



Appendix H2

Threatened species matrix

aurecon



energex
positive energy

Threatened species matrix

Flora

Species name	Conservation status			Habitat association	Likelihood of occurrence
	NC Act	EPBC Act	LCC		
Plants above 4 m					
<i>Baloghia marmorata</i> (Marbled balogia)	V	V	-	Small winter flowering rainforest species to 8 m. <i>Baloghia marmorata</i> is a small tree which occurs in subtropical rainforests on basaltic soils. The species known distribution is confined to disturbed remnant patches of rainforest at Mount Tamborine and in the Lismore area (DECC 2005a; Leiper <i>et al</i> 2008).	LOW: It is considered unlikely that this species would occur within the project area due to the absence of suitable habitat. Additionally the project area is located outside of the known distribution of the species.
<i>Bosistoa selwynii</i> (Heart-leaved bosistoa)	V	V	-	<i>Bosistoa selwynii</i> has been absorbed into the classification <i>Bosistoa transversa s. lat</i> (DECC 2005b). Consequently this report has treated <i>Bosistoa selwynii</i> as <i>Bosistoa transversa s. lat</i> .	
<i>Bosistoa transversa</i> (Three-leaved bosistoa)	-	V	-	Tree to 22 m. <i>Bosistoa transversa s. lat.</i> combines <i>Bosistoa transversa</i> and <i>Bosistoa selwynii</i> . <i>Bosistoa transversa s. lat.</i> is a tall tree which is predominately found in lowland subtropical and dry rainforest areas. The species distribution ranges between Mount Larcom (Queensland) and Mullumbimby (New South Wales) (DECC 2005c; Leiper <i>et al</i> 2008).	LOW: While the project area is within the species distribution range there is no suitable habitat for this species within the project area.
<i>Choricarpia subargentea</i> (Giant ironwood)	R	-	-	Tree to 25m which usually forms dense thickets in regrowth in subtropical rainforest and dry rainforest, north from near Mullumbimby and the Kyogle district (Harden <i>et al.</i> 2006)	LOW: The project area occurs within the distribution range of this species however the project area does not appear to contain any area of suitable habitat with the majority of vegetation communities within the project area dominated by dry sclerophyll species.
<i>Cryptocarya foetida</i> (Stinking cryptocarya)	V	V	-	Tree to 10 m. <i>Cryptocarya foetida</i> is a medium sized tree which is associated with littoral rainforest and occasional subtropical rainforest areas. The species has been recorded between Ballina, New South Wales and Cooloola, Queensland (DECC 2005d; Leiper <i>et al</i> 2008)..	LOW: The project area occurs within the distribution range of this species however the project area does not appear to contain any area of suitable habitat with the majority of vegetation communities within the project area dominated by dry sclerophyll species.

Species name	Conservation status			Habitat association	Likelihood of occurrence
	NC Act	EPBC Act	LCC		
<i>Cupaniopsis tomentella</i> (Boonah tuckeroo)	V	V	-	Tree to 10 m. <i>Cupaniopsis tomentella</i> is a medium sized tree which grows in vine thicket areas predominately on fertile clay soils. The species has a restricted distribution with recording occurring from a select area between Boonah and Ipswich (DEWHA 2008e).	LOW: As the project area does not contain areas of vine thicket and falls outside of the known distribution of <i>Cupaniopsis tomentella</i> it is considered unlikely that the species occurs within the project area.
<i>Diploglottis cambellii</i> (Small-leaved tamarind)	E	E	-	Tree up to 25 m. <i>Diploglottis cambellii</i> is confined to the subtropical rainforests of the Queensland/New South Wales border. The species has been recorded in areas between Richmond River at Tintenbar in northern NSW and Mudgeereba Creek north east of Springbrook in Queensland (DECC 2005e)..	LOW: The known distribution of <i>Diploglottis cambellii</i> is outside of the project area. Additionally suitable habitat for this species is not considered to occur within the project area.
<i>Endiandra floydii</i> (Floyd's walnut)	E	E	-	Tree to 15 m. <i>Endiandra floydii</i> is a medium sized tree which is associated with warm temperate forests and sub-tropical (including littoral) rainforests, often with a <i>Lophostemon confertus</i> (Brush Box) overstorey and occasional with <i>Araucaria cunninghamii</i> (Hoop Pine) emergents (DECC 2005f). usually observed along watercourses and sub-tropical rainforest margins on the Gold Coast (LRB S.G.A.P 2005).	LOW: Regional ecosystem mapping and field investigations of the project area did not identify any suitable habitat for <i>Endiandra floydii</i> .
<i>Eucalyptus curtisii</i> (Plunkett Mallee)	R	-	-	Mallee or small tree to 12m. Occurs in the Moreton and Darling Down district on sandy or stony soils, often in sandstone areas. Is also cultivated as an ornamental (Stanley and Ross 1983).	LOW: While the project area is within the species distribution range there is no suitable habitat for this species within the project area.
<i>Fontainea venosa</i> (Bahrs Scrub Fontainea)	V	V	-	Small tree to 15 m. <i>Fontainea venosa</i> is a small shrub which occurs in Araucarian microphyll vine forest and vine thicket area. The specs can often be found on rocky outcrops or along creeks and is often associated with <i>Araucaria cunninghamii</i> , <i>Barklya syringifolia</i> , and <i>Diospyros fasciculosa</i> (Leiper <i>et al</i> 2008).	LOW: It is considered unlikely that this species would occur within the project area due to the lack of suitable habitat. There were not microphyll vine forest, vine thicket areas or rocky outcrops recorded within the project area. Those creeks lines present within the project area did not appear to support any vine forest species or the commonly associated species listed above.

Species name	Conservation status			Habitat association	Likelihood of occurrence
	NC Act	EPBC Act	LCC		
<i>Gossia gonoclada</i> (Angle-stemmed myrtle)	E	E	S	Tree to 18 m <i>Gossia gonoclada</i> is considered to be locally significant to the Logan region and is associated with remnant lowland riparian rainforest situated along watercourses subject to tidal influence. The species has been recorded from nine sites along the lower reaches of the Logan and Brisbane Rivers and their tributaries (DERM 2006a; Logan City Council undateda).	MODERATE: <i>Gossia gonoclada</i> has been recorded from sites surrounding the project area however the species has not been recorded within the project area itself. The project area does not appear to contain areas of riparian rainforest however due to the close proximity of recorded individuals it is possible the species may exist within the project area.
<i>Macadamia integrifolia</i> (Macadamia nut)	V	V	-	Tree to approx. 18 m. <i>Macadamia integrifolia</i> grows in complex notophyll vine forest, simple notophyll vine forest and in simple microphyll-notophyll vine forest with emergent <i>Araucaria</i> and <i>Argyrodendron</i> species (EPA 2006a). <i>Macadamia integrifolia</i> has been recorded between Grafton in New South Wales and Maryborough in Queensland. (EPA 2006a).	LOW: Although the project occurs within the species distribution suitable habitat for this species is not considered to exist within the project area.
<i>Melaleuca irbyana</i> (Weeping Paperbark)	R	-	S	Shrub or small tree to 8 m high. <i>Melaleuca irbyana</i> is considered to be locally significant to the Logan region and is associated with poorly draining clay soils. (DEH 2005). Swamp Tea-tree Forests only occur in south-eastern Queensland, and can be found in the local government areas of Beaudesert, Boonah, Logan, Ipswich, Laidley and Esk. The Swamp Tea-tree Forests grow on poorly draining clay soils on the plains and low hills of the Moreton basin. These soils tend to drain slowly and therefore often become waterlogged after heavy rain events, causing the appearance of numerous temporary ponds (DEH 2005).	MODERATE: Although the species was not identified on the project site, the species is known from locations within the wider project area. The project site is located adjacent to EPBC critically endangered <i>Melaleuca irbyana</i> (Swamp Tea-tree) Forest of SEQ. At its closest point, the development corridor is located approximately 43 m from the community. At this distance it is considered unlikely that vegetation clearing activities on the proposed development site will generate edge effects which will penetrate into the critically endangered community.
<i>Notelaea lloydii</i> (Lloyd's native olive)	V	V	-	Multi-stemmed shrub to 4m high , which occurs on the margins of dry rainforest and vine thickets. Occurs from the Boonah district (SW of Brisbane) and on the outskirts of Brisbane (Harden <i>et al.</i> 2006).	LOW: <i>Notelaea lloydii</i> occurs along the margins of dry rainforest and vine thickets. Therefore suitable habitat for this species is unlikely to occur within the project corridor.

Species name	Conservation status			Habitat association	Likelihood of occurrence
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<i>Pouteria eerwah</i> (previously <i>Planchonella eerwah</i>) (Shiny-leaved Condo, Black Plum, Wild Apple)	E	E	-	Tree to 4 m to 40 m. <i>Pouteria eerwah</i> is a medium sized tree which occurs within scattered locations throughout SEQ. Populations which have been recorded within areas south of Brisbane are associated with <i>Araucarian</i> notophyll vine forest and <i>Araucarian</i> microphyll vine forest dominated by <i>Flindersia</i> species, with occasional emergent <i>Araucaria cunninghamii</i> and <i>Harpullia pendula</i> (Leiper <i>et al.</i> 2008; DEWHA 2008a).	LOW: Suitable habitat for the species was not identified within or directly adjacent to the project area.
Plants below 4m					
<i>Brasenia schreberi</i> (Water-shield)	R	-	-	Spreading herb which is widespread but rarely common, found in shallow freshwater lagoons or backwaters (PlantNET 2009b).	LOW: Only one small area of suitable habitat for <i>Brasenia schreberi</i> found along the project corridor, however this area was uniform in its species composition and this species was not identified.
<i>Bulbophyllum globuliforme</i> (Miniature moss-orchid)	R	V	-	Epyphitic orchid. <i>Bulbophyllum globuliforme</i> is an epiphytic orchid which grows on the bark of <i>Araucaria cunninghamii</i> (Hoop Pine) at altitudes between 500 and 800m within dry rainforest and vine thicket areas. It is suspected that <i>Araucaria cunninghamii</i> must be at least 100 years old before they provided suitable habitat for <i>Bulbophyllum globuliforme</i> (DECC 2005h).	LOW: The project area is not considered to provide habitat for this species. There have been no <i>Araucaria cunninghamii</i> specimens identified within or adjacent to the project area (the project area is not situated within the altitudinal range of <i>Araucaria cunninghamii</i>). Additionally the project site does not contain any areas of dry rainforest or vine thicket.
<i>Corchorus cunninghamii</i> (Native jute)	E	E	S	Perennial shrub to 1.5 m. <i>Corchorus cunninghamii</i> is a species considered locally significant to the Logan region. The species is found within ecotones between wet eucalypt forest and dry rainforest areas. Known populations of the species within Queensland occur at Mount Cotton, Ormeay, Wongawallen and Brisbane Forest Park, all areas which fall outside of the project area (DECC 2005i; Logan City Council undatedb).	LOW: Ecotones associated with rainforest communities were not identified within or directly adjacent to the project area. The absence of rainforest communities within the project area suggest suitable habitat for the species does not occur within the area and thus it is considered unlikely that <i>Corchorus cunninghamii</i> will occur within the project area.

Species name	Conservation status			Habitat association	Likelihood of occurrence
	NC Act	EPBC Act	LCC		
<i>Cryptostylis hunteriana</i> (Leafless tongue-orchid)	V	V	-	<p>A saprophytic, leafless ground orchid. <i>Cryptostylis hunteriana</i> is a saprophytic, leafless terrestrial orchid which has been recorded from a variety of habitats. Whilst the species is generally associated with swamp heaths and sandy soils the species has been recorded from open forest and areas boarding swamps (DECC 2005j; RBGDT 2009).</p> <p>In Queensland four coastal populations of <i>Cryptostylis hunteriana</i> have been recorded between the Glasshouse Mountains and Tin Can Bay. Additionally a single plant has been recorded near the village of Tinnanbar. The distribution of this species is not known to overlap with any EPBC Act-listed threatened ecological communities (DEWHA 2008c).</p>	<p>LOW: The project area is outside of the identified locations of the species it is considered unlikely the species will be present within or directly adjacent to the project area.</p> <p>It should be noted that <i>Cryptostylis hunteriana</i> is an extremely cryptic species which can only be detected when in flower. Suitable habitat for this species may be present within the project area however the species was not recorded during field investigations. It may be possible that the species is present within or directly adjacent to the project area and was not detected due to differences between survey timing and the flowering period of the species. Consequently a targeted search for this species during its flowering period is recommended prior to any vegetation clearing within the project area.</p>
<i>Hydrocharis dubia</i> (Frogbit)	V	V	-	<p>Aquatic perennial with emergent and floating leaves. Often found in mud near the water's edge in small shallow freshwater bodies or swamps (PlantNET 2009c, LRB S.G.A.P. 2005). There are two populations one in southeast Queensland and northern New South Wales the other near Townsville (DEWR 2008b)</p>	<p>MODERATE: There are water bodies within and directly adjacent to the project area which would provide suitable habitat for this species. A thorough search of a perennial wetland and other freshwater bodies present within the project area did not identify this species.</p>
<i>Indigofera baileyi</i> (Bailey's Indigo)	R	-	-	<p>Erect perennial herb, to 0.4 m high which grows in open woodlands on granite or basalt soils (PlantNET 2009d).</p>	<p>MODERATE: Suitable habitat exists throughout the project area however targeted searches for the species did not identify <i>Indigofera baileyi</i> within or directly adjacent to the project area.</p>
<i>Leucopogon recurvisepalus</i> (NCN)	E	-	-	<p>Shrub to 1m tall. Grows in dry sclerophyll forest and heath on sandy soil sandstone hills (LRB S.G.A.P.2005)</p>	<p>MODERATE: Suitable habitat exists throughout the project area however targeted searches for the species did not identify <i>Leucopogon recurvisepalus</i> within or directly adjacent to the project area.</p>
<i>Marsdenia coronata</i> (Slender milk vine)	V	R	-	<p>Slender climber growing mostly in eucalypt dominated open forest but also seen in association with dry rainforest margins (DEWR 2008c).</p>	<p>LOW: Eucalypt dominated open forest exists throughout the project area however there were no areas of dry rainforest identified within or adjacent to the project site. Thus it is considered unlikely that the species will occur within the project area.</p>

Species name	Conservation status			Habitat association	Likelihood of occurrence
	NC Act	EPBC Act	LCC		
<i>Plectranthus habrophyllus</i>	E	E	-	Herb to 40cm. <i>Plectranthus habrophyllus</i> occurs on rocky outcrops of sandstone or chert in shaded situations in eucalypt woodland often close to vine forest (Leiper et al 2008). It is known from only six locations in south-east Queensland, between Ipswich and Ormeau. Three populations occur in White Rock Conservation Park, two in small corridors through urban areas, and one in a proposed quarry site. The total population size is unknown, but some of these sites record only a few plants present.	LOW: Suitable habitat for <i>Plectranthus habrophyllus</i> is not present within the project corridor and is considered unlikely to occur within the project area.
<i>Taeniophyllum muelleri</i> (Minute orchid)	-	V	-	Tiny leafless epiphytic orchid. <i>Taeniophyllum muelleria</i> is a small, leafless epiphytic orchid which grows predominately on the outer branches and branchlets of rainforest trees. The species has also been recorded within sheltered areas of open forest, humid gullies and along waterways (PlantNET 2009e; Leiper <i>et al.</i> 2008).	LOW: As there were no rainforest trees identified within the project area it is considered unlikely that <i>Taeniophyllum muelleria</i> would occur within the project area.

Table notes:

Where there is no commonly accepted common name these have been omitted

Status

- V = Vulnerable
- E = Endangered
- R = Rare
- M = Migratory
- S = Significant (locally to LCC LGA)

Likelihood of occurrence

Low: Identified in desktop searches, however no suitable habitat exists within or directly adjacent to the project corridor.

Moderate: Identified in desktop searches, suitable habitat exists within the project corridor and/or prior investigations by others may have located this species within the area. However, the species was not observed during the current field survey period.

High: Identified in desktop searches and observed within or directly adjacent the project corridor during the field survey period.

Fauna

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
Amphibians						
<i>Adelotus brevis</i> (Tusked frog)	V	-	S	The Tusked frog lives in rainforests, wet sclerophyll forests and open grasslands. Usually this species is found under logs, stones or leaf litter near puddles, creeks and ponds (Frog Australia, 2005). During optimum conditions this species can be found in very large numbers within a particular area. Field investigations confirmed that there is suitable habitat for this species within the project area, however no individuals were observed.	Given that this species has been recorded in cleared areas similar to that of the cleared easements identified within the project area, and that any major low-lying areas are likely to be spanned, it is not considered likely that this species will be significantly impacted as a result of the project. This species has not been recorded from within 5 km of the project area (refer Figure 11.4).	<ul style="list-style-type: none"> The provision of coarse woody debris within cleared easements would improve habitat for any potential populations within the area. Retaining any logs etc during clearing practices is highly recommended even within pastoral areas such as Areas C, D and E as this species can still occur within such areas. Locate poles away from creeks and wetlands.
<i>Crinia tinnula</i> (Wallum froglet)	V	-	-	The Wallum froglet is restricted to acid paperbark swamp habitat in the wallum country, as the name suggests. Suitable habitat exists within Area G surrounding the targeted fauna site however no individuals were recorded during the field investigations. There are no Wildnet records for this species within the local area.	The wallum froglet has experienced significant population declines and range reductions due to habitat loss, fragmentation and modification from agricultural and urban project. Removal of suitable habitat and fragmentation is the most likely impact to this species as a result of the proposed project.	<ul style="list-style-type: none"> Span low-lying, wet areas. Reduce clearing within paperbark vegetation such as within the targeted fauna site in Area G. An additional targeted survey during the autumn breeding season may be beneficial. Should individuals be recorded from the project area, specialised clearing methods such as translocation may be implemented.
<i>Litoria brevipalmata</i> (Green thighed frog)	R	-	S	The Green thighed frog lives in rainforests and wet sclerophyll forests and is known to occur within the southern and western suburbs of Brisbane (Logan City Council, 2009). No suitable habitat for this species was identified during field investigations for this species.	Given that very little suitable habitat for this species is to be removed as a result of the project, and any suitable breeding sites are likely to be spanned if present, impacts to this species are considered to be minimal. There are no Wildnet records for this species within or surrounding the project area.	<ul style="list-style-type: none"> Reduce clearing around wetlands, dams, creeks. Implement and maintain high quality sediment controls to limit adverse impacts to local water quality. Locate poles away from creeks and wetlands.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Mixophyes iterates</i> (Giant barred frog)	-	E	-	Antarctic beech, wet sclerophyll and rainforest, under leaf litter near fast flowing, permanent streams (Frogs Australia, 2005). This habitat does not occur within the project area.	Given that no suitable habitat for this species occurs within the project and there are no Wildnet records for the local area or the LCC LGA, it is highly unlikely that this species inhabits the project area and will therefore not be impacted by the project.	None required – species does not occur within project area.
Birds						
<i>Accipiter novaehollandiae</i> (Grey goshawk)	R		-	This species inhabits rainforest, gallery forest, mangroves, eucalypt forest, woodland and river edge forest preferring mature forest with open understorey to suit its hunting technique. Established pairs are usually sedentary whilst non-established individuals and immature birds are dispersive (Morecomb, 2004). The project area consists primarily of eucalypt forest and woodland with an open understorey, therefore suiting this species preferred habitat. This species has been recorded from the Logan Reserve area, however the most recent record is from 1992.	The proposed project may reduce habitat for prey species. This species has declined due to forest clearing, however given the amount of vegetation to be cleared as a result of the project, it is not considered likely that this species will be significantly impacted.	<ul style="list-style-type: none"> • Retain mature trees wherever practicable including stags. • Spotter/catcher to check for active nests within local area prior to construction. • For any works near nests maintain a minimum buffer of 200 m radius.
<i>Anas castanea</i> (Chestnut teal)	-	-	S	Coastal swamps: fresh brackish and saline, saltmarshes, tidal mudflats, estuaries, inlets, islands, freshwater wetlands, montane lakes (Pizzey and Knight, 2003). Limited suitable habitat exists within project area and there are no Wildlife Online records for this species, therefore it is unlikely that this species inhabits the project area.	Impacts to any individuals within the area would be associated with impacts to any waterbodies such as filling in of any wetlands or the removal of vegetation surrounding wetlands in the area.	<ul style="list-style-type: none"> • Reduce clearing around wetlands, dams, creeks. • Implement and maintain high quality sediment controls to limit adverse impacts to local water quality. • Locate poles away from creeks and wetlands.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Apus pacificus</i> (Fork-tailed swift)	-	M		Aerial: over open country, from semi desert to coasts, islands, sometimes over forests, cities (Pizzey and Knight, 2004). Given wide range of suitable habitat for this species, likelihood of occurrence is reasonable. There are Wildlife Online records for this species within the project area.	Impacts to this species are likely to be minimal with longer term impacts potentially associated with impacts to food resources given that little is known about the likely entomological impacts associated with the project.	<ul style="list-style-type: none"> Reduce clearing footprint wherever practicable.
<i>Ardea alba</i> (Great egret)	-	M	-	Habitat includes wetland, flooded crops, pasture, dams, roadside ditches, estuarine mudflats, mangroves and reefs (Morecombe, 2004). This species is known to occur within the project area as it was recorded during field investigations.	Disturbance/removal of habitat surrounding farm dams may impact on this species.	<ul style="list-style-type: none"> Limit disturbance and clearing of vegetation surrounding farm dams and wetland areas (ie locate poles away from wetlands).
<i>Ardea ibis</i> (Cattle egret)	-	M	-	Moist pasture with tall grass, shallow open wetland and margins and mudflats (Morecombe, 2004). This species is known to occur within the project area as it was recorded during field investigations.	Disturbance/removal of habitat surrounding farm dams may impact on this species.	<ul style="list-style-type: none"> Limit disturbance and clearing of vegetation surrounding farm dams and wetland areas (ie locate poles away from wetlands).
<i>Aviceda subcristata</i> (Pacific baza)	-	-	S	Leafy trees on rainforest fringes, open forest and woodland, timbered watercourses, well-tree suburbs (Pizzey and Knight, 2003). This species is generally uncommon to the Logan area however it was recorded nesting within Area H3 during field investigations.	Potential impacts associated with the proposed project include direct impacts to nesting individuals including removal of nests or disruption associated with noise and movement of machinery. Impacts may be associated with a reduction in prey species such as frogs and reptiles as well as alteration to suitable habitats ie clearing of vegetated areas.	<ul style="list-style-type: none"> Spotter/catcher to identify any active nests at least 2 months prior to clearing commencing. Any active nests must not be disturbed and a minimum buffer distance of 200 m provided during nesting season (Oct – Dec and until young have fully fledged (to be confirmed by spotter/catcher)) and 50 m provided during non breeding season. Reduce clearing footprint wherever practicable.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Calidris acuminata</i> (Sharp-tailed sandpiper)	-	M	S	Tidal mudflats, saltmarshes, mangroves, shallow fresh brackish or saline inland wetlands, floodwaters, irrigated pastures and crops, sewage ponds, saltfields (Pizzey and Knight, 2003). No suitable habitat exists for this species within the project area.	Given that no suitable habitat for this species occurs within the project and there are no Wildnet records for the local area or the LCC LGA, it is highly unlikely that this species inhabits the project area and will therefore not be impacted by the project.	None required – species does not occur within project area.
<i>Calyptorhynchus lathamii</i> (Glossy black-cockatoo)	V	-	-	Glossy black-cockatoos inhabit forests and woodlands with abundant casuarinas (Morecombe, 2004). She oaks (predominantly allocasuarinas) in forests, woodlands, timbered watercourses often in hilly, rocky ridge country are generally preferred (Pizzey and Knight, 2003). Casuarinas were most prevalent within Area H, in particular H2 and H3.	A reduction in casuarinas/allocasuarinas as a result of clearing within the project area may have adverse effects on local populations utilising the area. The species' feeding patterns are poorly understood but they do show fidelity to particular feeding trees and avoid other seemingly suitable feeding trees. No individuals were observed during field observations nor were any chewed feeding cones or orts. This species has been recorded from within the general project area including immediately adjacent to the project area at Camp Cable Road (refer Figure 11.4).	<ul style="list-style-type: none"> Planting of casuarinas along riparian zones and throughout the project area wherever practicable will increase feeding resources. Mapping of habitat trees within the project area in order to avoid habitat trees wherever practicable and to allow for implementation of suitable clearing practices where habitat trees cannot be avoided.
<i>Coracina tenuirostris</i> (Cicadabird)	-	-	S	Canopy of rainforests, eucalypt forests, woodlands, paperbarks and mangroves (Pizzey and Knight, 2003). Suitable habitat exists for this species, particularly within the southern extent of the project area in Areas G and H. There are Wildlife Online records for this species in the project area.	Reduction of suitable habitat due to vegetation clearing is the most likely impact for this species and this is not considered to be significant. From a cumulative perspective however, continued reduction of the habitats present within the project area, could have significant impacts to typical woodland species.	<ul style="list-style-type: none"> Reduce clearing footprint wherever practicable. Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Chrysococcyx minutillus</i> (Little bronze cuckoo)	-	-	S	Dry open forests and woodlands, monsoon forest, paperbarks and gardens (Pizzey and Knight, 2003). Suitable habitat exists for this species throughout the project area particularly within Areas G and H. There are Wildlife Online records for the project area.	Reduction of suitable habitat due to vegetation clearing is the most likely impact for this species and this is not considered to be significant. From a cumulative perspective however, continued reduction of the habitats present within the project area, could have significant impacts to typical woodland species.	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity.
<i>Coarcina lineata</i> (Barred cuckoo-shrike)	-	-	S	Rainforest, vine-scrub and margins, eucalypt forest / woodlands, clearing in secondary growth, paperbarks, timber on watercourses, native figs and other trees with fruits, plantations (Pizzey and Knight, 2002). Suitable habitat exists for this species throughout the project area particularly within Areas G and H and the more densely vegetated riparian zone of the Logan River. There are Wildlife Online records for this species.	Reduction of suitable habitat due to vegetation clearing is the most likely impact for this species and this is not considered to be significant. From a cumulative perspective however, continued reduction of the habitats present within the project area, could have significant impacts to typical woodland species.	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity.
<i>Coracina maxima</i> (Ground cuckoo-shrike)	-	-	S	Open grasslands with dead trees and belts of live trees, timber on watercourses, mallee-spinifex, mulga and other acacias, cypress-pine scrubs, claypans, pastures, vineyards (Pizzey and Knight, 2003). Limited to no habitat exists for this species, there are no Wildlife Online records for this species within the project area.	Impacts to this species are considered minimal given that this species is considered unlikely to inhabit the project area.	None required – species does not occur within project area.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Cuculus saturatus</i> (Oriental cuckoo)	-	M	S	Monsoon forest, rainforest edges, leafy trees in paddocks, river flats, roadsides, mangroves, islands (Pizzey and Knight, 2003). Some suitable habitat exists within the riparian vegetation associated with the Logan River and there are Wildlife Online records for the project area.	Reduction of suitable habitat due to vegetation clearing is the most likely impact for this species and this is not considered to be significant. From a cumulative perspective however, continued reduction of the habitats present within the project area, could have significant impacts to typical woodland species.	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity.
<i>Cyclopsitta diophthalma coxeni</i> (Coxen's fig parrot)	E	E	-	Alluvial areas of lowland subtropical rainforest where figs and other fleshy-fruited trees are prevalent (CFRT 2001). Given that this species has been forced to occupy non-preferred habitat types there is the potential for this species to occur within the project area as it falls within the species range, however the limited food resources and degree of disturbance that has occurred within the project area reduces this likelihood	Impacts to this species are considered minimal given that this species is considered unlikely to inhabit the project area.	None required – species does not occur within project area.
<i>Euseiornis melanops</i> (Black-fronted dotterel)	-	-	S	Shallow, bare freshwater wetlands sandbars and margins of rivers, open ground on pebbles, gravel, mud, branch and leaf debris, inland claypans, receding shallow floodwater, sewage ponds, farm dams in. Less common on saltmarsh, brackish lakes, sandy seashores or mudflats (Pizzey and Knight, 2003). Suitable habitat exists within the project area where farm dams are present.	Disturbance/removal of habitat surrounding farm dams may impact on this species.	<ul style="list-style-type: none"> • Limit disturbance and clearing of vegetation surrounding farm dams and wetland areas (ie locate poles away from wetlands).

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Ephippiorhynchus asiaticus</i> (Black-necked stork)	R	-	-	Coastal wetlands, mangroves, tidal mudflats, floodplains, open woodlands, irrigated lands, bore drains, sub-artesian pools, farm dams, sewage ponds (Pizzey and Knight, 2003). Suitable habitat does exist for this species within and surrounding the project area particularly within the northern section (refer Figure 11.4). Wildnet records for the project area are dated between 1970 and 1994 with no records for the past 10 years. Increased project within the local area may have reduced the quality of habitats within the area in recent years.	The main impact associated with this species is likely to be electrocution from the transmission lines. Black-necked storks have a wingspan of up to 2 m. Disturbance/removal of habitat surrounding farm dams and open woodlands may also impact on this species.	<ul style="list-style-type: none"> • Bundle transmission line cables to reduce risk of electrocution. • Limit disturbance and clearing of vegetation surrounding farm dams and wetland areas (ie locate poles away from wetlands).
<i>Erythrogonys cinctus</i> (Red-kneed dotterel)	-	-	S	Shallow freshwater wetlands, claypans, floodwaters, sewage ponds (especially those with small shrubs), tussocks, rushes, lignum.	Disturbance/removal of habitat surrounding farm dams may impact on this species.	<ul style="list-style-type: none"> • Limit disturbance and clearing of vegetation surrounding farm dams and wetland areas (ie locate poles away from wetlands).
<i>Erythrotriorchis radiatus</i> (Red goshawk)	E	V	-	The species occupies a range of habitats, often at ecotones, including coastal and sub-coastal tall open forest, tropical savannahs crossed by wooded or forested watercourses, woodlands, the edges of rainforest and gallery forests along watercourses and wetlands that include melaleuca and casuarina (S. Ryan 2006). Whilst the Logan River within the project area provides a permanent water source for this species, severe land clearing and habitat degradation within the riparian zone and the general local area is likely to have removed any suitable habitat for this species. It is possible, given the species' large home range, that individuals might utilise the area for foraging however there are no records for the local area (D. Stewart, 2009).	It is unlikely that this species will be impacted as a result of the project. Indirect impacts may be associated with removal of habitat for prey species within the home range of any species within the area.	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Spotter/catcher to identify any active nests at least 2 months prior to clearing commencing.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Falco longipennis</i> (Australian hobby)	-	-	S	Open woodlands, grasslands with trees, environs of wetlands, lakes rivers, timbered watercourses, foothills, city parks, well-trees suburbs. Suitable habitat exists for this species within the project area however, there are no Wildlife Online records.	Potential impacts associated with the proposed project include direct impacts to nesting individuals including removal of nests or disruption associated with noise and movement of machinery. Impacts may be associated with a reduction in prey species such as frogs and reptiles as well as alteration to suitable habitats ie clearing of vegetated areas.	<ul style="list-style-type: none"> • Spotter/catcher to identify any active nests at least 2 months prior to clearing commencing. • Any active nests must not be disturbed and a minimum buffer distance of 200 m provided during nesting season (Oct – Dec and until young have fully fledged (to be confirmed by spotter/catcher)) and 50 m provided during non breeding season. • Reduce clearing footprint wherever practicable.
<i>Gallinago hardwickii</i> (Latham's snipe)	-	M	-	Soft wet ground or shallow water with tussocks and other green or dead growth to scrub or open woodland; samphire areas on saltmarshes and mangrove fringes. Although it doesn't breed in Australia, it is a regular summer migrant with its stronghold in south east Queensland to southern South Australia (Pizzey and Knight, 2003). Suitable habitat occurs within/surrounding project area particularly within Area A such as the wetlands associated with Scrubby Creek.	Impacts to this species are likely to be minimal given that any major waterbodies or wetlands will be spanned, negating the need for any immediate habitat alteration. There may be some impacts associated with disturbance to low lying areas containing sedges and reeds which may disturb local populations.	<ul style="list-style-type: none"> • Limit disturbance and clearing of vegetation surrounding wetland areas (ie locate poles away from wetlands).
<i>Glossopsitta pusilla</i> (Little lorikeet)	-	-	S	Forests, woodlands, large trees in open country, timbered watercourses, shelter belts, street trees (Pizzey and Knight, 2003). Suitable habitat exists throughout the project area, particularly within Areas G and H. There are Wildlife Online records for this species within the project area.	Reduction in feeding and nesting resources associated with remnant vegetation.	<ul style="list-style-type: none"> • Reduce the amount of remnant vegetation to be cleared from the project area. • Limit the amount of habitat trees to be removed within the project area.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Hirundapus caudacutus</i> (White-throated needletail)	-	M	S	This species occupies high airspaces throughout a range of habitats in Australia, feeding on insects. Caves, hollow trees or chimneys are used for roosting (Pizzey and Knight, 2003). It is likely that the species utilises the air space above the project area.	Given this species' wide range of suitable habitats as well as the large distribution range, it is unlikely that the proposed project will have an impact on this species. Impacts are most likely to be associated with removal of suitable roosting stags, although this species is known to utilise other anthropogenic materials also for this purpose such as chimneys. Longer term impacts may also be potentially associated with impacts to food resources given that little is known about the likely entomological impacts associated with the project	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Reduce clearing of stags wherever practicable.
<i>Lathamus discolor</i> (Swift parrot)	E	E	-	Non-breeding habitat within SEQ consists of Narrow leaved red ironbark, Blue gum forests and Yellow box forest (Department of Primary Industries, Water and Environment, 2001). This species may utilise the project area for foraging, particularly within areas surrounding drainage lines where foraging sites are often more common. Both the Narrow leaved red ironbark and the Blue gum occur throughout the project area. There is a DERM Wildnet record for this species adjacent to the project area from habitat similar to that within the project area however this was recorded in 1988 (refer Figure 11.4).	A reduction in non-breeding feeding habitat is the most likely impact associated with this species however it is considered unlikely that the project area provides important habitat for this species.	<ul style="list-style-type: none"> • Reduce the amount of remnant vegetation to be cleared from the project area. • Use commonly occurring native species such as Narrow leaved red ironbark and Forest red gum in areas to be revegetated wherever practicable. Restrictions associated with height of species limits the amount of suitable areas where these species can be planted near transmission lines.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Lewinia pectoralis</i> (Lewin's rail)	R	-	-	Swamp woodlands, rushes, reeds, rank grass in swamps, creeks, paddocks, wet heaths, tree ferns, samphire in saltmarshes (Pizzey and Knight, 2003). Suitable habitat exists such as the paddocks within Area C and rushes and reeds associated with wetlands within the project area.	Disturbance/removal of vegetation surrounding suitable habitat. This is considered to be the most significant threatening process for this species.	<ul style="list-style-type: none"> • Limit clearing of vegetation around drainage lines and low lying, wet areas. • Maintain existing hydrological regimes within area. • Revegetate low-lying areas impacted by the project with native, endemic species (sedges and grasses) to reduce the likelihood of weed invasion in order to promote suitable habitat for this species.
<i>Merops ornatus</i> (Rainbow bee-eater)	-	M	S	Open woodlands with sandy, loamy soil, sandridges, sandpits, riverbanks, road cuttings, beaches, dunes, cliffs, mangroves, rainforest, woodlands, golf courses (Pizzey and Knight, 2003). Suitable habitat exists within the project area and it is highly likely that this species occurs within the area. There are Wildlife Online records.	Reduction of suitable habitat due to vegetation clearing is the most likely impact for this species and this is not considered to be significant. From a cumulative perspective however, continued reduction of the habitats present within the project area, could have significant impacts to typical woodland species.	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity.
<i>Monarcha leucotis</i> (White-eared monarch)	-	-	S	Rainforest margins/regrowth, dense scrubs on streams, paperbarks, mangroves, adjacent eucalypt forest. This species was recorded from Area H3 during field investigations.	Reduction of suitable habitat due to vegetation clearing is the most likely impact for this species and this is not considered to be significant. From a cumulative perspective however, continued reduction of the habitats present within the project area, could have significant impacts to typical woodland species.	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Monarcha melanopsis</i> (Black-faced monarch)	-	M	S	Rainforests, eucalypt woodlands, coastal scrubs, damp gullies in rainforest, eucalypt forest. When migrating, this species utilises more open woodland (Pizzey and Knight, 2003).	Reduction of suitable habitat due to vegetation clearing is the most likely impact for this species and this is not considered to be significant. From a cumulative perspective however, continued reduction of the habitats present within the project area, could have significant impacts to typical woodland species.	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity.
<i>Monarcha trivirgatus</i> (Spectacled monarch)	-	M	S	Understorey of mountain/lowland rainforests, thickly wooded gullies, waterside vegetation (Pizzey and Knight, 2003). Limited suitable habitat exists within the area however, there are Wildlife Online records for this species within the project area.	Reduction of suitable habitat due to vegetation clearing is the most likely impact for this species and this is not considered to be significant. From a cumulative perspective however, continued reduction of the habitats present within the project area, could have significant impacts to typical woodland species.	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity.
<i>Myiagra cyanoleuca</i> (Satin flycatcher)	-	M	S	Heavily vegetated gullies in forests, taller woodlands, usually above shrub layer, during migration the species utilises coastal forests, woodlands, mangroves and trees in open country (Pizzey and Knight, 2003). This species is recorded from the LCC LGA but not the project area.	Reduction of suitable habitat due to vegetation clearing is the most likely impact for this species and this is not considered to be significant. From a cumulative perspective however, continued reduction of the habitats present within the project area, could have significant impacts to typical woodland species.	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Nettapus coromandelianus albigennis</i> (Australian cotton pygmy-goose)	R	Marine	-	Deep freshwater swamps, lagoons and dams with waterlilies and other semi-emergent water plants (Pizzey and Knight, 2003). Plentiful dams are present throughout the project area, particularly within the southern section of the project area, with suitable habitat also potentially present in the wetland system associated with Scrubby Creek.	Disturbance to farm dams including surrounding vegetation causing reduction in water quality.	<ul style="list-style-type: none"> Avoid any impacts to farm dams and wetlands, ie span wherever practicable. Where clearing near dams and wetlands cannot be avoided, vegetation immediately surrounding these areas should be retained.
<i>Numenius phaeopus</i> (Whimbrel)	-	M	S	Estuaries, mangroves, tidal flats, coral cays, exposed reefs, flooded paddocks, sewage ponds, bare grasslands, sportsgrounds, lawns (Pizzey and Knight, 2003). The project area is outside of this species' range, its presence is considered unlikely.	Impacts to this species are considered minimal given that this species is considered unlikely to inhabit the project area.	None required – species does not occur within project area.
<i>Phaps chalcoptera</i> (Common bronzewing)	-	-	S	Forests, woodlands, mallee, native cypress scrubs, acacia thickets, coastal tea-tree, banksias and heaths. In summer, alpine woodlands to over 2000 m, coastal and inland (Pizzey and Knight, 2003). Suitable habitat occurs within the project area for this species and the species was recorded from Sites H1, H2 and H3 during field investigations.	Reduction of suitable habitat due to vegetation clearing is the most likely impact for this species and this is not considered to be significant. From a cumulative perspective however, continued reduction of the habitats present within the project area, could have significant impacts to typical woodland species.	<ul style="list-style-type: none"> Reduce clearing footprint wherever practicable. Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity.
<i>Porzana tabuensis</i> (Spotless crane)	-	-	S	Well vegetated freshwater wetlands with rushes, reeds, cumbungi. Salt-swamps, saltmarsh and mangroves (Pizzey and Knight, 2003). Limited suitable habitat exists within the project area. Whilst there are several wetlands adjacent to the project area there are non that are directly impacted. There are Wildlife Online records for this species.	Disturbance to wetlands including surrounding vegetation and potential habitat.	<ul style="list-style-type: none"> Avoid any impacts to wetlands, ie span wherever practicable. Where clearing near wetlands cannot be avoided, vegetation immediately surrounding these areas should be retained.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Pyrholaemus sagittatus</i> (Speckled warbler)	-	-	S	Drier woodlands with tussocks, branches, rocks. In Queensland, mulga, brigalow, vine scrubs (Pizzey and Knight, 2003). This species was recorded from Site H3 during field investigations.	Reduction of suitable habitat due to vegetation clearing is the most likely impact for this species and this is not considered to be significant. From a cumulative perspective however, continued reduction of the habitats present within the project area, could have significant impacts to typical woodland species.	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity.
<i>Rhipidura rufifrons</i> (Rufous fantail)	-	M	S	Undergrowth of rainforests/wetter eucalypt forests/gullies, monsoon forests, paperbarks, sub-inland and coastal scrubs, mangroves, watercourses, parks, gardens (Pizzey and Knight, 2003). There is limited suitable habitat for this species within the project area, however the species is recorded from the project area in the Wildlife Online records.	Reduction of suitable habitat due to vegetation clearing is the most likely impact for this species and this is not considered to be significant. From a cumulative perspective however, continued reduction of the habitats present within the project area, could have significant impacts to typical woodland species.	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity.
<i>Rostratula australis</i> (Australian painted snipe)	-	V	S	The Australian painted snipe inhabits shallow swamps, water meadows, damp margins of lakes and sometimes temporarily flooded inland claypans throughout. The species is highly nomadic and may appear suddenly in an area where it is rarely seen or suddenly disappear from an area where it is frequently seen (G Beruldsen, 2003). Limited habitat exists within the project area.	Disturbance to permanent/ephemeral waterbodies including filling in dams and clearing of vegetation around swamp areas. Impacts to this species are considered unlikely as limited suitable habitat occurs.	<ul style="list-style-type: none"> • Limit clearing of vegetation around drainage lines and low lying, wet areas. • Maintain existing hydrological regimes within area.
<i>Tringa nebularia</i> (Common greenshank)	-	M	S	Mudflats, estuaries, saltmarshes, margins of lakes, wetlands, claypans, fresh and saline, commercial saltfields, sewage ponds (Pizzey and Knight, 2003). There is limited suitable habitat for this species within the project area. There are Wildlife Online records for this species.	Disturbance to wetlands including surrounding vegetation and potential habitat.	<ul style="list-style-type: none"> • Avoid any impacts to wetlands, ie span wherever practicable. • Where clearing near wetlands cannot be avoided, vegetation immediately surrounding these areas should be retained.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Tringa stagnatilis</i> (Marsh sandpiper)	-	M	S	Salt, brackish or freshwater wetlands, sewage ponds, commercial saltfields, bore drains, mangroves, tidal mudflats, estuaries (Pizzey and Knight, 2003). There is limited suitable habitat for this species within the project area. There are no Wildlife Online records for this species.	Disturbance to wetlands including surrounding vegetation and potential habitat.	<ul style="list-style-type: none"> • Avoid any impacts to wetlands, ie span wherever practicable. • Where clearing near wetlands cannot be avoided, vegetation immediately surrounding these areas should be retained.
<i>Xanthomyza phrygia</i> (Regent honeyeater)	E	E		Predominantly dry box-ironbark/eucalypt woodland and dry sclerophyll forest associations, showing preference for fertile sites such as riparian zones, or in broad river valleys and foothills. Riparian forests containing River oak and Needle-leaf mistletoe (<i>Amyema cambadgei</i>) are also important for feeding and breeding. At times of food shortage, honeyeaters also use other woodland types and wet lowland coastal forests dominated by Swamp mahogany or Spotted gum. Regent honeyeaters occur typically in associations that reliably produce copious amounts of nectar, such as Silver-leaved ironbark, Narrow-leaved ironbark, and Rough-barked apple of which the Narrow-leaved ironbark and Rough-barked apple were prevalent throughout the project area (DEWHA 2009). Morecombe (2004) places the project area outside the species' current main distribution range, with no recent records (ie last 10 years) from within the local project area. There are DERM Wildnet records for this species adjacent to the project area with the most recent sighting dated in 1990 (refer Figure 11.4).	Reduction in feeding resources such as the large eucalypt species occurring with the project area. Impacts are likely to be minimal due to the unlikely occurrence of this species within the project area.	<ul style="list-style-type: none"> • Limit clearing of remnant vegetation wherever practicable. • Rehabilitation efforts should include key flora for this species ie Narrow-leaved ironbark and Rough-barked apple (these flora species also provide key feeding resources for locally significant glider species within the area).

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
Mammals						
<i>Acrobates pygmaeus</i> (Feathertail glider)	-	-	S	Widely distributed in tall forests and woodlands throughout eastern Australia. It is suggested that this species prefers tall, mature and moist forest possibly due to the fact that the species requires a complex environment to be able to meet its food and nesting requirements (Strahan, 1995).	Feathertail gliders can glide up to 25 m. Given that the easement is proposed to be 40 m it is likely that the project will impact on the movement of this species.	<ul style="list-style-type: none"> • Reduce clearing within power easements. Where a maintenance track is not required, any species that have a mature height of less than 4 m shall be retained with all other species cleared for safety. Further revegetation with other suitable species should occur within the easement. Where a safety track is required, the minimum width required shall be cleared for the track with the same revegetation measures described above to be implemented. This will enhance connectivity and reduce the amount of distance required to be covered on foot. • Should revegetation within the easement be considered non-viable, glider poles provided at intervals within the easement may enhance species movement. • Revise clearing methodologies to allow for a qualified arborist and spotter/catcher to remove all tree hollows from within the clearing footprint with the use of a cherry picker. Hollows and any fauna within shall be relocated to a previously identified, suitable area. • Attach nesting boxes adjacent to easement wherever practicable to increase sheltering resources for arboreal species.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
						<ul style="list-style-type: none"> Wherever practicable, use suitable flora species in rehabilitation efforts that provide optimum feeding resources for glider species such as Narrow-leaved ironbark and Rough-barked apple.
<i>Chalinolobus dwyeri</i> (Large-eared pied bat)	R	V		Roosts in caves (near entrances), crevices in cliffs, frequenting low to mid-elevation dry open forest and woodland close to these features. Distribution is around Rockhampton to southern NSW highlands (DECC 2005p).	Impacts to this species are considered minimal given that this species is considered unlikely to inhabit the project area.	None required – species does not occur within project area.
<i>Dasyurus maculatus maculatus</i> (SE mainland population) (Spotted-tailed quoll)	V	E		The Spotted-tailed quoll occurs in densely vegetated areas ranging from rainforest, to woodland to coastal heathland. Transient males are sometimes seen in more open areas. The southern Spotted-tailed quoll occurs in coastal areas and adjacent ranges throughout SEQ (EPA, 2006). This species' habitat requirements include suitable den sites (such as hollow logs, tree hollows, rock outcrops or caves) and an abundance of food (such as birds and small mammals). Individuals also require large areas of relatively intact vegetation in which to forage (NSW NPWS, 1999).	Fragmented habitat due to increased size of existing easements within the southern extent of the project area. Existing fencing implemented by local residents within the easement also creates significant barriers for ground-dwelling fauna. Cumulative impacts associated with decreased food resources may also become an issue if habitat fragmentation leads to a broadscale reduction in fauna population within the project area.	<ul style="list-style-type: none"> Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity. Retain coarse woody debris, particularly large hollow logs. Remove fencing from within power easements wherever possible.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
				Studies conducted by the Wildlife Preservation Society of Queensland and Wildlife Online records for the project area indicate that this species inhabits the local area and could potentially inhabit the project area (refer Figure 11.4). Field investigations confirmed that the local project area still supports large areas of well connected vegetation, suitable sheltering habitats and abundant food sources, however no individuals were recorded during the fauna survey.		
<i>Macropus/Wallabia sp.</i> Wallabies	-	-	S	Wallabies within the Logan region inhabit a variety of habitats including scrubland, open forest, wet sclerophyll forest, open eucalypt forest as well as open grasslands. Wallabies recorded during the field investigations included the Agile wallaby (<i>Macropus agilis</i>) and Red-necked wallaby (<i>Macropus rufogriseus</i>).	Reduction in suitable foraging habitat and cumulative impacts associated with fragmentation of habitat associated with clearing as well as fencing of easements.	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Remove fencing from within existing easements.
<i>Ornithorhynchus anatinus</i> (Platypus)	-	-	S	Found in freshwater creeks, slow moving rivers, lakes and dams in east and south east Australia, with preference for areas that area shaded, deep and have high undercut banks suitable for burrows (Logan City Council, 2009). Given the poor health and tidal influence of the Logan River, and the fact that most other creeks within the area are ephemeral, it is highly unlikely that this species inhabits the local area.	Reduction in water quality due to removal of riparian vegetation. This can lead to erosion and increased sediment loads within receiving waterways which can impact on the aquatic ecology and limit the amount of available food resources for the species (macro-invertebrates).	<ul style="list-style-type: none"> • Implement a buffer zone for works along the river to ensure that no vegetation is removed within the riparian zone. • Implement and maintain high quality erosion and sediment controls

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Petaurioides volans</i> (Greater glider)	-	-	S	Eucalypt dominated habitats ranging from low, open coastal forests to tall forests in the ranges and low woodland to the west of its distribution (Strahan, 1995). There is some suitable habitat for this species within the project area however this species is generally found within undisturbed forest. There are Wildlife Online records for this species within the project area, however this species was not observed during field investigations.	Reduction in suitable habitat trees as well as mature feeding trees for this species (the Greater glider feeds almost exclusively on eucalyptus sp. foliage. As this species can glide up to 100 m, the easement of 40 m should not provide too much of an obstacle except perhaps for juveniles.	<ul style="list-style-type: none"> • Limit clearing of remnant vegetation wherever practicable, particularly those containing hollows. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity. • Remove any barbed wire fencing from within/adjacent the project area. • Attach nesting boxes adjacent to easement wherever practicable to increase sheltering resources for arboreal species. • Should revegetation within the easement be considered non-viable, refuge/glider poles within the easement may provide opportunities to continue movement within the easement and avoid ground-dwelling predators.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Petaurus australis</i> (Yellow-bellied glider)	-	-	S	This species occurs within tall, mature wet eucalypt forest feeding on plant and insect exudate with eucalypt species the preferred species to obtain sap and nectar (Strahan, 1995).	Reduction in suitable habitat trees as well as mature feeding trees for this species (the Greater glider feeds almost exclusively on eucalyptus sp. foliage. As this species can glide up to 90 m, the easement of 40 m should not provide too much of an obstacle except perhaps for juveniles.	<ul style="list-style-type: none"> • Limit clearing of remnant vegetation wherever practicable, particularly those containing hollows. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity. • Remove any barbed wire fencing from within/adjacent the project area. • Attach nesting boxes adjacent to easement wherever practicable to increase sheltering resources for arboreal species. • Should revegetation within the easement be considered non-viable, refuge/glider poles within the easement may provide opportunities to continue movement within the easement and avoid ground-dwelling predators.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Petaurus breviceps</i> (Sugar glider)	-	-	S	The Sugar glider is locally common where tree hollows and food sources are abundant. Preferred food sources include gum from acacias and nectar and pollen as well as sap from some eucalypts all of which depends on seasonal availability. This species appears more densely populated in open forest habitats in SE Australia where acacia appear more prevalent (Strahan, 1995). Suitable habitat occurs within the project area for this species, particularly within the southern portion. Local residents have noted a decline in this species in past years.	Reduction in suitable habitat trees as well as mature feeding trees for this species (the Greater glider feeds almost exclusively on eucalyptus sp. foliage. As this species can glide to 50 m, the easement of 40 m should not provide too much of an obstacle except perhaps for juveniles	<ul style="list-style-type: none"> • Limit clearing of remnant vegetation wherever practicable, particularly those containing hollows. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity. • Remove any barbed wire fencing from within/adjacent the project area. • Attach nesting boxes adjacent to easement wherever practicable to increase sheltering resources for arboreal species. • Should revegetation within the easement be considered non-viable, refuge/glider poles within the easement may provide opportunities to continue movement within the easement and avoid ground-dwelling predators.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Petaurus phalanger</i> (Squirrel glider)	-	-	S	Squirrel gliders inhabit dry sclerophyll forest and woodland in SE Australia where it is absent from the coastal ranges, however in Queensland it also occurs in coastal forest and in some wet forests areas bordering on rainforest (Strahan, 1995). Suitable habitat occurs within the project area for this species, particularly within the southern portion. Local residents have noted a decline in this species in past years.	Reduction in suitable habitat trees as well as mature feeding trees for this species (the Greater glider feeds almost exclusively on eucalyptus sp. foliage. As this species can glide up to 90 m, the easement of 40 m should not provide too much of an obstacle except perhaps for juveniles.	<ul style="list-style-type: none"> • Limit clearing of remnant vegetation wherever practicable, particularly those containing hollows. • Reduce clearing within power easements to that required for a maintenance track, if required, and revegetate previously cleared easements with suitable, low growing, endemic species to enhance connectivity. • Remove any barbed wire fencing from within/adjacent the project area. • Attach nesting boxes adjacent to easement wherever practicable to increase sheltering resources for arboreal species. • Should revegetation within the easement be considered non-viable, refuge/glider poles within the easement may provide opportunities to continue movement within the easement and avoid ground-dwelling predators.
<i>Petrogale penicillata</i> (Brush-tailed rock-wallaby)	V	V		The Brush-tailed rock-wallaby inhabits rocky areas in a wide variety of habitats, including rainforest gullies, wet and dry sclerophyll forest, open woodland and rocky outcrops in semi-arid country (Strahan, 1995). No suitable habitat for this species occurs within the project area.	Impacts to this species are considered minimal given that this species is considered unlikely to inhabit the project area.	None required – species does not occur within project area.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
<i>Phascolarctos cinereus</i> (Koala (South East Queensland bioregion))	V	-	S	The Koala occurs on a range of habitat types depending on the availability of food trees as well as soil fertility and water to a lesser degree. Favoured food trees include Forest red gum, Tallowwood, Spotted gum, Scribbly gum as well as some ironbarks and melaleucas (G. Gordon et al. 2008).	Loss of habitat and habitat fragmentation is considered to be the biggest potential impact to this species as a result of the proposed project. Fencing within the existing power easement implemented by local residents also creates movement barriers for individuals attempting to move within the easement, increasing the time individuals would need to spend on the ground and therefore creating further risk of dog attack. This species is known to occur in high numbers within the project area (refer Figure 11.4). Indirect impacts associated with habitat fragmentation such as increased risk of predation are also highly likely.	<ul style="list-style-type: none"> • Reduce clearing within power easements. Where a maintenance track is not required, any species that have a mature height of less than 4 m shall be retained with all other species cleared for safety. Further revegetation with other suitable species should occur within the easement. Where a safety track is required, the minimum width required shall be cleared for the track with the same revegetation measures described above to be implemented. This will enhance connectivity and reduce the amount of distance required to be covered on foot. • Should revegetation within the easement be considered non-viable, refuge poles within the easement may provide opportunities to escape potential predators. • Any low growing species within the easement shall be retained wherever possible to provide refuge points for individuals in the short term until revegetation has reached a suitable height and can also provide connectivity and refuge. <p>Remove fencing from within power easements wherever possible.</p>

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
						<ul style="list-style-type: none"> Where removal of fencing is not a possibility, consideration should be given to providing fencing that is Koala friendly and easy to climb. This may require consultation with the relevant landowners.
<p><i>Potorous tridactylus tridactylu</i> (Long-nosed potoroo (SE mainland))</p>	V	V		<p>Occurs across a range of vegetation types from subtropical and warm temperate rainforest through tall open forest with dense understorey to dense coastal heaths. Its main requirement is thick groundcover.</p> <p>Found between Southern Queensland and northern NSW (EPA 2005b). There are no Wildlife Online records for this species within the project area and limited suitable habitat exists.</p>	<p>Reduction in suitable foraging habitat and cumulative impacts associated with fragmentation of habitat associated with clearing as well as fencing of easements.</p>	<ul style="list-style-type: none"> Reduce clearing footprint wherever practicable. Remove fencing from within existing easements.
<p><i>Pteropus poliocephalus</i> (Grey-headed flying-fox)</p>	C	V		<p>Found between Bundaberg and Melbourne within 200 km of coast.</p> <p>Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops (DECC 2005). There is suitable habitat for this species within the project area however no species were recorded during the field investigations. The <i>Bat Care Brisbane</i> association state that there is a flying-fox colony approximately 3 km to the north of the project area. There are Wildlife Online records for the project area.</p>	<p>Electrocution on sub-transmission lines as well as local reduction in food resources are the main impacts associated with this species. Cumulative impacts associated with vegetation clearing could result in a significant decline in this species due to reduced food resources.</p>	<ul style="list-style-type: none"> Bundle transmission line cables to reduce risk of electrocution. Where bundling of transmission line cables is not feasible, cables should be spaced at least 1 m apart (wingspan of this species is up to 1 m). Limit clearing of remnant vegetation wherever practicable.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
Reptiles						
<i>Coeranoscincus reticulatus</i> (Three-toed snake-tooth skink)	R	V		Found mostly in closed forest and possibly open layered Eucalyptus forest. Generally recorded in moist layered forest on loamy basaltic soils, but also found in closed forest overlying silica sand dunes. Within forests, this species is found in well-mulched, loose, friable rainforest soil in leaf litter, often immediately adjacent to fallen tree trunks (DEWHA, 2009).	Clearing of suitable habitat and removal of coarse woody debris and leaf litter.	<ul style="list-style-type: none"> • Reduce clearing footprint wherever practicable. • Retain all coarse woody debris.

Species name	Conservation status			Habitat association	Likely impacts	Mitigation measures
	NCA	EPBC	LCC			
Insects						
<i>Ornithoptera richmondia</i> (Richmond birdwing butterfly)	V	-	-	<p>The Richmond Birdwing Butterfly's distribution extends between Caboolture and Kin Kin to the north of Brisbane and between Nerang in the Gold Coast hinterland to Wardell in New South Wales (EPA 2007). Tallebudgera Valley and Currumbin Valley have been identified as key corridors for the species (Dolan 2008).</p> <p>The Richmond Birdwing Butterfly lays single or small clusters (up to 3) of round, greenish-yellow eggs on native Pararistolochia vines (EPA 2007; Sands 2008). When hatched, each larva will consume more than one square metre of the Pararistolochia vines leaves and stem before it pupates (CSIRO 2000). Whilst Pararistolochia vines provide a food source for the Richmond Birdwing Butterfly larvae, the adults of the species do not feed from the plant (Braby 2004). Although a number of Pararistolochia vines have been mapped within south SEQ, no Pararistolochia vines have been mapped within the LCC LGA.</p>	<p>Major threats to the Richmond Birdwing Butterfly include the removal of habitat, and the introduction of the exotic <i>Aristolochia elegans</i> (Dutchman's pipe vine), which has toxic leaves that can kill the butterfly larvae (EPA 2007).</p>	<ul style="list-style-type: none"> It is believed that when used in revegetation works the Pararistolochia vines may successfully sustain Richmond Birdwing Butterfly populations and encourage the butterflies to recolonise an area.

Table notes:

Where there is no commonly accepted common name these have been omitted

Status

- V = Vulnerable
- E = Endangered
- R = Rare
- M = Migratory
- S = Significant (locally to LCC LGA)