considered unlikely to lead to a long-term decrease in the size of important populations of these species.</p> <p>Additionally, the Project is outside of the blue-winged parrots breeding distribution.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to these species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.</p>	
<i>Reduce the area of occupancy of an important population</i>	<p>There are no listed “important populations” for Blue-winged Parrot or Southern Whiteface.</p> <p>The removal of 1278.92 hectares of potential suitable habitat is considered unlikely to reduce the area of occupancy of a population of Blue-winged Parrot or Southern Whiteface, that may meet the criteria to be considered “important”.</p>	
<i>Fragment an existing population into two or more populations</i>	<p>These species are highly mobile and so the removal of 1278.92 hectares of potential suitable habitat is unlikely to fragment any existing populations into two or more sub-populations.</p>	
<i>Adversely affect habitat critical to the survival of a species</i>	<p>While 1278.92 hectares of habitat are proposed to be removed, this is unlikely to be considered habitat critical to the survival of these species. Similar habitat values are present and abundant in the region. Therefore, impacts to potential habitat of Blue-winged Parrot or Southern Whiteface from the Project is considered unlikely to adversely affect the survival of the species.</p> <p>Furthermore there are no records of these species within 10km of the Project area, as such the survival of these species is unlikely to be impacted.</p>	
<i>Disrupt the breeding cycle of an important population</i>	<p>There are no listed “important populations” for Blue-winged Parrot or Southern Whiteface.</p> <p>The Project is outside of the Blue-winged Parrots breeding range which includes Tasmania, coastal south-eastern South Australia and southern Victoria.</p> <p>Southern Whiteface requires tree hollows for breeding. A total of 11.29 hectares of woodland vegetation supporting specific breeding habitat (hollows bearing trees) for these species will be removed by the proposal. If a population is present that meets the criteria for an important population, the removal of tree hollows, has the potential to disrupt their breeding cycle.</p>	
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent</i>	<p>Up to 1278.92 hectares of potential habitat for Blue-winged Parrot or Southern Whiteface is proposed to be removed by the Project. While the project will decrease the availability habitat, it is unlikely that it will decrease habitat to an</p>	

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Blue-winged Parrot ( <i>Neophema chrysostoma</i> )	Southern Whiteface ( <i>Aphelocephala leucopsis</i> )
<i>that the species is likely to decline</i>	extent that will cause these species to decline. This is due to the extensive area of similar habitat in the region and high mobility of these species.	
<i>Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat</i>	The Project is unlikely to result in the establishment of invasive species that aren't already present in the area. Any risk will be minimised through the implementation of a Construction Environmental Management Plan (CEMP), which will detail measures to reduce the risk of novel species becoming established, and also to prevent further spread of invasive species already present within the Project area.	
<i>Introduce disease that may cause the species to decline</i>	<p>While Psittacine beak and feather disease is a key threat to the Superb Parrot the nature of the works involved with the Project (construction) makes it unlikely to introduce it to a population if present.</p> <p>This disease is transmitted through contact, feed sharing and excrement. The project is not considered likely to increase contact between parrot species.</p>	The Project is unlikely to introduce disease that may cause the species to decline.
<i>Interfere substantially with the recovery of the species.</i>	There is no adopted or made Recovery Plan for these species. Habitat data for these species is lacking, although habitat clearing would not support the recovery of these species. However, given that there are no records of these species within 10km of the Project area and that these species are highly mobile, the removal of 1278.92 hectares of potential habitat is considered unlikely to substantially interfere with the recovery of these species.	
<p><b>Conclusion:</b> The project will remove up to 1278.92 hectares which supports potential habitat of the Blue-winged Parrot (foraging) and Southern Whiteface (breeding and foraging). If individuals are present, impacts to 1278.92 hectares of habitat has the potential adversely impact a population.</p> <p>Although the Project could adversely impact these species, the localised scale of impacts and the high mobility of the Blue-winged Parrot and Southern Whiteface make it unlikely to be considered significant; and unlikely to place them at risk of extinction.</p> <p>The current disturbance footprint, for which impacts to these species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to these species will be better understood and the likelihood of a significant impact to this species can be reevaluated.</p>		

## Painted Honeyeater (*Grantiella picta*)

### Painted Honeyeater ecology

The Painted Honeyeater (*Grantiella picta*) is listed as Vulnerable under the EPBC Act.

The distribution of the Painted Honeyeater is sparse between south-easter Australia to north-western Queensland and easter Northern Territory. The species moves between the south and north seasonally and due to its dispersive habits, it is considered a single population.

The diet of the Painted Honeyeater consists of mistletoe fruits but more widely includes nectar from native trees and arthropods. Due to its specialised diet, the species inhabits mistletoes in eucalypt forests/woodlands, riparian woodlands of black box and river red gum, box-ironbark-yellow gum woodlands, acacia-dominated woodlands, paperbarks, casuarinas, callitris, and trees on farmland or gardens. The species prefers woodlands which contain a higher number of mature trees, as these host more mistletoes. The species often occurs singly or in pairs, and less often in small flocks and when breeding, both parents will incubate the clutch of around 2-3 eggs.

### Painted Honeyeater habitat in the Project area

BioNet identified no records of Painted Honeyeater within 10km of the Project area. There are a total of 18 records for the Painted Honeyeater in the Edward River LGA. It is possible that the Project area could provide habitat for the species.

Three PCTs in the Project area are associated with the Painted Hoenyeater. PCT 10- River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion), PCT 13- Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) and PCT 26- Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion are PCTs associated with habitat for this species.

### Painted Honeyeater SIC

Assessment against the MNES Significant Impact Guidelines (DoE, 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>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 no identified "important populations" for Painted Honeyeater in existing management plans or advice.</p> <p>BioNet identified no records of Painted Honeyeater within 10km of the Project area. There are a total of 18 records for the Painted Honeyeater in the Edward River LGA.</p> <p>The removal of 17.58 hectares of habitat is unlikely to lead to a long-term decrease in the size of an important population of this species, especially as this specialist species is dependent on Mistletoe which occurred sparsely in the Project area.</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.
<i>Reduce the area of occupancy of an important population</i>	There are no listed “important populations” for the Painted Honeyeater.  The removal of 17.58 hectares of suitable habitat may reduce the area of occupancy of a population, however given that there are no records of this species within 10km of the Project area, it is considered unlikely to reduce the area of occupancy of a population that may meet the criteria to be considered “important”.
<i>Fragment an existing population into two or more populations</i>	This species is mobile and the removal of 17.58 hectares is unlikely to fragment an existing population into two or more populations.
<i>Adversely affect habitat critical to the survival of a species</i>	Mistletoe is a primary food source for this species. Mistletoe was identified in the Project area however was sparse and limited to the riparian vegetation, which is mostly being avoided the proposed development. The removal of 17.58 hectares of habitat is unlikely to adversely affect habitat critical to the survival of this species.
<i>Disrupt the breeding cycle of an important population</i>	The species breeds in areas with Mistletoe present. Mistletoe was identified in the Project area however was limited to the riparian vegetation, which is mostly being avoided by the proposed development, thus, the removal of 17.58 hectares of habitat is unlikely to disrupt the breeding cycle of an important population. Additionally, it is unlikely for a population within the Project area to meet the criteria to be considered “important”.
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i>	Up to 17.58 hectares of potential habitat for the Painted Honeyeater is proposed to be removed by the Project.  While the project will decrease the availability of habitat, it is unlikely to decrease to an extent that will cause the species to decline. This is due to the extensive area of similar habitat in the region and high mobility of the species. Furthermore, there are no records of this species within 10km of the Project area, and the critical habitat component of Mistletoe is sparsely present in the Project area making it is unlikely that the removal of habitat would cause the species to decline.
<i>Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species’ habitat</i>	The Project is unlikely to result in the establishment of invasive species that aren’t already present in the area. Any risk will be minimised through the implementation of a Construction Environmental Management Plan (CEMP),, which will detail measures to reduce the risk of novel species becoming established, and also to prevent further spread of weeds already present within the Project area.
<i>Introduce disease that may cause the species to decline</i>	The Project is unlikely to introduce disease that may cause the species to decline.

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
<i>Interfere substantially with the recovery of the species.</i>	There is a National Recovery Plan for the Painted Honeyeater, and the proposed removal of habitat is not consistent with recovery actions included in the plan. However, the removal of 17.58 hectares of habitat is unlikely to interfere substantially with the recovery of this species. Specifically, as the critical habitat component of mistletoe is sparsely present in the Project area.
<p><b>Conclusion:</b> The project will remove up to 17.58 hectares which supports potential breeding and foraging habitat of the Painted honeyeater. If individuals are present, impacts to 17.58 hectares of habitat has the potential adversely impact a population. However, the Painted Honeyeater is heavily reliant on the presence of Mistletoe. Mistletoe was identified sparsely in the Project area and is restricted to riparian vegetation along Yanco Creek which is being mostly avoided by the Proposal.</p> <p>Although the Project could adversely impact this species, the localised scale of impacts and the high mobility of the Painted Honeyeater make it unlikely to be considered significant; and unlikely to place them at risk of extinction.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.</p>	

## Corben's Long-eared Bat (*Nyctophilus corbeni*)

### Corben's Long-eared Bat ecology

The Corben's Long-eared Bat (*Nyctophilus corbeni*) is listed as Vulnerable under the EPBC Act.

The patchy distribution of Corben's Long-eared Bat is spread across southern central Queensland, central western NSW, north-western Victoria and eastern South Australia. It is found in a variety of woodland habitat types that include box / ironbark / cypress pine woodlands, Buloke woodlands, Brigalow woodland, Belah woodland, smooth-barked apple woodland, river red gum forest, black box woodland, and various types of tree mallee. The diet Corben's Long-eared Bat consists of insects hunted in flights or by foraging on the ground. This species can have maternity colonies, which use dead trees to roost, though roost sites are used for a single day with colonies travelling up to four kilometres a night to a new roosting site.

### Corben's Long-eared Bat habitat in the Project area

BioNet identified no records of Corben's Long-eared Bat within 10km of the Project area. There is a total of 1 record for the Corben's Long-eared Bat in the Edward River LGA. It is possible that the Project area could provide habitat for the species.

One PCT in the Project area is associated with the Corben's Long-eared Bat. PCT 10- River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion is associated with habitat for this species.

### Corben's Long-eared Bat SIC

Assessment against the MNES Significant Impact Guidelines (DoE, 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>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 no identified "important populations" for Corben's Long-eared Bat in existing management plans or advice.</p> <p>BioNet identified no records of this species within 10km of the Project area and a single record in the Edward River LGA.</p> <p>Of the PCTs present within the Project area, this species is only associated with PCT 10. This species could utilise hollow-bearing trees as temporary roosting and engage in aerial foraging around patches of vegetation. As this species is highly mobile and moves across the landscape in search of suitable resources, habitat within the Project area would likely only be temporarily used (if at all).</p> <p>Therefore, the removal of 2.82 hectares of habitat is unlikely to lead to a long-term decrease in the size of an important population of this species.</p> <p>The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
	preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further.
<i>Reduce the area of occupancy of an important population</i>	<p>There are no listed “important populations” for Corben’s Long-eared Bat.</p> <p>Given that there are no records of this species within 10km of the Project area, it is unlikely that an important population of Corben’s Long-eared Bat is using habitat in the Project area.</p> <p>Further, if a population of Corben’s Long-eared Bat was present and met the criteria to be considered “important”, the removal of 2.82 hectares of potential transient habitat is considered unlikely to reduce their area of occupancy.</p>
<i>Fragment an existing population into two or more populations</i>	This species is mobile and transient, moving across the landscape in search of suitable habitat resources. Therefore, the removal of 2.82 hectares of potential habitat is unlikely to fragment an existing population into two or more populations.
<i>Adversely affect habitat critical to the survival of a species</i>	A total of 2.82 hectares of potential habitat will be impacted by the proposed works. Similar habitat resources to those being removed by the project are extensive in the broader property and region, particularly along Yanco Creek which can be easily utilised by this flying mammal species. As such, the removal of habitat from the project is not considered critical to the survival of the species.
<i>Disrupt the breeding cycle of an important population</i>	<p>There are no listed “important populations” for Corben’s Long-eared Bat.</p> <p>This species requires dead hollow-bearing trees for roosting and breeding. Dead hollow-bearing trees are present in the Project area in semi-arid woodlands and forested wetlands which may be used by this species. However, due to the transient nature of this species, regularly moving across the landscape utilising different roosts; and the retention of similar habitat in adjoining areas, it is unlikely that Project will disrupt the breeding cycle of this species.</p>
<i>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</i>	The removal of 2.82 hectares of habitat is unlikely to impact the availability or quality of habitat to the extent that the species is likely to decline because extensive areas of similar habitat are present in the broader property and region which can be accessed and utilised by this species.
<i>Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species’ habitat</i>	The Project is unlikely to result in the establishment of invasive species that aren’t already present in the area. Any risk will be minimised through the implementation of a Construction Environmental Management Plan (CEMP),, which will detail measures to reduce the risk of novel species becoming established, and also to prevent further spread of weeds already present within the Project area.
<i>Introduce disease that may cause the species to decline</i>	The Project is unlikely to introduce disease that may cause the species to decline.
<i>Interfere substantially with the recovery of the species.</i>	<p>A Recovery Plan has not been prepared for the species. However, the removal of potential habitat would not be considered to support the recovery of the species.</p> <p>Although, the removal of 2.82 hectares of habitat is unlikely to interfere substantially with the recovery of these species.</p>

Criteria if there is a real chance or possibility that the action (the proposed works) will:

Response criteria

**Conclusion:** The project will remove up to 2.82 hectares of potential breeding and foraging habitat of Corben's Long-eared Bat. If individuals are present, impacts to 2.82 hectares of habitat has the potential adversely impact a population. Although the Project could adversely impact this species, the localised scale of impacts, the transient nature and high mobility of the species makes it unlikely to be considered significant; and unlikely to place the species at risk of extinction.

The current disturbance footprint, for which impacts to this species has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS to confirm presence or absence of the species, and as the project design is developed further. At which point the potential impact to this species will be better understood and the likelihood of a significant impact to this species can be reevaluated.

