0 50 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

N

LEGEND

- Existing gas pipeline
- Proposed gas pipeline realignment
- Proposed Construction Footprint
- Study Area 100m Buffer Area
- Flora Survey Locations
- Anabat
- Dam
- Bird Survey Sites
- Owl call playback

East Australian Pipeline Pty Ltd
Brown's Creek to Orange Gas
Pipeline Relocation EIS

Job Number	21-21326
Revision	B
Date	22 Oct 2012

Survey sites

Figure 3

G:\21\21326\GIS\Maps\MXD\21_21326_Z043_GasPipelineEcology_SurveySites.mxd

Data Source: NSW Department of Lands: Cadastre - Jan 2011; Geoscience Australia: 250k Data - Jan 2011. Created by: apmiller

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4. Existing Environment

4.1 Database search results

4.1.1 Threatened ecological communities

Two threatened ecological communities (TECs) listed under the TSC Act have been recorded in the Orange CMA subregion (OEH 2012b). One TEC listed under the EPBC Act is predicted to occur in the locality (DSEWPaC 2012a) (Appendix A).

4.1.2 Threatened species

The Atlas of NSW Wildlife database (OEH 2012a) identifies two threatened flora species listed under the TSC Act previously recorded in the locality of the subject site: *Eucalyptus aggregata* (Black Gum) and *Eucalyptus canobolensis* (Silver-leaf Candlebark). The protected matters search (DSEWPaC 2012a) identifies three threatened flora species listed under the EPBC Act as potentially occurring in the locality: *Eucalyptus canobolensis*, *Euphrasia arguta* and *Thesium australe* (Austral Toadflax).

The Atlas of NSW Wildlife database (OEH 2012a) identifies four threatened fauna species listed under the TSC Act as having been previously recorded in the locality of the subject site: Blue-billed Duck (*Oxyura australis*), Freckled Duck (*Stictonetta naevosa*), Superb Parrot (*Polytelis swainsonii*) and Eastern Bentwing Bat (*Miniopterus schreibersii oceanensis*). The protected matters search (DSEWPaC 2012a) identifies 13 threatened fauna species listed under the EPBC Act as potentially occurring in the locality. No threatened species listed under the FM Act have been previously recorded in the locality of the study area (see Appendix A).

4.1.3 Migratory species

The protected matters search (DSEWPaC 2012a) identifies ten migratory species listed under the EPBC Act as potentially occurring in the study area. These migratory species are considered unlikely to occur (see Appendix A).

The EPBC Act also protects all species in the family Accipitridae (kites, eagles and hawks), Falconidae (falcons and kestrels), Anatidae (ducks), Charadriidae (Plovers, Lapwings and Dotterels), Muscicapidae (Thrushs), Phoenicopteridae (Flamingos), Recurvirostridae (Avocets and Stilts) and Scolopacidae (Snipes, Godwits, Sandpipers etc), and all species in the genus *Grus* (Brolga and Sarus Crane) for which Australia is a Range State. Species of potential relevance to this proposal include eagles, kites and falcons, ducks, and the Masked Lapwing (*Vanellus miles*).

4.1.4 Other matters of national environmental significance

The protected matters search (DSEWPaC 2012a) identified three wetlands of international significance (Ramsar Wetlands) that occur downstream of the study area: Banrock Station wetland complex, the Coorong and Lakes Alexandrina and Albert, and Riverland. These wetlands are many hundreds of kilometres downstream and would not be impacted in any way by this proposal, and are not considered further in this report.

No World Heritage properties or National Heritage places were identified in the protected matters search (DSEWPaC 2012a) as potentially occurring in the locality.

4.2 Natural environment

The study area is mainly cleared, comprising open paddocks with scattered small stands of trees (Figure 4). Planted gardens and windbreaks are found at the airport and adjacent to farm houses. Occasional farm dams are present in paddocks and near the airport, and vegetated roadside ditches are also present.

4.3 Flora

4.3.1 Flora species

The flora survey identified 60 flora species within the study area, of which 20 species were native and 40 species were introduced (Appendix B).

No threatened flora species were identified in the study area. No threatened species identified in the desktop assessment are considered likely to occur in the study area (see Appendix A).

The dominant tree species within the subject site is Ribbon Gum (*Eucalyptus viminalis*). One other native tree species was recorded: Silver Wattle (*Acacia dealbata* subsp. *dealbata*). Scattered Hawthorn (*Crataegus monogyna**) and Radiata Pine (*Pinus radiata**) trees are present in the study area. At the residence at the western end of the subject site (west of flora survey site T3 – see Figure 3) various introduced tree species have been planted around the house and sheds.

Shrubs are generally absent in the study area.

The groundcover vegetation in the study area is dominated by introduced species. Some of the common grasses recorded include Paspalum (*Paspalum dilatatum**), Phalaris (*Phalaris aquatic**), Cocksfoot (*Dactylis glomerata**) and Plains Grass (*Bromus catharticus**). Some of the common forbs recorded include Lamb's Tongues (*Plantago lanceolata**), Smooth Catsear (*Hypochaeris glabra**), Flaxleaf Fleabane (*Conyza bonariensis**) and White Clover (*Trifolium repens**). Native grass species present in paddocks include Slender Wallaby Grass (*Austrodanthonia penicillata*) and Weeping Lovegrass (*Eragrostis parviflora),* and native herbs include Common Cranesbill (*Geranium retrorsum*), *Oxalis exilis*, and *Euchiton sphaericus*. Kangaroo Grass (*Themeda australis*) is present in a roadside ditch in the western end of the study area. Native sedges and reeds (*Cyperus* sp. and *Juncus* spp.) are present around farm dams and drainage ditches.

4.3.2 Noxious and environmental weeds

The study area has been extensively disturbed and is dominated by introduced flora species. One species listed as noxious under the NW Act for the Orange City Council control area was identified during field surveys: Blackberry (*Rubus* sp.*). This noxious species occurs in low numbers and is restricted to isolated occurrences in the study area. This species is classified as Class 4, which requires that the growth of the plant must be managed in a manner that reduces its numbers spread and incidence and continuously inhibits its reproduction. As well, the listing of Blackberry as noxious is an *All of NSW* declaration. The plant must not be sold, propagated or knowingly distributed.

4.3.3 Vegetation communities

Native woodland patches in the study area (flora survey sites Q1, Q2, T2, T3 and T6 in Figure 3) consist almost entirely of Ribbon Gum. The patch of trees at the northern end of the proposal (flora survey site T6) also contains Radiata Pine and Silver Wattle. Occasional native species (eg *Austrodanthonia* spp.) are present in the groundcover.

The vegetation type of woodland in the study area, as defined by the NSW Vegetation Types Database, is *Apple Box - Yellow Box - Gum open-woodland on flats and low hills of the Central Tablelands*. Dominant species include Apple Box (*E. bridgesiana*), Yellow Box (*E. melliodora*), Candlebark (*E. rubida*), Ribbon Gum, Mountain Gum (*E. dalrympleana*) and Snow Gum (*E. pauciflora*) (DEC 2006). Vegetation structure consists of woodland to open-woodland with a grassy/herbaceous understorey (DEC 2006).

This vegetation community classifies as the ecological community *Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland,* which is listed as an endangered ecological community (EEC) under the TSC Act, and was identified as potentially occurring in the locality during the desktop assessment. The final determination for the ecological community (NSW Scientific Committee 2011) states the following:

> Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland typically forms an open-forest, woodland or open woodland that transitions into grassland at low tree cover. The canopy is dominated *by Eucalyptus pauciflora* (Snow Gum), *E. rubida* (Candlebark), *E. stellulata* (Back Sallee) and *E. viminalis* (Ribbon Gum), either as single species or in combinations. A shrub layer may be present. The ground layer is dominated by grasses and other herbaceous species including *Themeda australis, Poa* spp., *Austrostipa* spp., *Austrodanthonia* spp., *Leptorhynchos squamatus*, *Chrysocephalum apiculatum*, and *Asperula conferta*. This community may also occur as secondary grassland where the dominant trees have been removed but the ground stratum remains. The species composition of a site will be influenced by the size of the site, recent rainfall or drought condition and by its disturbance history. The number of species and the above ground relative abundance of species will change with fire and grazing regime.

Due to disturbance by grazing and dominance of introduced flora species in the ground layer, Ribbon Gum woodland in the study area comprises a very degraded form of Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland.

Condition classes were assigned according to the BioBanking definition of low condition vegetation (DEC 2009):

- Native woody vegetation with an overstorey per cent foliage cover less than 25 per cent of the lower value of the over storey per cent foliage cover benchmark for that vegetation type.
- Native woody vegetation where less than 50 per cent of vegetation in the ground layer is indigenous species.
- Native grassland where less than 50 per cent of vegetation in the ground layer is indigenous species.
- Native woody vegetation or grassland is greater than 90 per cent ploughed or fallowed.

4.4 Fauna

4.4.1 Fauna species

The fauna field surveys identified a low diversity of species, with up to 45 species recorded. This included 27 bird species (including three introduced species), up to twelve mammal species (including three introduced species), one reptile species and five frog species. Up to seven microchiropteran bats were recorded, including the Eastern Bentwing Bat (*Miniopterus schreibersii oceanensis*), listed as vulnerable under the TSC Act.

No other threatened fauna species were recorded. Of the threatened species identified during the desktop assessment, two fauna species (Superb Parrot and Eastern Bentwing Bat) are considered to have a moderate to high likelihood of occurrence, based on the presence of local records and suitable habitat in the study area (see Appendix A).

Migratory species recorded included three species of duck and two raptors. For a full list of species recorded refer to Appendix B.

4.4.2 Fauna habitats

The proposal is located in country that has been disturbed by agricultural practices for close to 200 years (Keith, 2006). The study area is of a pastoral nature, with paddocks supporting cropping and cattle and sheep grazing. As such, fauna habitats are highly disturbed within the study area. Habitat features and resources are described in terms of the native fauna they may support with specific reference to threatened species recorded during the current surveys or previously recorded in the study area. The habitat assessment identified the following main habitat types across the study area.

Paddocks

The study area is dominated by paddocks that are almost entirely cleared of trees, shrubs and surface rocks. These have low habitat values for most native fauna, but do provide foraging habitat for ground foragers such as the Australian Magpie and Red-rumped Parrot (*Psephotus haematonotus*).

Paddock trees (generally *Eucalyptus viminalis*) are occasionally present (Plate 3). Most paddock trees are large, old, hollow-bearing trees. Groundcover includes introduced pasture species and weeds with occasional native grasses. Bird species observed utilising paddock trees included the White-plumed Honeyeater (*Lichenostomus penicillatus*), Yellow-faced Honeyeater (*Lichenostomus chrysops*), Yellow-rumped Thornbill (*Acanthiza chrysorrhoa*), Brown Thornbill (*Acanthiza pusilla*), Silvereye (*Zosterops lateralis*) and the introduced European Goldfinch (*Carduelis carduelis*). Birds of prey such as Australian Kestrels (*Falco cenchroides*) and Black-shouldered Kites (*Elanus axillaris*) were observed foraging in the area. Wedge-tailed Eagles (*Aquila audax*) are also known to occur. Possible feeding scars were observed in isolated trees or small clumps of trees in paddocks. These may have been made by Sugar Gliders (*Petaurus breviceps*). None of the scars appeared to be recent, and it is not known if these trees are still utilised by the gliders, particularly given their small size and isolation from larger woodland patches. Paddock trees may possibly provide foraging habitat for threatened species such as the Superb Parrot (*Polytelis swainsonii*) and Eastern Bentwing Bat (*Miniopterus schreibersii oceanensis*).

Farm dams and drainage lines

Farm dams are scattered throughout the study area. These generally had no or little emergent vegetation, except for a dam, located near the proposed airport extension, which is vegetated with various rushes and sedges. The Pacific Black Duck (*Anas superciliosa*), Australian Wood Duck (*Chenonetta jubata*) and Grey Teal (*Anas gracilis*) were recorded. The Spotted Grass Frog (*Limnodynastes tasmaniensis*) and Eastern Sign-bearing Froglet (*Crinia parinsignifera*) were heard calling from farm dams throughout the study area. The Emerald-spotted Tree Frog (*Litoria peronii*) was heard near a farm dam within the woodland patch. There is a low possibility of threatened or migratory wetland birds occurring, given the generally small area of the farm dams, and the minimal reed cover.

Drainage lines are present alongside Aerodrome Road and Huntley Road. These were vegetated with rushes and sedges. A number of drainage lines also fed into farm dams (Plate 4). The Common Eastern Toadlet (*Crinia signifera*) was heard calling from these drains. Culverts were present in a

number of locations, and could potentially provide temporary roosting habitat for the threatened Eastern Bentwing Bat. These are not suitable as maternity roosts for this species.

A wetland is also present further to the south of the woodland, outside the study area. This waterbody is likely to provide habitat for a range of waterbirds and frogs. The landowner noted that Black Swans (*Cygnus atratus*) utilise this wetland.

Woodland

A woodland patch is present at the western end of the study area (Plate 2). This consists of a monotypic stand of Ribbon Gum over a groundcover of pasture grasses and weeds, with occasional native species. This area is currently grazed and has a very sparse shrub layer. Fallen timber is present in moderate levels. Birds observed included aggressive honeyeaters such as Noisy Miners (*Manorina melanocephala*), Red Wattlebirds (*Anthochaera carunculata*) and Noisy Friarbirds (*Philemon corniculatus*). Parrots included Eastern Rosellas (*Platycercus eximius*), Crimson Rosellas (*Platycercus elegans*) and Galahs. Brush-tail Possums (*Trichosurus vulpecula*) and a Tawny Frogmouth (*Podargus strigoides*) were observed during spotlighting, as were many White-striped Freetail Bats (*Tadarida australis*). Up to six other species of microbats were recorded from their echolocation calls (Appendix B). Five of these, and the White-striped Freetail Bat, are hollow-nesting species. Many horizontal scars were observed on trees in the woodland patch. These may be feeding scars of the Sugar Glider. None of the scars appeared to be recent. No Sugar Gliders were observed during spotlighting, and it is not known if they still occur in the woodland patch.

Most trees in the patch are large and have multiple hollows of a variety of sizes, catering for a variety of species. Hollow-dependent fauna recorded in the study area include the Common Brush-tail Possum, Sugar Glider, White-striped Freetail Bat, Galah and the two rosellas. Threatened species such as the Superb Parrot could potentially nest in these hollows, although this is unlikely as the species tends to nest in Box Gum Woodlands where there are extensive tracts of foraging habitat (DSEWPC 2012b). No Superb Parrots were recorded during surveys, but could forage in the study area on occasion.

Plate 1: Paddock trees near Huntley Road

Plate 2: Trees near the southern end of the realignment

Plate 3: Woodland to west of the study area

Plate 4: Farm dam

0 50 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 55

N

LEGEND

- Existing gas pipeline
- Proposed gas pipeline realignment
- Study Area 100m Buffer Area
- Temporary compound
- Construction corridor
- Wetland
- Hollow-bearing tree
- Stag
- Dam
- Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland
- Planted Trees and Gardens

East Australian Pipeline Pty Ltd
Brown's Creek to Orange Gas
Pipeline Relocation EIS

Job Number	21-21326
Revision	B
Date	19 Nov 2012

Vegetation and fauna habitat

Figure 4

G:\21\21326\GIS\Maps\MXD\21_21326_Z044_GasPipelineEcology_VegetationandFaundaHabitats.mxd

Data Source: Orange City Council, aerial imagery, 2012. NSW Department of Lands: Cadastre - Jan 2011; Geoscience Australia: 250k Data - Jan 2011. Created by: apmiller

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5. Impact Assessment

5.1 Construction impacts

5.1.1 Direct impacts

Vegetation clearing

The majority of the subject site is located in cleared agricultural land. Impacts will mainly be located in areas of exotic grassland (Figure 4). Up to two Ribbon Gums and their associated understorey would be removed at the start of the realignment near Aerodrome Road, although it is possible that the pipeline could be located between the two trees to avoid their removal. The pipeline passes close to another four Ribbon Gums, but these are on the edge of the 20 metre wide construction footprint and are unlikely to be impacted. In addition, some planted trees would be lost. The proposal would temporarily disturb up to 0.12 hectares of the very degraded EEC Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland out of about 1.44 hectares present in the study area. No farm dams would be removed.

Fauna habitat clearing

As described above, the subject site provides very limited habitat resources for native fauna species and would only contain foraging and shelter resources for some native fauna. The proposal would result in clearing comprising up to two mature trees and the temporary disturbance of the associated understorey and groundcover vegetation which form part of an EEC. Mature trees have value for fauna populations as sources of foraging resources such as nectar, sap or seed. Scattered trees, including paddock trees, are considered keystone structures for the conservation of biodiversity in agricultural landscapes (Manning *et al* 2006). Paddock trees enhance landscape connectivity by acting as stepping stones to assist movement of birds across agricultural landscapes (Fischer and Lindenmayer 2002). The presence of hollows in these trees also provides valuable nesting resources for common species. The proposal would remove a negligible proportion of available foraging resources for local populations of the Superb Parrot and other native fauna. The proposal may remove two hollow-bearing trees, which could provide potential nesting habitat for a range of common bird and bat species. Many hollow-bearing trees are present in the small woodland patch in the west of the study area and in the surrounding locality.

Direct fauna mortality

The proposal has the potential to cause fauna injury or mortality as a result of construction activities, although given the cleared and modified nature of the study area, this is unlikely. Given the nature of the majority of the project site, fauna mortality is likely to be restricted to ground dwelling, relatively sedentary species such as frogs. More mobile fauna such as birds are likely to be able to avoid injury by moving away from the construction area. The proposal does, however, have the potential to result in the mortality of fauna that may be nesting or roosting in hollows of the two trees that may be removed, or that may become trapped in the pipeline trench.

5.1.2 Indirect impacts

Indirect impacts of the proposal are likely to be negligible. The majority of the study area is cleared agricultural land, with only occasional small stands of native trees. The proposal is not likely to further introduce weeds or result in edge effects in native vegetation. There may be indirect impacts on water quality in drainage ditches immediately adjacent to construction areas. There are unlikely to be indirect impacts on the larger wetland, due to the distance from the study area.

5.2 Operational impacts

It is unlikely that there would be any impacts on native biodiversity values as a result of the operation of the pipeline

5.3 Cumulative Impacts

The gas pipeline realignment is proposed as a result of the expansion of the Orange Aerodrome and associated road realignments. The Aerodrome expansion project is likely to result in the removal of two Ribbon Gums and about 0.11 ha of the EEC Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland (GHD 2012). The possible removal of another two Ribbon Gums and temporary disturbance of an additional 0.12 hectares of native groundcover would have a minor cumulative impact on this EEC in the region.

5.4 Key threatening processes

A key threatening process (KTP) is defined in the TSC Act (OEH 2011c) as an action, activity or proposal that:

- adversely affects two or more threatened species, populations or ecological communities
- could cause species, populations or ecological communities that are not currently threatened to become threatened.

There are currently 36 KTPs listed under the TSC Act, seven listed under the FM Act and 19 under the EPBC Act. A number of KTPs are listed under more than one Act. Those potentially relevant to this proposal are discussed in the table below. No KTPs listed under the FM Act are relevant to this proposal. Mitigation measures to limit the impacts of KTPs of relevance are discussed in Section 6.

Table 3 Key threatening processes

Listed Key Threatening Process	Status	Would the proposal increase threat?
Habitat loss or change		
Clearing of native vegetation	TSC Act EPBC Act	Yes. The majority of the project site is cleared agricultural land, however up to two trees would be removed and up to 0.12 hectares of very degraded native groundcover would be temporarily disturbed.
Loss of hollow-bearing trees	TSC Act	Yes. Scattered hollow-bearing paddock trees are present in the study area. The proposal may result in the loss of up to two hollow-bearing trees.
Removal of dead wood and dead trees	TSC Act	No. The proposal is unlikely to result in the loss of dead wood and dead trees.
Weeds		
Invasion of plant communities by perennial exotic grasses	TSC Act	No. The majority of the project site is cleared agricultural land, with the ground layer dominated by perennial exotic grasses. Small pockets of native vegetation also have a ground layer dominated by perennial exotic grasses. The proposal is unlikely to lead to the further invasion of these weeds.
Pest species		
Competition and grazing by the feral European Rabbit	TSC Act EPBC Act	No. Project unlikely to increase this threat any more than that currently occurring in the study area.
Predation by the European Red Fox	TSC Act EPBC Act	No. Project unlikely to increase this threat any more than that currently occurring in the study area.

6. Mitigation Measures

The mitigation of adverse effects arising from the proposal has been presented according to the hierarchy of avoidance, mitigation and offsetting of impacts. The proposal would result in minimal direct impacts on native biota and their habitats within the subject site. There is limited potential for impacts on habitat in the study area site during the longer-term operational phase of the proposal. Specific mitigation measures are recommended to minimise impacts on the natural environment.

The proposal would result in some very limited unavoidable residual adverse impacts imposed upon some elements of the natural environment, including removal of native vegetation and hollow-bearing trees. These residual impacts are not expected to impose a significant negative effect on any local populations of native biota, including threatened species, EECs and their habitats, which occur in the study area or in adjoining habitats.

6.1 Avoidance of impacts

The proposal is located in a highly disturbed environment. Most of the proposed works will be located in cleared agricultural land, thus largely avoiding impacts on biodiversity values. The presence of an EEC and hollow-bearing trees along the proposed pipeline realignment means that there is likely to be some impact on native biodiversity. The final design of the pipeline will take into account the location of these features, and avoid them where possible.

6.2 Mitigation of impacts

Despite the efforts to avoid trees, it is likely that the proposal will result in the removal of up to two trees. In order to address the potential impacts of the project on biodiversity, the mitigation measures outlined in Table 4 are recommended.

Table 4 Mitigation measures

Impact	Mitigation
General	◗ Ensure all workers are provided an environmental induction prior to starting work on site. This would include information on the ecological values of the site and protection measures to be implemented to protect biodiversity. ◗ A Construction Environmental Management Plan (CEMP) and project environmental management plan would be developed following approval of the proposal.
Vegetation	◗ Fence off or mark trees to be retained, to avoid additional impacts on vegetation. Fencing should protect the entire Tree Protection Zone (ie 10 times the diameter of the trunk at breast height). ◗ Restriction of stockpiles of construction materials, fill or vegetation to existing cleared areas and not within areas of adjoining native vegetation. ◗ Stabilisation of surfaces in areas mapped as native vegetation should use locally sourced native grasses including Slender Wallaby Grass (*Austrodanthonia penicillata*), Weeping Lovegrass (*Eragrostis parviflora*), and Kangaroo Grass (*Themeda australis*)

Impact	Mitigation
Fauna habitat	◗ Any open sections of the pipeline trench should be covered at night to ensure no animals become trapped. The trench should be checked each morning and any trapped animals released. ◗ Clearing of mature and hollow-bearing trees and stags should be minimised where possible. ◗ Any hollow-bearing trees to be felled should be marked prior to clearing of vegetation. The removal of hollow bearing trees is to be undertaken in accordance with a tree hollow management protocol set out in the CEMP, and would involve the presence of a qualified ecologist or wildlife expert experienced in the rescue of fauna. ◗ Habitat features such as mature tree trunks within the subject site should be salvaged and replaced within woodland areas as far as is practicable.
Water Quality	◗ Erosion and sediment controls should be implemented in accordance with Volume 2D of Managing Urban Stormwater: soils and construction (DECC 2008) where the construction site is located near near drainage lines. ◗ Erosion and sediment control measures would be established prior to construction. ◗ Erosion and sediment control measures would be regularly inspected, particularly following rainfall events, to ensure their ongoing functionality. ◗ Reinstatement of stabilised surfaces as quickly as practicable after construction. ◗ All stockpiled material would be stored in bunded areas and kept away from waterways to avoid sediment entering the waterway.

6.3 Offsetting of impacts

The proposal would result very limited impacts on native biota, and formal offsets are not required.

7. Assessments of Significance

7.1 Impacts on state listed biota

7.1.1 Endangered ecological communities

One EEC listed under the TSC Act is present in the study area: Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland is present in a woodland patch in the west of the study area and also occurs as small stands of paddock trees scattered throughout the study area. The proposal would result in the loss of up to two trees and the temporary disturbance of their associated understorey from within a small, modified stand of this community.

7.1.2 Threatened species

Two threatened fauna species listed under the TSC Act are considered to have a moderate to high likelihood of occurrence in the study area:

- Superb Parrot. The Superb Parrot is listed as vulnerable under the TSC Act. This species is known from many records in the locality, all to the north-west of the study area. This species could forage in the woodland patch and in paddock trees in the study area, although these are considered low quality habitat given that the vegetation is highly disturbed through clearing and grazing. The proposal would result in the loss a very limited area of potential foraging habitat for this species.
- Eastern Bentwing Bat. The Eastern Bentwing Bat is listed as vulnerable under the TSC Act. There is one record of this species in the locality. This species was possibly recorded from echolocation calls in the study area. The study area has no breeding habitat and only limited potential temporary roosting habitat (two culverts under roads). The Eastern Bentwing Bat could forage throughout the area. The proposal would result in the loss of two hollow-bearing trees that could provide foraging habitat for this species.

7.2 Impacts on matters of national environmental significance

7.2.1 Endangered ecological communities

No endangered ecological communities listed under the EPBC Act occur in the study area.

7.2.2 Threatened species

One threatened fauna species listed under the EPBC Act is considered to have a high likelihood of occurrence in the study area:

- Superb Parrot. The Superb Parrot is listed as vulnerable under the EPBC Act. This species is known from many records in the locality, all to the north-west of the study area. This species could forage in the woodland patch and in paddock trees in the study area, although these are considered low quality habitat given that the vegetation is highly disturbed through clearing and grazing. The proposal would result in the loss a very limited area of potential foraging habitat for this species.

7.2.3 Migratory species

No individual migratory species listed under the EPBC Act (see Appendix A) are considered to have a moderate to high likelihood of occurrence in the study area. No individual assessments of significance pursuant to the EPBC Act Significant Impact Guidelines (DEWHA 2009) have been prepared for migratory species as:

- The habitats recorded within the study area do not qualify as 'important habitat' for migratory species as defined under the guidelines;
- There is no real chance or possibility that the proposal will substantially modify, destroy or isolate an area of important habitat for migratory species;
- The proposal would not result in an invasive species (that is harmful to the migratory species) becoming established in an area of important habitat for migratory species; and
- The proposal is not likely to seriously disrupt the lifecycle of an ecologically significant proportion of the population of a migratory species.

Based on the above considerations the proposal is unlikely to impose "a significant effect" on any of the listed migratory fauna species predicted to occur within the locality.

7.3 Summary of assessments of significance

Assessments of significance for affected threatened biota identified above are included as Appendix C and Appendix D. The outcome of these assessments is that the proposal is not likely to have a significant adverse impact on any threatened biota.

The application of the various assessment criteria to each of the affected threatened biota is summarised in Table 5 below.

Table 5 Summary of assessment of significance results

TSC Act significance assessments								
Affected threatened biota	Significance assessment criteria[1]							**Likely significant impact?**
	a	b	c	d	e	f	g	
Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland	X	X	Y	Y	N	N	Y	No
Superb Parrot	Y	X	X	Y	N	N	Y	No
Eastern Bentwing Bat	N	X	X	Y	N	N	Y	No
EPBC Act significance assessments								
Threatened species, or communities	**Important population[2]**							**Likely significant impact?**
Superb Parrot	Yes							No

Notes: Y= Yes (negative impact), N= No (no or positive impact), X= not applicable.

1. Significance assessment questions as set out in Section 5a of the EP&A Act. Refer to Appendix C for full assessments.

8. Conclusion

The subject site comprises mainly cleared agricultural land. There are small patches of highly modified remnant native vegetation in some paddocks and along road sides. Native vegetation within the subject site contains high levels of weed infestation due to the location within an agricultural area (ie. pasture-improved paddocks).

Based on the desktop assessment, field surveys and habitat assessments undertaken, the following affected threatened biota were identified:

- Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland, listed as an EEC under the TSC Act, is present in a woodland patch in the west of the study area and also occurs as small stands of paddock trees scattered throughout the study area.
- The Superb Parrot, listed as vulnerable under the TSC Act and the EPBC Act, is known from many records in the locality, all to the north-west of the study area. This species could forage in the woodland patch and in paddock trees in the study area, although these are considered low quality habitat given that the vegetation is highly disturbed through clearing and grazing. It is highly unlikely to nest in the study area.
- The Eastern Bentwing Bat, listed as vulnerable under the TSC Act, has been recorded once in the locality. The species was possibly recorded from echolocation calls in the study area. The study area has no breeding habitat and only limited potential roosting habitat (two culverts under roads). The species could forage throughout the area.

The extent of habitat in the study area for each of these mobile and wide-ranging species is limited. The species may forage on occasion within the study area, but would not rely on these habitats for their conservation in the locality.

The proposal would result in impacts on native biota and their habitats including:

- The loss of up to two trees and the temporary disturbance of up to 0.12 hectares of Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland EEC.
- The potential loss of up to two hollow-bearing trees, which provide nesting and foraging habitat for common species, and only limited potential foraging habitat for the Superb Parrot.
- The loss of up to two trees that could provide foraging habitat for the Eastern Bentwing Bat.

These impacts are not expected to impose a significant negative effect on any local populations of native biota, including threatened species, EECs and their habitats, which occur in the study area or in adjoining habitats.

Planting of Ribbon Gums may be undertaken to compensate for the potential loss of the two trees from the study area.

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Appendix A

Threatened and Migratory Biota

Threatened Ecological Communities known or predicted from the locality, habitat association and presence/absence at the subject site

Scientific Name	Common Name	TSC Act	EPBC Act	Habitat Association	Details of Record	Presence on site
Mt Canobolas *Xanthoparmelia* Lichen Community		**E**		A foliose lichen community characterised by the following assemblage: *Cladia fuliginosa, Xanthoparmelia canobolasensis, Xanthoparmelia digitiformis, Xanthoparmelia metaclystoides, Xanthoparmelia metastrigosa, Xanthoparmelia multipartite, Xanthoparmela neorimalis, Xanthoparmelia sulcifera, Xanthoparmelia tasmanica*. Occurs on rock faces and soils of the Mt Canobolas Tertiary volcanic complex. The Mt Canobolas complex consists mostly of trachyte and alkali rhyolite, with smaller outcroppings of other Tertiary rocks.	**Recorded** within 10 km	**Not present.** Study area dominated by pasture grasses.
Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland in the South Eastern Highlands, Sydney Basin, South East Corner and NSW South Western Slopes Bioregions		**E**		Occurs in low lying, fertile areas including valley floors, frost hollow margins, footslopes and undulating hills between 600-1400 m asl. Occurs on range of substrates including granite, basalt, metasediment and Quaternary alluvium. Open woodland characterised by Snow Gum, Black Sallee, Candlebark and or Ribbon Gum. Shrubs may be present and sub-shrubs often components of the understorey, which includes native grasses and high diversity of herbs in intact sites. Secondary grasslands where trees have been removed are also part of this community.		**Present**. Woodland patches and paddock trees dominated by Ribbon Gum. Occasional areas with native grasses.

Scientific Name	Common Name	TSC Act	EPBC Act	Habitat Association	Details of Record	Presence on site
White Box Yellow box Blakely's Red Gum Woodland (also known as Box-Gum Woodland)		**E**	**CE**	White Box Yellow Box Blakely's Red Gum Woodland is an open woodland or forest community, and is characterized by White Box (*Eucalyptus albens*), Yellow Box (*E. melliodora*) and Blakely's Red Gum (*E. blakelyi*). Intact sites contain a high diversity of plant species, including dominant and additional tree species, shrubs, climbers, grass species and a high diversity of herbs. Intact stands that contain diverse upper and mid-storeys and groundlayers are rare. Modified sites include the following areas where the main tree species are present ranging from an open woodland formation to a forest structure, with the groundlayer predominantly being composed of exotic species. On sites where the trees have been removed, only the grassy groundlayer and some herbs remain. The Commonwealth listing of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland differs slightly from the NSW listing. Areas that are part of the listed ecological community must have either an intact tree layer and predominately native ground layer or an intact native ground layer with a high diversity of native plant species but no remaining tree layer. Box-Gum Woodland is found from the Queensland border in the north, to the Victorian border in the south. It occurs in the tablelands and western slopes of NSW.	**Predicted** to occur within 10km (DSEWPaC 2012a) Known to occur in the CMA subregion (OEH 2012a)	**Not present.** Dominant tree species is *Eucaluptus viminalis*.

Threatened flora known or predicted from the locality, habitat association and likelihood of occurrence at the subject site

Scientific Name	Common Name	TSC Act	EPBC Act	Habitat Association	Details of Record	Likelihood of Occurring
Eucalyptus aggregata	Black Gum	V	-	Occurs on the central and southern tablelands of NSW, and in a small disjunct population in Victoria. Grows in grassy woodlands on alluvial soils in moist sites along creeks on broad, cold and poorly-drained flats and hollows. Commonly occurs with *E. rubida, E. viminalis*, and *E. pauciflora* with a grassy understorey of *Poa labillardierei*.	1 record within 10km (OEH 2012a)	**Nil.** Preferred habitat not present. All eucalypts in the study area *Eucalyptus viminalis*.
Eucalyptus canobolensis	Silver-leaf Candlebark	**V**	**E**	Known only from Mt Canobolas near Orange. Found predominantly between 1100-1300m, but can occur down to 1000m and above 1300m. The species is more or less restricted to the Mt Canobolas State Recreation Area. The landform consists of undulating low hills to steep hills. Soils are shallow skeletal sands and loams on steep slopes. Vegetation is a sub-alpine woodland.	**Predicted** to occur within 10km (DSEWPaC 2012a) 2 records within 10km (OEH 2012a)	**Nil.** Subject site not within or near the Mt Canobolas State Recreation Area.
Euphrasia arguta		Prel. CE	CE	Recently rediscovered near Nundle on the north-western slopes and tablelands, once known from scattered locations between Sydney, Bathurst and Walcha. Known populations occur in eucalypt forest with a mixed grass/shrub understorey, while previous records are described as occurring in open forest, grassy country and river meadows. Annual and dies back over winter. Dense stands observed in cleared firebreak areas, suggesting it may respond well to disturbance.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Low**. Subject Site highly modified and grazed. Woodland patches have a mostly exotic understory with no shrubs.
Thesium australe	Austral Toadflax	V	V	Found in small, scattered populations along the east coast, northern and southern tablelands. Occurs in grassland or grassy woodland, and is often found in association with Kangaroo Grass (*Themeda australis*).	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Low**. No Kangaroo Grass recorded in the subject site. Subject Site highly modified and grazed.

Threatened fauna known or predicted from the locality, habitat association and likelihood of occurrence at the subject site

Scientific Name	Common Name	TSC Act	EPBC Act	Habitat Association	Details of Record	Likelihood of Occurring
Birds						
Rostratula australis	Australian Painted Snipe	**E**	**V, M**	Normally found in permanent or ephemeral shallow inland wetlands, either freshwater or brackish. This cryptic species nests on the ground amongst tall reed-like vegetation near water. It emerges from the dense growth at dusk to feed on mudflats and the water's edge taking insects, worm and seeds. This species prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Low**. One small wetland area with dense reeds present.
Oxyura australis	Blue-billed Duck	**V**		This species is a partly migratory bird that travels short-distances between breeding swamps and over-wintering lakes. It prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. Nesting occurs in Cumbungi over deep water between September and February, as well as in trampled vegetation of Lignum, sedges or Spike-rushes, where a bowl-shaped nest is constructed. Young birds disperse in April-May from their breeding swamps in inland NSW to non-breeding areas on the Murray River system and coastal lakes. The species is completely aquatic, swimming low in the water along the edge of dense cover.	1 record within 10km (OEH 2012a)	**Nil**. No habitat present.
Stictonetta naevosa	Freckled Duck	**V**		This species prefers permanent freshwater swamps and creeks with heavy growth of Typha, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds. They generally rest in dense cover during the day, usually in deep water.	2 records within 10km (OEH 2012a)	**Low.** Could occur on occasion on farm dams in the study area.

Scientific Name	Common Name	TSC Act	EPBC Act	Habitat Association	Details of Record	Likelihood of Occurring
Leipoa ocellata	Malleefowl	**E**	**V, M**	Malleefowl predominantly inhabit mallee communities, preferring the tall, dense and floristically-rich mallee found in higher rainfall (300-450 mm mean annual rainfall) areas. Less frequently found in other eucalypt woodlands (e.g., mixed Western Grey Box and Yellow Gum or Bimble Box, Ironbark-Callitris Pine, Callitris Pine, Mulga (*Acacia aneura*), and Gidgee(*A. cambagei*). It prefers areas of light sandy to sandy loam soils and habitats with a dense but discontinuous canopy, dense and variable shrub and herb layers. Malleefowl will occupy areas within five years of fire, however they prefer older age classes. Mainly forage in open areas on seeds of acacias and other native shrubs, buds, flowers and fruits of herbs and various shrubs, insects and cereals if available.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil**. No mallee or box gum habitat present.
Erythrotriorchus radiatus	Red Goshawk	CE	V	Typically occurs in coastal and subcoastal areas, with 90% of recent records in NSW confined to the Northern Rivers and Northern Tablelands regions, north of the Clarence River. Formerly occurred south to Port Stephens. Prefer woodlands and forests with a mosaic of vegetation types that are open enough for fast manoeuvring flight, avoiding very open or very dense habitats. In NSW inhabits mixed subtropical rainforest, Melaleuca swamp forest and open eucalypt forest along coastal rivers. Nests built within 1km of a permanent freshwater body in a large, tall tree(>20m) within a remnant stand. Home ranges large (120-200km2).	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil**. Outside normal range. No suitable habitat present.

Scientific Name	Common Name	TSC Act	EPBC Act	Habitat Association	Details of Record	Likelihood of Occurring
Anthochaera phrygia	Regent Honeyeater	**CE**	**E**	This species is a semi-nomadic species that inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River She-oak where there are significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. Regent Honeyeaters occur typically in associations that support species which reliably produce copious amounts of nectar, such as *Eucalyptus sideroxylon* (Mugga Ironbark), *E. melliodora* (Yellow Box), White Box and *E. leucoxylon* (Yellow Gum) , but also in associated woodlands supporting *E. microcarpa* (Grey Box), *E. polyanthemos* (Red Box), *E. blakelyi* (Blakely's Red Gum), *E. camaldulensis* (River Red Gum), *E. melanophloia* (Silver-leaved Ironbark), *E. crebra* (Narrow-leaved Ironbark), *E. caleyi* (Caley's Ironbark) and *Angophora floribunda* (Rough-barked Apple) (Higgins et al. 2001; Webster & Menkhorst 1992).	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil**. Preferred feed trees not present.
Polytelis swainsonii	Superb Parrot	**V**	**V**	Generally inhabits Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. It nests in hollows in small colonies, often with more than one nest in a single tree. Nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box (DECCW 2010b). The Superb Parrot tends to nest where there are extensive tracts of foraging habitat. It forages up to 10 km from nesting sites, primarily in grassy box woodland, feeding mainly on grass seed and herbaceous plants, fruits, berries, nectar, buds, flowers, insects and grain (DSEWPC 2012b).	**Many records** within 10 km (OEH 2012a) **Predicted** to occur within 10km (DSEWPaC 2012a)	**High**. Could nest and forage in Ribbon Gum woodland in the study area.

Scientific Name	Common Name	TSC Act	EPBC Act	Habitat Association	Details of Record	Likelihood of Occurring
Lathamus discolor	Swift Parrot	**E**	**E**	The Swift Parrot breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia. In NSW it mostly occurs on the coast and south west slopes. Favoured feed trees include winter flowering species such as *Eucalyptus robusta, Corymbia maculata, C. gummifera, E. sideroxylon*, and *E. albens*. Commonly used lerp infested trees include *E. microcarpa, E. moluccana* and *E. pilularis* and Swift Parrots will return to some foraging sites on a cyclic basis depending on food availability. Following winter they return to Tasmania where they breed from September to January.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil**. Preferred feed trees not present.
Mammals						
Petrogale pencillata	Brush-tailed Rock-wallaby	**E**	**V**	This species of small wallaby occurs on rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges facing north. Diet consists of vegetation in adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. In NSW they occur along the whole Eastern section of the State.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil.** No rocky escarpments or outcrops present.
Phascolarctos cinereus	Koala	**V**	**V**	Occurs from coast to inland slopes and plains. Restricted to areas of preferred feed trees in eucalypt woodlands and forests. Home range varies depending on habitat quality, from < 2 to several hundred hectares. *Eucalyptus viminalis* (Ribbon Gum) is a primary feed tree for the Central and Southern Tablelands Koala Management Area.	Predicted to occur within 10km (DSEWPaC 2012a)	**Low.** Could forage in the study area on occasion, however no records in the locality.
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	Occurs from the coast to the western slopes of the divide. Largest numbers of records from sandstone escarpment country in the Sydney Basin and Hunter Valley (Hoye and Schulz 2008). Roosts in caves and mines and most commonly recorded from dry sclerophyll forests and woodlands. An insectivorous species that flies over the canopy or along creek beds (Churchill 2008).	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Low.** Could forage in the study area on occasion.

Scientific Name	Common Name	TSC Act	EPBC Act	Habitat Association	Details of Record	Likelihood of Occurring
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	V	-	Generally occurs east of the Great Dividing Range along NSW coast (Churchill 2008). Inhabits various habitats from open grasslands to woodlands, wet and dry sclerophyll forests and rainforest. Essentially a cave bat but may also roost in road culverts, stormwater tunnels and other man-made structures. Only 4 known maternity caves in NSW, near Wee Jasper, Bungonia, Kempsey and Texas. Females may travel hundreds of kilometres to the nearest maternal colony (Churchill 2008).	**1 record** within 10km (OEH 2012a)	**Moderate.** May forage within the study area. No breeding habitat present.
Pseudomys fumeus	Smoky Mouse	E	E	In NSW recorded from Kosciuszko NP and adjacent areas, and Mt Poole, Nullica SF and SE Forests NP near Eden. Occurs from subalpine regions to sea-level. Appears to prefer heath habitat on ridge tops and slopes in sclerophyll forest, heathland and open-forest from the coast, characterised by floristically diverse shrub layer including abundance of Epacridaceae, Fabaceae and Mimosaceae spp. Also occurs in damp fern gullies. Nesting burrows have been recorded in rocky areas and under Xanthorrhoea bases.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil.** Woodland patches in the study area lack shrub layer.
Frogs						
Litoria booroolongensis	Booroolong Frog	E	E	Restricted to western slopes and tablelands, mainly in western-flowing streams and their headwaters on the Great Dividing Range. Has disappeared from the Northern Tablelands and rare throughout the rest of its range. Occurs along permanent streams with some fringing vegetation cover, ranging from slow-flowing creeks to large rivers, in both forested/ open pasture areas. Found on or near cobble banks and other rock structures within stream margins and shelter under rocks or amongst vegetation near the ground on the stream edge.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil.** No permanent streams present in the study area.
Fish						

Scientific Name	Common Name	TSC Act	EPBC Act	Habitat Association	Details of Record	Likelihood of Occurring
Macquaria australasica	Macquarie Perch	**V**	**E**	This species of freshwater fish inhabits river and lake habitats, especially the upper reaches of rivers and their tributaries. Spawning occurs in spring and summer in shallow upland streams or flowing sections of river systems. This species is found in the upper reaches of the Lachlan, Murrumbidgee and Murray Rivers, and in parts of the Hawkesbury and Shoalhaven catchment areas	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil.** No habitat present.
Maccullochella peelii peelii	Murray Cod		**V**	Murray cod can live in a wide range of habitats, from clear, rocky streams in the upper western slopes regions of New South Wales to the slow flowing, turbid rivers and billabongs of the western plains. Generally, they are found in waters up to 5m deep and in sheltered areas with cover from rocks, timber or overhanging banks. The presence of wood debris has been shown to be the primary factor determining Murray cod presence (Kearney and Kildea 2001).	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil.** No habitat present.

EPBC Act-listed migratory fauna known or predicted from the locality, habitat association and suitable habitat present at the subject site

Scientific Name	Common Name	TSC Status	EPBC Status	Habitat Association	Details of Record	Likelihood of Occurrence
Wetland or Marine species						
Apus pacificus	Fork-tailed Swift		M; Marine	Recorded in all regions of NSW. Non- breeding, and almost exclusively aerial while in Australia. Occurs over urban and rural areas as well as areas of native vegetation.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Low**. Could forage above the study area on occasion.
Ardea alba	Great Egret		M; Marine	Occurs across NSW. Within NSW there are breeding colonies within the Darling Riverine Plains and Riverina regions, and minor colonies across its range including the north and north-east of the state. Reported from a wide range of wetland habitats (for example inland and coastal, freshwater and saline, permanent and ephemeral, open and vegetated, large and small, natural and artificial).	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Low.** Could occur at farm dams in the study area on occasion.
Ardea ibis	Cattle Egret		M; Marine	Occurs across NSW. Principal breeding sites are the central east coast from Newcastle to Bundaberg. Also breeds in major inland wetlands in north NSW (notably the Macquarie Marshes). Occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands. Uses predominately shallow, open and fresh wetlands with low emergent vegetation and abundant aquatic flora. Sometimes observed in swamps with tall emergent vegetation and commonly use areas of tall pasture in moist, low-lying areas.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Low.** Could occur at farm dams and paddocks in the study area on occasion.

Scientific Name	Common Name	TSC Status	EPBC Status	Habitat Association	Details of Record	Likelihood of Occurrence
Gallinago hardwickii	Latham's Snipe		M; Marine	Occurs along the coast and west of the great dividing range. Non breeding visitor to Australia. Inhabit permanent and ephemeral wetlands up to 2000 m asl. Typically in open, freshwater wetlands with low, dense vegetation (incl. swamps, flooded grasslands and heathlands). Can also occur in saline/brackish habitats and in modified or artificial habitats close to human activity.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Low**. One small wetland area with dense reeds present.
Rostratula australis	Australian Painted Snipe	E	V; M; Marine	Normally found in permanent or ephemeral shallow inland wetlands, either freshwater or brackish. Nests on the ground amongst tall reed-like vegetation near water. Feeds on mudflats and the water's edge taking insects, worm and seeds. Prefers fringes of swamps, dams and nearby marshy areas with cover of grasses, lignum, low scrub or open timber.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Low**. One small wetland area with dense reeds present.
Terrestrial species						
Haliaeetus leucogaster	White-bellied Sea-eagle		M, Marine	Primarily coastal but may extend inland over major river systems. Breeds close to water, mainly in tall open forest/woodland but also in dense forest, rainforest, closed scrub or remnant trees. Usually forages over large expanses of open water, but also over open terrestrial habitats (e.g. grasslands).	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil.** No habitat present.
Hirundapus caudacutus	White-throated Needletail		M; Marine	Recorded along NSW coast to the western slopes and occasionally from the inland plains. Breeds in northern hemisphere. Almost exclusively aerial while in Australia. Occur above most habitat types, but are more frequently recorded above more densely vegetated habitats (rainforest, open forest and heathland) than over woodland or treeless areas.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil.** No habitat present.

Scientific Name	Common Name	TSC Status	EPBC Status	Habitat Association	Details of Record	Likelihood of Occurrence
Merops ornatus	Rainbow Bee-eater		M; Marine	Widespread across mainland Australia. Mainly inhabits open forests and woodlands and shrublands, often in proximity to permanent water. Also occurs in cleared/semi-cleared habitats including farmland and residential areas. Excavates a nest burrow in flat/sloping ground in banks of waterways, dams, roadside cuttings, gravel pits or cliff faces. Southern populations migrate north for winter after breeding.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Low**. Could forage in the study area on occasion.
Leipoa ocellata	Malleefowl	**E**	**V, M**	Malleefowl predominantly inhabit mallee communities, preferring the tall, dense and floristically-rich mallee found in higher rainfall (300-450 mm mean annual rainfall) areas. Less frequently found in other eucalypt woodlands (e.g., mixed Western Grey Box and Yellow Gum or Bimble Box, Ironbark-Callitris Pine, Callitris Pine, Mulga (*Acacia aneura*), and Gidgee(*A. cambagei*). It prefers areas of light sandy to sandy loam soils and habitats with a dense but discontinuous canopy, dense and variable shrub and herb layers. Malleefowl will occupy areas within five years of fire, however they prefer older age classes. Mainly forage in open areas on seeds of acacias and other native shrubs, buds, flowers and fruits of herbs and various shrubs, insects and cereals if available.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil.** No habitat present.
Myiagra cyanoleuca	Satin Flycatcher		M; Marine	In NSW widespread on and east of the Great Divide, sparsely scattered on the western slopes, very occasional records on the western plains. Inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, often near wetlands and watercourses. On migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests. Generally not in rainforests.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil.** No habitat present.

Scientific Name	Common Name	TSC Status	EPBC Status	Habitat Association	Details of Record	Likelihood of Occurrence
Anthochaera phrygia	Regent Honeyeater	CE	E, M	In NSW confined to two known breeding areas: the Capertee Valley and Bundarra-Barraba region. Non-breeding flocks occasionally seen in coastal areas foraging in flowering Spotted Gum and Swamp Mahogany forests, presumably in response to drought. Inhabits dry open forest and woodlands, particularly Box-Ironbark woodland and riparian forests of River Sheoak, with an abundance of mature trees, high canopy cover and abundance of mistletoes.	**Predicted** to occur within 10km (DSEWPaC 2012a)	**Nil.** Preferred feed trees not present.

All information in these tables is taken from NSW OEH and Commonwealth DSEWPaC Threatened Species profiles (DEC 2005, DSEWPaC 2011b) unless otherwise stated. The codes used in this table are: CE – Critically Endangered; E – Endangered; V – Vulnerable; EP – Endangered Population; CEEC – Critically Endangered Ecological Community; EEC – Endangered Ecological Community; M - Migratory.

Appendix B

Species Lists

FLORA LIST

* Introduced species

✓ Species present

All numbers are per cent cover

r Less than one per cent cover, few individuals

+ Less than one per cent cover, numerous individuals

Scientific Name	Common Name	Q1	Q2	T1	T2	T3	T4	T5	T6
Acacia dealbata subsp. *dealbata*	Silver Wattle								✓
Acaena ovina			+						
*Agrostis capillaris**	Browntop Bent	25							
*Amaranthus hybridus**	Slim Amaranth					✓			
Asteraceae sp.*		r							
Austrodanthonia sp.	A Wallaby Grass					✓			
Austrodanthonia penicillata	Slender Wallaby Grass	15			✓				
Avena sp.*				✓					
*Bromus catharticus**	Prairie Grass					✓	✓	✓	
*Centaurium tenuiflorum**			r						
*Cirsium vulgare**	Spear Thistle	+	+	✓	✓		✓	✓	

Scientific Name	Common Name	Q1	Q2	T1	T2	T3	T4	T5	T6
Convolvulus erubescens	Blushing Bindweed	✓							
*Conyza bonariensis**	Flaxleaf Fleabane	+	+		✓				
*Crataegus monogyna**	Hawthorn	+				✓			
Cynodon dactylon	Couch	20	r	✓					
Cyperus sp.	A Sedge		+						
*Dactylis glomerata**	Cocksfoot	10	30		✓			✓	✓
*Digitaria sanguinalis**	Summer Grass							✓	
*Dittrichia graveolens**	Stinkwort	r							
*Echinochloa crus-galli**	Barnyard Grass							✓	
*Echium plantagineum**	Paterson's Curse					✓	✓	✓	
*Eleusine tristachya**	Goose Grass	2							
Epilobium billardierianum subsp. *cinereum*		r	r						
Eragrostis parviflora	Weeping Lovegrass	r							
Eucalyptus viminalis	Ribbon Gum	10	5		✓	✓			
Euchiton sphaericus		+				✓			
*Genista monspessulana**	Montpellier Broom		✓						
Geranium retrorsum	Common Cranesbill	+	+					✓	
*Holcus lanatus**	Yorkshire Fog	5			✓				
*Hordeum leporinum**	Barley Grass			✓					

Scientific Name	Common Name	Q1	Q2	T1	T2	T3	T4	T5	T6
Hypochaeris sp.*				✓					
*Hypochaeris glabra**	Smooth Catsear	5	2		✓	✓	✓		
*Hypochaeris radicata**	Flatweed		r				✓	✓	
Joycea pallida	Redanther Wallaby Grass					✓			
Juncus filicaulis	A rush	+							
Juncus subsecundus	A rush	5							
*Lolium rigidum**	Wimmera Ryegrass					✓			
Oxalis exilis		r							
*Paspalum dilatatum**	Paspalum	+		✓		✓	✓	✓	
*Phalaris aquatica**	Phalaris	2	60	✓		✓	✓	✓	✓
Pinus radiata	Radiata Pine								✓
*Plantago lanceolata**	Lamb's Tongues	+	+	✓	✓	✓	✓		
Poa sp.			+						
Poaceae sp.*		+			✓		✓		
*Polygonum aviculare**	Wireweed					✓			
Rubus sp.*	Blackberry	+				✓			
Rumex sp.						✓			
*Rumex crispus**	Curled Dock		r					✓	
*Setaria parviflora**		+							

Scientific Name	Common Name	Q1	Q2	T1	T2	T3	T4	T5	T6
*Sonchus oleraceus**	Common Sowthistle		r						
*Stellaria media**	Common Chickweed					✓			
*Taraxacum officinale**	Dandelion						✓		
Themeda australis	Kangaroo Grass	2							
*Trifolium arvense**	Haresfoot Clover		r						
*Trifolium campestre**	Hop Clover		+						
*Trifolium pratense**	Red Clover	+							
*Trifolium repens**	White Clover	10		✓	✓	✓	✓		
*Trifolium striatum**	Knotted Clover	5							
*Vicia sativa**			+						
Wahlenbergia sp.		r							

FAUNA LIST

	Common name	Scientific name	Study Area	B1	B2	B3	B4	B5	B6	dam
Birds										
Anatidae	Grey Teal	*Anas gracilis*	O		O					
	Pacific Black Duck	*Anas superciliosa*	O	O	O					
	Australian Wood Duck	*Chenonetta jubata*	O		O					
Podargidae	Tawny Frogmouth	*Podargus strigoides*	O		O					
Accipitridae	Black-shouldered Kite	*Elanus axillaris*	O	O			O	O	O	
Falconidae	Nankeen Kestrel	*Falco cenchroides*	O			O				
Cacatuidae	Galah	*Eolophus roseicapillus*	O	O	O	O			O	
Psittacidae	Crimson Rosella	*Platycercus elegans*	O	O		O	O		O	
	Eastern Rosella	*Platycercus eximius*	O		O	O		O		
	Red-rumped Parrot	*Psephotus haematonotus*	O	O						
Alcedinidae	Laughing Kookaburra	*Dacelo novaeguineae*	O		O					
Maluridae	Superb Fairy-wren	*Malurus cyaneus*	O				O	O		
Acanthizidae	Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	O	O			O	O		
	Brown Thornbill	*Acanthiza pusilla*	O					O		
Meliphagidae	Red Wattlebird	*Anthochaera carunculata*	O	O	O	O				
	Yellow-faced Honeyeater	*Lichenostomus chrysops*	O				O			
	White-plumed Honeyeater	*Lichenostomus penicillatus*	O	O			O			
	Noisy Miner	*Manorina melanocephala*	O		O					
	Noisy Friarbird	*Philemon corniculatus*	O		O					
Artamidae	Australian Magpie	*Cracticus tibicen*	O		O	O			O	

	Common name	Scientific name	Study Area	B1	B2	B3	B4	B5	B6	dam
Rhipiduridae	Willie Wagtail	*Rhipidura leucophrys*	O					O		
Corvidae	Australian Raven	*Corvus coronoides*	W		W					
Monarchidae	Magpie-lark	*Grallina cyanoleuca*	O	O	O	O		O	O	
Timaliidae	Silvereye	*Zosterops lateralis*	O					O		
Sturnidae	Common Starling	*Sturnus vulgaris**	O	O	O	O			O	
Passeridae	House Sparrow	*Passer domesticus**	O						O	
Fringillidae	European Goldfinch	*Carduelis carduelis**	O					O		
Mammals										
Petauridae	Sugar Glider	*Petaurus breviceps*	?	?	?		?	?		
Phalangeridae	Common Brushtail Possum	*Trichosurus vulpecula*	O		O					
Macropodidae	kangaroo / wallaby	*Macropus* sp.	P		P					
Molossidae	White-striped Freetail-bat	*Tadarida australis*	OW		OW					
Vespertilionidae	Large Forest Bat / Southern Forest Bat	*Vespadelus darlingtoni* / *V. regulus*			Po					
	a forest bat / Eastern Bentwing-bat	*Vespadelus* sp. / *Miniopterus schreibersii oceanensis*			Po					
	Little Forest Bat / Chocolate Wattled Bat	*Vespadelus vulturnus* / *Chalinolobus morio*			Po					
Muridae	Black Rat	*Rattus rattus**	O		O					
Canidae	Fox	*Vulpes vulpes**			P	P				
Leporidae	European Rabbit	*Oryctolagus capensis**	O						O	
Reptiles										
Skinkidae	Common Blue-tongue Lizard	*Tiliqua scincoides*	O							
Amphibians										

	Common name	Scientific name	Study Area	B1	B2	B3	B4	B5	B6	dam
Myobatrachidae	Eastern Sign-bearing Froglet	*Crinia parinsignifera*	W		W				W	W
	Common Eastern Froglet	*Crinia signifera*	W		W	W	W	W	W	W
	Eastern Banjo Frog	*Limnodynastes dumerilii*								
	Spotted Grass Frog	*Limnodynastes tasmaniensis*	OW		OW				W	W
Hylidae	Peron's Tree Frog	*Litoria peronii*	W		W					

Key: O – observed; P – scat; Po – possible (anabat); W – heard; ? – possible feeding scars

Appendix C

Assessments of Significance for threatened biota listed under the TSC Act

Legislative requirement

Section 5A of the EP&A Act lists seven factors that must be taken into account in the determination of the significance of potential impacts of an activity on 'threatened species, populations or ecological communities (or their habitats)' listed under the TSC Act and FM Act. The '7 part test' is used to determine whether an activity is 'likely' to impose 'a significant effect' on threatened biota and thus whether a species impact statement (SIS) is required. Should the 7 part test conclude that a significant effect is likely, an SIS must be prepared. On this basis, 7 part tests have been prepared for the following threatened biota:

- Threatened communities:
  - Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland.
- Threatened fauna:
  - Superb Parrot
  - Eastern Bentwing Bat.

Seven Part Test	Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland
a) *in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction*	
Not applicable.	
b) *in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction*	
Not applicable.	
c) *in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:* *(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction*	
Much of the native vegetation of the locality is likely to be equivalent to Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland. The proposal would result in the removal of up to two trees and the temporary disturbance of 0.12 hectares of this community. This loss is unlikely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction.	
(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction	
Native woodland patches in the study area consist almost entirely of Ribbon Gum. No other canopy eucalypts are present. The groundcover vegetation in the study area is dominated by introduced species, with few native species (eg *Austrodanthonia* spp.) present. The proposal would result in the loss of up to two Ribbon Gums and their associated understorey. This is not likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.	
d) *in relation to the habitat of a threatened species, population or ecological community:*	

Seven Part Test	Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland
(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed	
The proposal would result in the removal of up to two trees and the temporary disturbance of 0.12 hectares of very degraded groundcover from this community.	
(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action	
Woodlands of the locality are already highly fragmented by agricultural practises, roads, the airport, railways and towns. The proposal is located in a highly modified area, with little native vegetation.	
(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality	
Much of the native vegetation of the locality is likely to be equivalent to Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland. The proposal is located in a highly modified area, with little native vegetation. The proposal would result in the clearing of a negligible area of this community (ie. up to two Ribbon Gums and their associated understorey). These trees and small area of understory are not considered to be important to the ecological community in the locality.	
e) *whether the action proposed is likely to have an adverse effect on critical habitat* (*either directly or indirectly*)	
There is no critical habitat listed for Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland.	
f) *whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan*	
There is no recovery plan for this community and no recovery actions have been published. There is no threat abatement plan of particular relevance to this community.	
g) *whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process*	
The proposal will result in the operation of the following key threatening processes: ◗ Clearing of native vegetation – The proposal would result in the clearing up to two Ribbon Gums and their associated understorey. ◗ Loss of hollow-bearing trees – The proposal would result in the loss of up to two hollow-bearing trees.	
Conclusion of Assessment of Significance for Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland	
The proposal is not likely to result in a significant impact on Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland, pursuant to section 5A of the EP&A Act, given: ◗ Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland at the site is fragmented and highly modified through clearing and grazing. ◗ The proposal would result in the clearing of a negligible area of this community (ie. up to two Ribbon Gums and their associated understorey).	

Seven Part Test	Superb Parrot (Vulnerable)
a) *in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction*	
The Superb Parrot nests in small colonies, often with more than one nest in a single tree. Nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box (DECCW 2010b). The Superb Parrot tends to nest where there are extensive tracts of foraging habitat (DSEWPC 2012b). No Superb Parrots have been recorded in the vicinity of the Orange Airport in the past, or during recent surveys. The species has been recorded in small woodland patches in the north-west of the locality. Superb Parrots could forage in the study area on occasion while passing through, but is unlikely to nest of reside in the study area. The loss of up to two trees from a small, fragmented patch of woodland is unlikely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.	
b) *in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction*	
Not applicable.	
c) *in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:* *(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction*	
Not applicable.	
(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction	
Not applicable.	
d) *in relation to the habitat of a threatened species, population or ecological community:* *(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed*	
The proposal would result in the clearing of mainly exotic vegetation, but would include the loss of up to two trees and the temporary disturbance of about 0.12 hectares of very degraded native groundcover from a highly modified, already isolated patch.	
(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action	
Woodlands of the locality are already highly fragmented by agricultural practises, roads, the airport, railways and towns. The proposal is located in a highly modified area, with little native vegetation. Up to two potential forage trees may be removed from a small patch of isolated woodland. Superb Parrots are highly mobile, able to travel large distances between woodland patches. The loss of up to two trees would not fragment or isolate an area of habitat from other areas of habitat.	
(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality	
The Superb Parrot inhabits a range of woodlands, including Box-Gum woodland. It feeds in trees and understorey shrubs and on the ground and its diet consists mainly of grass seeds and herbaceous	

plants. Also eaten are fruits, berries, nectar, buds, flowers, insects and grain. It may forage up to 10 km from nesting sites (OEH 2012b). The parrot avoids open areas on foraging flights, hence simple fragmentation of the habitat can be devastating (DSE 2003).

Superb Parrots may forage in small patches of woodland, paddock trees and in paddocks in the study area on occasion, although the presence of large open areas of cleared paddock are likely to deter the species from foraging in the area. No Superb Parrots have been recorded in the vicinity of the Orange Airport in the past, or during recent surveys. The species has been recorded in small woodland patches in the north-west of the locality. The proposal would result in the clearing of mostly exotic vegetation, as well as up to two Ribbon Gums and their associated understorey from a highly modified, already isolated patch. This loss of this potential foraging habitat is unlikely to decrease the availability or quality of habitat to the extent that the species is likely to decline.

e) *whether the action proposed is likely to have an adverse effect on critical habitat* (*either directly or indirectly*)

There is no critical habitat listed for the Superb Parrot.

f) *whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan*

A recovery plan has been prepared for this species (Baker-Gibb 2011). The long-term objective of recovery is to minimise the probability of extinction of the Superb Parrot in the wild, and to increase the probability of important populations becoming self-sustaining in the long term. The Specific Objectives of recovery are to:

1. Determine population trends in the Superb Parrot.

2. Increase the level of knowledge of the Superb Parrot's ecological requirements.

3. Develop and implement threat abatement strategies.

4. Increase community involvement in and awareness of the Superb Parrot recovery program.

The proposal is not inconsistent with these recovery objectives.

g) *whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process*

The proposal will result in the operation of the following key threatening processes:

- Clearing of native vegetation - The proposal would result in the clearing up to two Ribbon Gums and their associated understorey. This is a negligible area of potential foraging habitat for this species.
- Loss of hollow-bearing trees – The proposal would result in the loss of up to two hollow-bearing trees. The Superb Parrot is highly unlikely to nest in the study area.

Conclusion of Assessment of Significance for the Superb Parrot

The proposal is not likely to result in a significant impact on the Superb Parrot, pursuant to section 5A of the EP&A Act, given:

- No Superb Parrots have been recorded in the vicinity of the Orange Airport in the past, or during recent surveys.
- Potential habitat at the site is fragmented and highly modified through clearing and grazing.
- The proposal would result in the clearing of a negligible area of poor quality foraging habitat (up to

Seven Part Test	Superb Parrot (Vulnerable)
two Ribbon Gums and their associated understorey).	

Seven Part Test	Eastern Bentwing Bat (Vulnerable)
a) *in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction*	
The Eastern Bentwing Bat is essentially a cave bat, but also utilises man-made habitats such as road culverts, storm-water tunnels and other man-made structures outside the breeding season. Breeding takes place from October to April in a number of maternity caves that host up 100,000 females (Churchill, 2008). Maternity colonies are known from Wee Jasper, Bungonia, Willi-Willi, and Riverton (Office of Environment and Heritage, 2011b). The Eastern Bentwing Bat is known from a variety of habitats along the east coast including rainforest, wet and dry sclerophyll forest, monsoon forest, open woodland, paperbark forests and open grasslands. In forested areas, it flies above the canopy to hunt, while in open grassland areas, flight may be within 6 metres of the ground (Churchill 2008). There is one record of the species in the locality. The species was possibly recorded from echolocation calls in the study area. The study area has no breeding habitat and only limited roosting habitat (two culverts under roads). The species could forage throughout the area. The proposal would result in the loss of two trees that could provide a small area of potential foraging habitat for this species. This is unlikely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.	
b) *in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction*	
Not applicable.	
c) *in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:* *(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction*	
Not applicable.	
(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction	
Not applicable.	
d) *in relation to the habitat of a threatened species, population or ecological community:* *(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed*	
The proposal would result in the loss of up to two trees that could provide a small area of potential foraging habitat for this species.	
(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action	

Woodlands of the locality are already highly fragmented by agricultural practises, roads, the airport, railways and towns. The proposal is located in a highly modified area, with little native vegetation. Up to two potential forage trees may be removed from a small patch of isolated woodland. Eastern Bentwing Bats are highly mobile, able to travel large distances between foraging areas and breeding areas. The loss of up to two trees would not fragment or isolate an area of habitat from other areas of habitat.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality

The proposal would result in the loss of up to two trees that could provide potential foraging habitat for this species. This would only make up a minute proportion of the potential foraging habitat for a local population. There is only minimal potential roosting habitat present, and no breeding habitat in the study area. The habitat to be removed is therefore not considered important for the long-term survival of the species in the locality.

e) *whether the action proposed is likely to have an adverse effect on critical habitat* (*either directly or indirectly*)

There is no critical habitat listed for the Eastern Bentwing Bat.

f) *whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan*

There is no recovery plan for this species. The OEH (2012b) has identified a number of priority actions for this species which generally relate to maternity caves and roost habitat. No priority actions are particularly relevant to the proposal. The proposal is therefore not inconsistent with the priority actions for this species.

g) *whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process*

The proposal would result in the operation of the following key threatening processes:

- Clearing of native vegetation - The proposal would result in the clearing up to two Ribbon Gums and their associated understorey.

Conclusion of Assessment of Significance for the Eastern Bentwing Bat

The proposal is not likely to result in a significant impact on the Eastern Bentwing Bat, pursuant to section 5A of the EP&A Act, given:

- The proposal would not impact breeding or roosting habitat.
- The proposal would result in the clearing of a small area of cleared paddocks and up to two Ribbon Gums (potential foraging habitat).

Appendix D

Assessments of Significance for threatened and migratory biota listed under the EPBC Act

For threatened biodiversity listed under the EPBC Act significance assessments have been completed in accordance with the EPBC Act Significant Impact Guidelines (Department of the Environment, Heritage, Water and the Arts 2009). Under the EPBC Act an action will require approval from the minister if the action has, will have, or is likely to have, a significant impact on a MNES. On this basis, assessments of significance have been prepared for the following MNES:

- Threatened fauna:
    - Superb Parrot

EPBC Act Criteria	Superb Parrot (Vulnerable)
An 'important population' of a vulnerable species is defined by DEWHA (2009) as '…a population that is necessary for the species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are: ◗ *Key source populations either for breeding or dispersal* ◗ *Populations that are necessary for maintaining genetic diversity, and/or* ◗ *Populations that are near the limit of the species' range'.*	
The population of Superb Parrots that occurs in the Orange area is likely to be part of the wider South West Slopes population. This population is thought to number in the several thousands. This population is therefore considered important for breeding, dispersal and maintaining genetic diversity. Orange is located at the north-west edge of the species' range. As such, the population of Superb Parrots that occurs around Orange is considered to be an important population for the purpose of this assessment.	
According to the DEWHA (2009) 'significant impact criteria' for vulnerable species, an action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:	
Lead to a long-term decrease in the size of an important population	
Superb Parrots have been recorded a number of times in the locality, in a small woodland to the north-west. The species has not been recorded near Orange Airport, and was not recorded during recent surveys. The loss of up to two potential forage and nest trees is unlikely to lead to a long-term decrease in the size of the important population.	
Reduce the area of occupancy of the species	
The Superb Parrot occurs in NSW and Victoria. In NSW, it mostly occurs west of the Great Divide, where it mainly inhabits the Riverina, the South-west Slope and Southern Tableland Regions (DSEWPaC 2012b). The loss of up to two potential forage and nest trees is unlikely to reduce the area of occupancy for this species.	
Fragment an existing important population into two or more populations	
Woodlands of the locality are already highly fragmented by agricultural practises, roads, the airport, railways and towns. The proposal is located in a highly modified area, with little native vegetation. Up to two potential forage and nest trees may be removed from a small patch of isolated woodland. Superb Parrots are highly mobile, able to travel large distances between woodland patches. The loss of up to two trees would not fragment the existing important population into two or more populations.	
Adversely affect habitat critical to the survival of a species	
No critical habitat is listed under legislation for this species. Woodland habitat for this species exists in the surrounding area and locality. No Superb Parrots have been recorded in the vicinity of the Orange	

EPBC Act Criteria	Superb Parrot (Vulnerable)
Airport in the past, or during recent surveys. Habitat at the site is fragmented and highly modified through clearing and grazing. The habitat to be removed is unlikely to be critical habitat for this species.	
Disrupt the breeding cycle of an important population	
The Superb Parrot nests in small colonies, often with more than one nest in a single tree. Nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box (DECCW 2010b). The Superb Parrot tends to nest where there are extensive tracts of foraging habitat (DSEWPC 2012b). No Superb Parrots have been recorded in the vicinity of the Orange Airport in the past, or during recent surveys. The species has been recorded in small woodland patches in the north-west of the locality. Superb Parrots could forage in the study area on occasion while passing through, but is unlikely to nest of reside in the study area. The loss of up to two trees from a small, fragmented patch of woodland is unlikely to disrupt the breeding cycle of the important population.	
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	
The Superb Parrot inhabits a range of woodlands, including Box-Gum woodland. It feeds in trees and understorey shrubs and on the ground and its diet consists mainly of grass seeds and herbaceous plants. Also eaten are fruits, berries, nectar, buds, flowers, insects and grain. It may forage up to 10 km from nesting sites (OEH 2012b). The parrot avoids open areas on foraging flights, hence simple fragmentation of the habitat can be devastating (DSE 2003). Superb Parrots may forage in small patches of woodland, paddock trees and in paddocks in the study area on occasion, although the presence of large open areas of cleared paddock are likely to deter the species from foraging in the area. No Superb Parrots have been recorded in the vicinity of the Orange Airport in the past, or during recent surveys. The species has been recorded in small woodland patches in the north-west of the locality. The proposal would result in the clearing of mostly exotic vegetation as well as up to two Ribbon Gums and their associated understorey from a highly modified, already isolated patch. This loss of this potential foraging habitat is unlikely to decrease the availability or quality of habitat to the extent that the species is likely to decline.	
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	
Invasive species such as the Red Fox are already present within the study area. The action is not likely to increase the incidence of this species in the locality.	
Introduce disease that may cause the species to decline	
Infection by Psittacine circoviral (beak & feather) disease affecting endangered psittacine species is a disease of relevance to the Superb Parrot. The proposal is not likely to cause infection of this disease in local parrots.	
Interfere with the recovery of the species	
A recovery plan has been prepared for this species (Baker-Gibb 2011). The long-term objective of recovery is to minimise the probability of extinction of the Superb Parrot in the wild, and to increase the probability of important populations becoming self-sustaining in the long term. The Specific Objectives of recovery are to: 1. Determine population trends in the Superb Parrot. 2. Increase the level of knowledge of the Superb Parrot's ecological requirements. 3. Develop and implement threat abatement strategies.	

EPBC Act Criteria	Superb Parrot (Vulnerable)
4. Increase community involvement in and awareness of the Superb Parrot recovery program. The proposal is not inconsistent with these recovery objectives.	
Conclusion	
The proposal is unlikely to have a significant impact on the Superb Parrot as: ◗ No Superb Parrots have been recorded in the vicinity of the Orange Airport in the past, or during recent surveys. ◗ Potential habitat at the site is fragmented and highly modified through clearing and grazing. ◗ The proposal would result in the clearing of a negligible area of poor quality foraging habitat (up to two Ribbon Gums and their associated understorey).	

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0	K. Crosby R. Robinson	J. Tipping		J. Tipping		25/10/12

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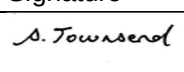
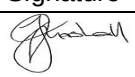
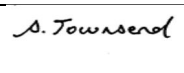
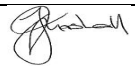
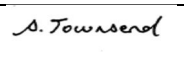
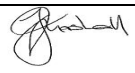
1	R. Exikanas	Sophy Townsend		Greg Marshall		6.11.12
2	R. Exikanas	Sophy Townsend		Greg Marshall		20.11.12
3	R. Exikanas	Sophy Townsend		Greg Marshall		18.01.13

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