ULTIMATE PLANNING SOLUTIONS

MNES Assessment Report ATTACHMENT 6

MNES LIKELIHOOD OF OCCURRENCE ASSESSMENT TABLES

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1. DESKTOP LIKELIHOOD OF OCCURRENCE ASSESSMENTS: MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

The desktop assessment of potentially occurring Matters of National Environmental Significance (MNES) considered information relating to species habitat preferences, known or suspected distribution, database records from the region, the occurrence of suitable habitat based on desktop information, or confirmed presence of species within the locality (i.e. known records).

The likelihood of occurrence assessment was based upon publicly available species records and/or other information sources, such as field guides and web-based species profiles, including, but not limited to:

- Commonwealth Government's SPRAT for the threatened species and ecological communities listed under the EPBC Act
- the Queensland DES threatened species website
- Databases listed in Table 1 of the attached report (and their associated underpinning methodologies where the output is a mapping product or species suitability model)
- Specifically referenced documents contained within discussions of threatened species and communities

The likelihood of threatened species and ecological communities occurring in the referral area was assessed against the criteria outlined below:

Likelihood of Occurrence	Assessment Criteria
Reasonably Unlikely / Low	No previous records of the species within the locality (5km surrounding the site) and one or more of the following apply: – Not within the current known geographic range – Are dependent on specific habitat types or resources that are to be present on the site. – Not recorded in the locality in the last 20 years.
Possible/ Moderate	Species previously recorded within locality and potential habitat resources are currently known to be present within the locality or the species is highly nomadic or may fly over the site (e.g. migratory birds).
Likely/High	Species recorded within the locality within the last 20 years and one or more of the following apply: – Dependent on habitats or habitat resources that are confirmed to be present on the site – Favoured habitats are available in proximate or contiguous habitats to the site – Previously recorded within the site or immediately adjoining habitats
Very Likely / Known	Flora or fauna species or ecological community positively identified during field surveys within the site or similar contiguous habitat. Or multiple recent (last 10 years) records within the locality within habitats similar to or physically connected with those on the site

The desktop assessment of each potentially occurring is provided below and generally follows the matters as arranged within the Protected Matters Search Report extracted for the action site (refer Attachment 2).

1.1 POTENTIALLY OCCURRING THREATENED FLORA SPECIES

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Threatened Ecological Communities			
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland	E	'Physical Environment: This ecological community occurs in sub-tropical, sub-humid and temperate climatic zones from Curtis Island, north of Gladstone, in Queensland to Bermagui in southern New South Wales. The ecological community is found within the South Eastern Queensland (SEQ), NSW North Coast (NNC), Sydney Basin (SYB) and South East Corner (SEC) IBRA7 bioregions (Department of the Environment and Energy, 2012). The ecological community occurs in coastal catchments, mostly at elevations of less than 20 m above sea-level (ASL) that are typically found within 30 km of the coast. Coastal Swamp Oak Forest typically occurs on unconsolidated sediments, including alluvium deposits, and where soils formed during the Quaternary period as a result of sea-level rise during the Holocene period (Sloss et al., 2007). These are most typically hydrosols, which are saturated with water for long periods of time (typically grey-black clay-loam and/or sandy loam soils). The ecological community can also occur on organosols (peaty soils). Occurrences of swamp oak trees on rocky headlands or other consolidated substrates are not considered to be a part of the ecological community, but areas where soils transition into unconsolidated sediments may contain the ecological community. The ecological community is typically found where groundwater is saline or brackish, but can occur in areas where groundwater is relatively fresh. It is typically found on coastal flats, floodplains, drainage lines, lake margins, wetlands and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated. These are typically associated with low-lying coastal alluvial floodplains and alluvial flats (Keith and Scott, 2005). Minor occurrences can be found on coastal dune swales or flats, particularly deflated dunes and dune soaks. Vegetative Structure: Coastal Swamp Oak Forest is often found in association with other vegetation types such as coastal saltmarsh, mangroves, freshwater wetlands, littoral rainforests or swamp sclerophyll forests in a 'mosaic' of coastal floodplain communities. The structure of Coastal Swamp Oak Forest can vary from forest to woodland depending on its location in the landscape and disturbance history. The local expression of the ecological community is influenced by soils, history of inundation by tidal flows/estuarine system dynamics, groundwater salinity, site history, disturbance regimes and current land management. Many remaining patches of the ecological community contain regrowth from past clearance or other disturbances, and/or due to naturally occurring river and coastal dynamics. Some patches, for example where	Unlikely. Residual vegetation communities are not reflective of the CSO community, and no desktop mapping of analogous regional ecosystems occurs. Not recorded during field survey.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
		drainage is more impeded, may be expressed primarily as sedgeland or rushland, with a very sparse canopy (down to 10 per cent crown cover) of predominantly swamp oak. Other patches may just occur as canopy trees, over dense needle litter with sparse native groundcover. Where groundwater is more saline, for example on estuarine and/or coastal lake fringes, the ecological community is typically expressed as a low woodland or forest. In these areas, the composition of the understory is more likely to include saline tolerant (typically saltmarsh) species. In more freshwater areas, the ecological community is more likely to demonstrate greater structural diversity – often being expressed as a taller open or rarely closed forest with a diverse understory, typically including a greater abundance of grasses and herbs. Many patches have a sub-canopy of smaller trees, but the mid-layer or shrub layer is typically sparse. Climbing and epiphytic plant species are commonly observed and are characteristic of Coastal Swamp Oak Forest. The ecological community typically includes a continuous to semi-continuous ground layer that may include either forbs, sedges, grasses and/or plant litter (including branchlets/needles, leaves, bark, twigs). Key Diagnostics: The ecological community is defined as patches of vegetation that meet the following key diagnostic characteristics: -Occurs from south-east Queensland to southern NSW within the South Eastern Queensland, NSW North Coast, Sydney Basin, or South East Corner bioregions -Occurs in coastal catchments at elevations up to 50 m ASL, typically less than 20 m ASL, on coastal flats, floodplains, drainage lines, lake margins, wetlands and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated. There are also minor occurrences on coastal dune swales or flats, particularly deflated dunes and dune soaks. -Occurs on soils derived from unconsolidated sediments (including alluvium), typically hydrosols (grey-black clay-loam and/or sandy loam soils) and sometimes organosols (peaty soils). It may occur in transitional soils (or catenas) where shallow unconsolidated sediments border lithic substrates. -Has an open woodland, woodland, forest, or closed forest structure, with a tree canopy that has a total crown cover1 of at least 10 per cent. -Has a canopy of trees dominated by Casuarina glauca (swamp-oak, swamp she-oak)' (DoE, 2018: 2, 11-12) This community is usually associated with Regional Ecosystems 12.3.20, 12.1.1 (where key diagnostic criteria are met).	
Lowland Rainforest of Subtropical Australia	CE	'Physical Environment: The ecological community occurs on basalt and alluvial soils, including sand and old or elevated alluvial soils as well as floodplain alluvia. It also occurs occasionally on enriched rhyolitic soils and basaltically enriched metasediments. Lowland Rainforest mostly occurs in areas <300 m above sea level. Aspect can result in the ecological community being found at >300 m altitude on north-facing slopes, but typically 300 m defines the extent of the lowlands. In addition, Lowland Rainforest typically occurs in areas with high annual rainfall (>1300 mm). The physical environment where the ecological community occurs is differentiated from the EPBC listed Littoral Rainforest and Coastal Vine Thickets of Eastern Australia ecological community (hereafter referred to as Littoral Rainforest) by the level of coastal or estuarine influence (such as windshear). Lowland Rainforest typically occurs more than 2 km from the coast, however, it can (and does) intergrade with Littoral Rainforest in some coastal areas. Vegetation Structure: The ecological community is generally a moderately tall (≥20 m) to tall (≥30 m) closed forest (canopy cover ≥70%). Tree species with compound leaves are common and leaves are relatively large (notophyll to mesophyll). Typically there is a relatively low abundance of species from the genera Eucalyptus, Melaleuca and Casuarina. Buttresses are common as is an abundance and diversity of vines. Lowland Rainforest has the most diverse tree flora of any vegetation type in NSW (Floyd, 1990a) and the species composition of the canopy varies between local stands and between regions (Keith, 2004). The ecological community typically has high species richness (≥ 30 woody species from Appendix A). The canopy comprises a range of tree species but in some areas a particular species may dominate e.g. palm forest, usually dominated by Archontophoenix cunninghamiana (bangalow palm) or Livistona australis (cabbage palm); and riparian areas dominated by Syzygium floribundum (syn. Waterhousea floribunda) (weeping satinash/weeping lilly pilly). The canopy is often multilayered consisting of an upper, discontinuous layer of emergents, over the main canopy and subcanopy. Below the canopy is an understorey of sparse shrubs and seedlings. The upper, discontinuous layer includes canopy emergents that may be 40–50 m tall and have large spreading crowns. This layer is composed of species such as Araucaria cunninghamii (hoop pine), Ficus spp. (figs), Lophostemon confertus (brushbox), and in some sites, Eucalyptus spp. Typically non-rainforest species such as eucalypts and brushbox comprise <30% of canopy emergents. The canopy/subcanopy layer contains a diverse range of species. Representative species include: hoop pine, figs, Argyrodendron trifoliolatum/Heritiera trifoliolata (white booyong), Castanospermum australe (black bean), Cryptocarya obovata (white walnut, pepperberry), Lowland Rainforest of Subtropical Australia listing advice - Page 3 of 31 Dendrocnide excelsa (giant stinging tree), Diploglottis australis (native tamarind), Dysoxylum fraserianum (rosewood), Dysoxylum mollissimum (red bean), Elattostachys nervosa (green tamarind), Endiandra pubens (hairy walnut), Flindersia schottiana (bumpy ash, cudgerie, silver ash), Gmelina leichhardtii (white beech), Neolitsea australiensis (bolly gum), Neolitsea dealbata (white bolly gum), Sloanea australis (maiden‟s blush), Sloanea woollsii (yellow carabeen), Toona ciliata (red cedar), and epiphytes such as Platycerium spp. and Asplenium australasicum (bird‟s nest fern). The understorey contains a sparse layer of species such as Cordyline stricta (narrow-leaved palm lily), Linospadix monostachya (walking stick palm), Neolitsea dealbata (white bolly gum), Notelaea johnsonii (veinless mock olive), Pittosporum multiflorum (orange thorn), Triunia youngiana (native honey-suckle bush), Wilkiea austroqueenslandica (smooth wilkiea) and Wilkiea huegeliana (veiny wilkiea) as well as seedlings of a variety of canopy species. A variety of vines may be present such as Calamus muelleri (lawyer vine), Cissus antarctica (native grape vine, water vine), Cissus hypoglauca (giant water vine), Dioscorea transversa (native yam), Flagellaria indica (whip vine), Morinda jasminoides (sweet morinda), Pandorea floribunda (wonga wonga vine) and Smilax australis (sarsaparilla). Ferns such as Adiantum hispidulum (rough maidenhair fern), Doodia aspera (rasp fern), Lastreopsis decomposita (trim shield fern) and Lastreopsis marginans (bordered shield fern, glossy shield fern) may also be present. Key Diagnostics: Distribution of the ecological community is primarily in the NSW North Coast and South Eastern Queensland bioregions, according to Interim Biogeographic Regionalisation for Australia (IBRA) version 6.1 (2004). The ecological community occurs on soils derived from basalt or alluvium, enriched rhyolitic soils or basaltically enriched metasediments and occurs generally at an altitude less than 300 m above sea level. The community typically occurs in areas with high annual rainfall (>1300mm) and in locations typically more than 2 km inland from the coast. The vegetative structure is typically a tall (20 m–30 m) closed forest, often with multiple canopy layers with typically having high species richness (TSSC, 20011:6, DoE, 20011:1-3).	Unlikely. Residual vegetation communities are not reflective of the Lowland Rainforest critically endangered community, and no desktop mapping of analogous regional ecosystems occurs. Not recorded during field survey.
Poplar Box Grassy Woodland on Alluvial Plains	E	'The Poplar Box (Eucalyptus populnea) Grassy Woodland is located west of the Great Dividing Range, typically at less than 300 m above sea level (ASL) and between latitudes 200S to 340S. The ecological community is scattered across a broad distribution within an area that is roughly: - south of Charters Towers in Queensland (QLD) - north of Leeton in New South Wales (NSW) - west of Ipswich in Queensland and Armidale in NSW - east of Longreach in Queensland and Hillston in NSW The ecological community occurs within the Brigalow Belt North, Brigalow Belt South, Southeast Queensland, Cobar Peneplain, Darling Riverine Plains, NSW South Western Slopes and Riverina IBRA bioregions. The ecological community typically occurs on palaeo and recent depositional soils in flat terrain and occasionally along watercourses in undulating country (Webb et al. 1980). The woodland is mainly associated with active and relictual depositional plains and flats including back plains, higher terraces, levees along rivers (particularly in Queensland) and stagnant alluvial plain landscapes (particularly in NSW) (Beeston et al. 1980). The Poplar Box Grassy Woodland is sometimes found in close proximity to ephemeral watercourses and depressions. The soils in these watercourses are considered alluvial and the regularity of flow after heavy rain	Unlikely. Residual vegetation communities are not reflective of the Poplar Box Woodland, and no desktop mapping of analogous regional ecosystems occurs. Not recorded during field survey.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
		curtails shrub growth. These areas contain the ecological community where the native vegetation canopy is dominated by Poplar Box and the understorey is not shrubby. The ecological community commonly occurs on duplex soils in NSW and Queensland, with sodosols being present for much of the extent of the ecological community in Queensland (Fensham et al. 2017; Benson pers comm. 2017). These soils typically occur as clay, clay-loam, loam or sandy-loam. The ecological community is generally absent from sandy soils and siliceous substrates (Benson pers. comm. 2015). With decreasing soil fertility and increasing topographic relief the Poplar Box Grassy Woodland is replaced by more shrubby types of Eucalyptus woodland and Ironbark/cypress pine communities' (DoE, 2019: 5-7)	
Subtropical Eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland Bioregions	E	The ecological community is found on alluvial landforms, including floodplains, the riparian zones of parent rivers and other order tributaries, alluvial flats, floodplain/alluvial terraces and periodically flooded depressions. It generally occurs below 50m above sea level. The tree canopy is dominated by eucalypts and/or other myrtaceous trees (specifically from the Angophora, Corymbia, Lophostemon and Syncarpia genera), often as a mixture of species. The canopy may exceed 40 m in height, but can be considerably shorter; for example in regrowth stands, or where growth is inhibited (such as on waterlogged sites, or in areas with lower rainfall). When intact, the canopy typically has 40–60% crown cover, with large trees often containing hollows. Several regional ecosystems are analogous with this community where the key diagnostic characteristics align including: • 12.3.3 – Eucalyptus tereticornis woodland on Quaternary alluvium • RE 12.3.3a – Eucalyptus crebra, Corymbia tessellaris woodland to open forest • RE 12.3.3d – Eucalyptus moluccana woodland • RE 12.3.19 – Eucalyptus moluccana and/or E. tereticornis and E. crebra open forest to woodland • RE 12.3.20 – Melaleuca quinquenervia, Casuarina glauca +/- Eucalyptus tereticornis, E. siderophloia, M. styphelioides open forest on low coastal alluvial plains (Qld Herbarium 2021 in DCCEEW (2022).	Possible/Moderate Approximately 1.52ha of RE12.3.11 is mapped in the central west of the site which can correspond (wholly or in part) with this TEC. As such a detailed key diagnostic and condition class / threshold assessment was performed in accordance with Section 2.1-2.3 of the Conservation Advice (refer Section 5.2 and Attachment 4). The field assessment demonstrated that the TEC is not present.
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	E	The ecological community typically occurs in low-lying coastal alluvial areas with minimal relief, such as swamps, floodplain pockets, depressions, alluvial flats, back-barrier flats, fans, terraces, and behind fore-dunes (DPI 2016; Queensland Government 2019a). The ecological community most commonly occurs at elevations below 20m above sea-level (ASL) but may occur occasionally up to 220m ASL on hill slopes, for example in association with perched swamps and lakes, or a naturally high-water table. The structure of the Coastal Swamp Sclerophyll Forest ecological community varies from open woodland to closed forest with a crown cover of at least 10% and typically no more than 70% (Tozer et al. in prep.). In an intact forest, the canopy can be layered, with a sub-canopy of melaleuca grading into a taller mixed melaleuca and/or eucalypt canopy. The Coastal Swamp Sclerophyll Forest typically features a canopy and/or sub-canopy dominated by Melaleuca spp. and/or Eucalyptus robusta. Eucalypt trees other than E. robusta that occur scattered through the canopy, often emergent, in some areas but do not dominate the canopy of a patch, include Corymbia intermedia (Pink Bloodwood), E. tereticornis, (Forest Red Gum/Queensland Blue Gum), E. longifolia (Woollybutt), E. botryoides (Southern Mahogany/Bangalay) and E. ovata (Swamp Gum). Lophostemon suaveolens (Swamp Box/Swamp Turpentine) can be an associate (typically minor) in the canopy north from the Hastings River (Griffith & Wilson 2007a, b in DCCEEW (2021). Several regional ecosystems are analogous with this community where the key diagnostic characteristics align including: • RE 12.2.7 Melaleuca quinquenervia or rarely M. dealbata open forest on sand plains • RE12.3.4/4a Melaleuca quinquenervia, Eucalyptus robusta woodland on coastal alluvium/Eucalyptus bancroftii open woodland often with Melaleuca quinquenervia • RE 12.3.5 Melaleuca quinquenervia open forest on coastal alluvium • RE 2.3.6 Melaleuca quinquenervia +/- Eucalyptus tereticornis, Lophostemon suaveolens, Corymbia intermedia open forest on coastal alluvial plains • RE 12.3.20 [only parts not dominated by C. glauca]Melaleuca quinquenervia, Casuarina glauca +/- Eucalyptus tereticornis, E. siderophloia open forest on low coastal alluvial plains	Absent. As the site is located well over 20km from the coast the key diagnostic criteria of the TEC cannot be met (refer Conservation Advice section 2.1).
Swamp Tea-tree (Melaleuca irbyana) Forest of South-east Queensland	CE	'Swamp Tea-tree Forest of South-east Queensland usually comprises low open to closed forest, closed scrub or thickets dominated by Melaleuca irbyana (Swamp Tea-tree) with or without an emergent tree layer of scattered eucalypts, and occasionally as Eucalyptus woodland in which M. irbyana forms a distinct understorey stratum (see Similar Communities). It is restricted to South-eastern Queensland within the local government areas of Beaudesert, Boonah, Esk, Ipswich, Laidley and Logan (Porche 2001; Threatened Species Scientific Committee 2005). Geomorphology and landforms: Swamp Tea-tree forest is restricted to Quaternary alluvial plains and Cainozoic and Mesozoic sediments (Environmental Protection Agency (Qld) 2007a, b). It occurs on level ground to slightly elevated areas on alluvial plains and their edges, and on the sides, saddles and tops of low rolling hills in areas with impeded drainage (Johnston 1979; Cooper et al. 1995; Boulton et al. 1998; Conservation, Parks and Sport 2000; Department of Environment and Heritage (Commonwealth) 2005; Ryan 2008). Swamp Tea-tree forest generally does not grow along water courses or within permanent swamps/wetlands, but is commonly associated with areas that experience periods of "scattered inundation" for several weeks after summer rainfall as a result of perched water tables, in locations where runoff flows overland rather than in distinct drainage lines (Cooper et al. 1995; Boulton et al. 1998; Ipswich City Council 1998). Melaleuca irbyana trees often have multiple trunks (Cooper et al. 1995; McDonald et al. 1999), possibly a result of regrowth from damaged trees stumps (Cooper et al. 1995). Cooper and colleagues (1995) noted that the trees have brittle branches which break off, and that the trees are prone to falling over during wind storms (possibly because they have a shallow root system and due to the shearing impact on the roots of wetting and drying of the clay soils in which they grow). Trees with living, horizontal stems readily send up new vertical trunks. Because of the above characteristics, Swamp Tea-tree forest may contain much fallen timber and small clearings where trees have fallen (or have been logged) (Cooper et al. 1995). Cooper and colleagues (1995) note that fallen timber is likely to provide a variety of habitats for fauna and is thus an integral part of the natural ecology of the community. The composition of the ground layer is reported to vary with the degree of waterlogging of the soil (Johnston 1979) and the level of shading within the vegetation (Cooper et al. 1995). Cooper and colleagues (1995) noted that Themeda triandra (Kangaroo Grass) may be more common in sites where Melaleuca irbyana has invaded adjacent Eucalyptus woodland' (DoE, 2020 online @ http://www.environment.gov.au/sprat)	Unlikely. Within the broader locality potentially equivalent ecosystems are mapped including state RE12.3.18, 12.3.19, 12.9-10.11, 12.9-10.27 and local MLES Melaleuca irbyana (swamp tea-tree) Communities mapping. However, the site's residual vegetation communities are not reflective of the Swamp Tea-tree Forest. Not recorded during field survey.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	CE	'General Description: Box – Gum Grassy Woodlands and Derived Grasslands are characterized by a species-rich understorey of native tussock grasses, herbs and scattered shrubs, and the dominance, or prior dominance, of White Box, Yellow Box or Blakely's Red Gum trees. In the Nandewar Bioregion, Grey Box (Eucalyptus microcarpa or E. moluccana) may also be dominant or codominant. The tree-cover is generally discontinuous and consists of widely-spaced trees of medium height in which the canopies are clearly separated (Yates & Hobbs 1997). In its pre-1750 state, this ecological community was characterised by: • a ground layer dominated by tussock grasses; • an overstorey dominated or co-dominated by White Box, Yellow Box or Blakely's Red Gum, or Grey Box in the Nandewar bioregion; and, • a sparse or patchy shrub layer. Associated, and occasionally co-dominant, trees include, but are not restricted to: Grey Box (Eucalyptus microcarpa), Fuzzy Box (E. conica), Apple Box (E. bridgesiana), Red Box (E. polyanthemos), Red Stringybark (E. macrorhyncha), White Cypress Pine (Callitris glaucophylla), Black Cypress Pine (C. enderlicheri), Long-leaved Box (E. goniocalyx), New England Stringybark (E. calignosa), Brittle Gum (E. mannifera), Candlebark (E. rubida), Argyle Apple (E. cinerea), Kurrajong (Brachychiton populneus) and Drooping She-oak (Allocasuarina verticillata) (Austin et al. 2002; Beadle 1981; Fischer et al. 2004; NSW National Parks & Wildlife Service 2002; Prober & Thiele in press). This ecological community occurs in areas where rainfall is between 400 and 1200 mm per annum, on moderate to highly fertile soils at altitudes of 170 metres to 1200 metres (NSW Scientific Committee 2002). In general, White Box is more prevalent in the west, and Yellow Box – Red Gum in the east. A distinct exception is the outlying White Box woodlands in the upper Snowy River region in Victoria and adjacent southern New South Wales. Yellow Box and Blakely's Red Gum are generally dominant on the Tablelands and form mosaics with White Box on the Eastern Slopes (Beadle 1981; Prober & Thiele in press). The understorey shows a more consistent pattern than the overstorey, with understorey species composition on the Tablelands differing from that on the Slopes (Prober & Thiele in press). The Box – Gum Grassy Woodland and Derived Grassland ecological community intergrades with Western Grey Box (Eucalyptus microcarpa) woodlands in the west (Prober and Thiele in press). Sites dominated by Western Grey Box (E. microcarpa) or Coastal Grey Box (E. moluccana) without Yellow Box, White Box or Blakely's Red Gum as co-dominants are not considered to be part of the ecological community, except in the Nandewar Bioregion. Thiele and Prober (2000) estimated that less than 0.1% of Grassy White Box Woodlands (a component of the Box – Gum Grassy Woodland and Derived Grassland ecological community) remains in a near-intact condition. Much of the original extent of the Box –Gum Grassy Woodland and Derived Grassland ecological community has been cleared for agriculture. In most of the areas that remain, grazing and pasture-improvement have effectively removed the characteristic understorey, leaving only the overstorey trees with an understorey dominated by exotic species (McIntyre et al. 2002; Prober & Thiele in press). In these areas, grazing has also largely prevented the regeneration of the overstorey species (Sivertsen 1993). Due to the high levels of clearing that have taken place, and continued grazing, large areas of healthy, regenerating overstorey are rare. Areas containing a number of mature trees or regenerating trees are important as they provide current and future breeding and foraging habitat for woodland animals, such as Regent Honeyeaters (Xanthomyza phrygia), Squirrel Gliders (Petaurus norfolcensis) and Superb Parrots (Polytelis swainsonii) (NSW Scientific Committee 2002). Kangaroo Grass (Themeda triandra, also known as Themeda australis) and Snow Grass (Poa sieberiana) were originally the dominant grasses across a large part of the ecological community's range, and are particularly sensitive to grazing pressure (Cole et al. 2004). Grazing tends to cause the loss of these grasses, along with other grazing-intolerant forbs, grasses, sedges and shrubs. These grazing-intolerant forbs include tall perennial herbs such as daisies (e.g. Yam Daisy (Microseris lanceolata)), lilies (e.g. Milkmaids (Burchardia umbellata)), pea plants (e.g. Australian Trefoil (Lotus australis)) and orchids (e.g. Purple Diuris (Diuris punctata)). Grazing can also have indirect effects upon other ground layer species through soil disturbance and physical changes to the soil such as compaction, nutrient enrichment, reduced water infiltration and erosion. These changes to the soil can facilitate and maintain weed invasions and make soil conditions unsuitable for native species regeneration (Prober et al. 2002a & 2002b; Yates & Hobbs 1997) (TSSC, 2006: 1-3).	Unlikely. Residual vegetation communities are not reflective of the WB-YB-BRG Grassy Woodland, and no desktop mapping of analogous regional ecosystems occurs. Not recorded during field survey.

1.2 POTENTIALLY OCCURRING THREATENED FLORA SPECIES

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Threatened Flora Species			
Hairy-joint Grass Arthraxon hispidus	V	'This species occurs as far south as Kempsey, and west to Glen Innes, NSW; in Queensland it occurs north to Port Douglas, and west to disjunct occurrences around mound springs in Carnavon National Park (NP); however, most occurrences are from Noosa southwards (Queensland CRA/RFA Steering Committee, 1997; NSW Government, 2005; Bostock & Holland, 2007; Queensland Herbarium, 2008) [in TSSS, 2008:1]. "In NSW and Queensland, Hairy-joint Grass is found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps (Queensland CRA/RFA Steering Committee, 1997, 1998; DECC NSW, 2005), as well as woodland (Queensland Herbarium, 2008). In south-east Queensland, Hairy-joint Grass has also been recorded growing around freshwater springs on coastal foreshore dunes, in shaded small gullies, on creek banks, and on sandy alluvium in creek beds in open forests (Queensland CRA/RFA Steering Committee, 1997, 1998), and also with bog mosses in mound springs (Queensland Herbarium, 2008)" [Department of the Environment, Water, Heritage and the Arts 2008:1-2]. Flowers occur in March to July (Harden, 1993 in Threatened Species Scientific Committee, 2008ig).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Three-leaved Bosistoa Bosistoa transversa	V	'Three-leaved Bosistoa' is known from the Richmond River, NSW, to Mt Larcom near Gladstone, Queensland. This species is conserved within Mt Warning National Park, Numbinbah Nature Reserve, Limpinwood Nature Reserve and Whian Whian State Forest (Floyd, 1989). Population information is unavailable; however, it has been asserted that this species is common in its range (Hartley, 2004, pers. comm.). This species occurs within the Northern Rivers (NSW), Fitzroy, Burnett Mary and South East Queensland Natural Resource Management Regions. Three-leaved Bosistoa grows in wet sclerophyll forest, dry sclerophyll forest and rainforest up to 300 m in altitude. Associated vegetation includes Argyrodendron trifoliolatum, Syzygium hodgkinsoniae, Endiandra pubens, Dendrocnide photinophylla, Acmena ingens, Diploglottis australis and Diospyros mabacea (BRI, n.d.) [in TSSC, 2008:1].'	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Native Jute Corchorus cunninghamii	V	'Corchorus cunninghamii is a herbaceous plant species with a restricted distribution occurring naturally within a 120 km region between Brisbane (Queensland) and Lismore (New South Wales). It is currently known from four locations in south-east Queensland (Brisbane Forest Park, Mt Cotton, Wongawallan and Ormeau) and two locations in northern New South Wales (Toonumbar, Bungabbee). In Queensland the species has an estimated total population size of around 6000 individuals (Parr, 2001) which is an increase from the 1032 individuals recorded the previous year (Simmonds, 2000). In New South Wales (N.S.W) the estimated population size is between 600-700 individuals (N.S.W. National Parks and Wildlife Service; 1999). C. cunninghamii occurs in the narrow ecotone between subtropical rainforest and open eucalypt forest. The species is generally located at low to mid elevations (110 - 430 metres), on upper hill-slopes or hill-crests that have a south-easterly or easterly aspect. Although it occurs primarily on upper hill-slopes the species may grow anywhere between the ridge and gully, depending on the position of the open forest-rainforest ecotone. There is no specific geology or soil type associated with the species as it occurs on both metamorphic and igneous substrates and on loam or clay soils (Halford, 1995a) and as such there does not appear to	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
		be a particular habitat that is critical to the survival of the species. In general the soils are shallow, stony and well drained and common canopy species occurring alongside C. cunninghamii include Eucalyptus propinqua (grey gum), Lophostemon confertus (brush box) and Eucalyptus siderophloia (grey ironbark). The density and composition of the understorey may be variable between sites, and introduced weed species such as Lantana camara (lantana), Rivina humilis (coral berry) and Ageratina adenophora (crofton weed) frequently occur in the shrub layer' [in Saunders, M, 2001:3]	
Leafless Tongue Orchid Cryptostylis hunteriana	V	'The Leafless Tongue-orchid has been reported to occur in a wide variety of habitats including heathlands, heathy woodlands, sedgelands, Xanthorrheoa spp. plains, dry sclerophyll forests (shrub/grass sub-formation and shrubby sub-formation), forested wetlands, freshwater wetlands, grasslands, grassy woodlands, rainforests and wet sclerophyll forests (grassy sub-formation) (Backhouse & Jeanes 1995; Bell 2001; DECC 2005a; Jones 2006; Riley & Banks 2002). Soils are generally considered to be moist and sandy, however, this species is also known to grow in dry or peaty soils (Backhouse & Jeanes 1995; Bell 2001; Brown 2007; Jones 2006; Riley & Banks 2002). In SEQ the orchid is associated with Banksia/Mahogany Wallum Heath. Estimates for time taken for a Leafless Tongue-orchid seed to germinate and flower could be from two and a half years to a more probable three or four and a half years based on existing knowledge of orchid reproduction (Clements 2008 pers. comm.). Attempts to propagate the species have been unsuccessful (Clements 2008 pers. comm.). The flowering period for the Leafless Tongue-orchid is generally from August to February with flowering taking place earlier in Queensland than in NSW and Victoria (Jones 2006; Riley & Banks 2002). Flowering intensity may be stimulated by previous fire events, however, fire during the flowering season has been identified as a potential threat to the species (Backhouse & Jeanes 1995; Bell 2001; Brown 2007) [DoE, 2025].	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Wedge-leaf Tuckeroo Cupaniopsis shirleyana	V	'The Wedge-leaf Tuckeroo is distributed on a stretch of the Queensland coast, extending from Mt Larcom in the north to Brisbane in the south. Between these points, the species occurs from the coast to Mt Perry in the west. This is a distribution of approximately 450 km (TSSC 2008f). 'The species occurs in a variety of dry rainforest vegetation types, including vine thicket communities on hillsides, stream beds and along riverbanks at altitudes up to 550 m above sea level. This species is also likely to occur on the margins of native vegetation in scrubby urbanised areas (Thomas & McDonald 1989). 'Sites where the species has been found are mostly simple microphyll closed forests to tall closed forest, often with Hoop Pine (Araucaria cunninghamii) emergents. There are a few sites which support a more moist rainforest ecosystem known as 'simple notophyll vineforest'. Some commonly associated tree and shrub species also found at the sites are as follows: Ailanthus triphysa, Alchornea ilicifolia, Aphananthe philippinensis, Araucaria cunninghamii, Archidendropsis thozetiana, Argyrodendron trifoliatum, Atalaya multiflora, Austromyrtus bidwillii, Baloghia inophylla, Barklya syringifolia, Bosistoa transversa, Bouchardatia neurococca, Croton acronychioides, Cryptocarya triplinervis, Dendrocnide photinophylla, Diospyros australis, Disiliaria muelleri, Drypetes deplanchei, Elaeocarpus obovatus, Fitzalania heteropetala, Planchonella laurifolia, P. myrsinoides, Pleiogynium timorense, Sterculia quadrifida and Strychnos axillaris (Barry & Thomas 1994). The Wedge-leaf Tuckeroo flowers from April to June. Frugivorous (fruit-eating) birds and animals are likely to consume the fruit, which are thought to ripen in late June (Barry & Thomas 1994; Williams 2003a) [DoE, 2025]	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys
Bluegrass Dichanthium setosum	V	"In Queensland the species has been reported from the Leichhardt, Morton, North Kennedy and Port Curtis regions (Henderson 1997). This species occurs in the Mistake Range, in Main Range National Park, and possibly on Glen Rock Regional Park, adjacent to the national park (QDNR 2001a). Habitat: Dichanthium setosum is associated with heavy basaltic black soils and red-brown loams with clay subsoil (NSW OEH 2013a). Associated species include White Box (Eucalyptus albens), Silver-leaved Ironbark (Eucalyptus melanophloia), Yellow Box (Eucalyptus melliodora), Manna Gum (Eucalyptus viminalis), Amulla (Myoporum debile), Purple Wire-grass (Aristida ramosa), Kangaroo Grass (Themeda triandra), Fine-leaved Tussock-grass (Poa sieberiana), Red-leg Grass (Bothriochloa ambigua), Pitted Blue-grass (Bothriochloa decipiens), Macrozamia stenomera, Small Woolly Burr-medic (Medicago minima), Scaly Buttons (Leptorhynchos squamatus), Lomandra aff. longifolia, Australian Bugle (Ajuga australis), Bogan-flea (Calotis hispidula) and Austrodanthonia spp., Dichopogon spp., Brachyscome spp., Vittadinia spp., Wahlenbergia spp. and Psoralea spp. (Ayers et al. 1996; NSW OEH 2013a). Dichanthium setosum is often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture. It is often collected from disturbed open grassy woodlands on the northern tablelands, where the habitat has been variously grazed, nutrient-enriched and water-enriched. The species may tolerate or benefit from disturbance, otherwise, disturbance is indicative of threatening processes in its habitat (NSW OEH 2013a). A warm season perennial, the species commences growing in spring, flowers in summers and becomes dormant in late autumn (Yu et al. 2000) [DoE, 2025]	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys
Fontainea venosa Bahrs Scrub Fontainea	V	*Fontainea venosa,* Family Euphorbiaceae, also known as Bahrs Scrub Fontainea, is a shrub or tree growing to 18 m high which occurs south west of Beenleigh near Brisbane, along the Koolkooroon Creek in the Boyne Valley, and near Littlemore, in Queensland (Jessup & Guymer, 1985; BRI collection records, n.d.). The total population size is 200 plants across five stable populations (Queensland CRA/RFA Steering Committee, 1997). This species occurs in Araucarian microphyll vine forest with a mean annual rainfall of 1000 mm on alluvial soil along creeks. Associated species include *Backhousia citriodora*, *Actephila lindleyi* and *Bosistoa medicinalis* (BRI collection records, n.d.). *Fontainea venosa* occurs south west of Beenleigh near Brisbane, along the Koolkooroon Creek in the Boyne Valley, and near Littlemore, in Queensland (Jessup & Guymer, 1985; BRI collection records, n.d.). The total population size is 200 plants across five stable populations (Queensland CRA/RFA Steering Committee, 1997). This species occurs in Araucarian microphyll vine forest with a mean annual rainfall of 1000 mm on alluvial soil along creeks. Associated species include *Backhousia citriodora*, *Actephila lindleyi* and *Bosistoa medicinalis* (BRI collection records, n.d.). The extent of occurrence of *Fontainea venosa* is unknown. This species occurs within the Fitzroy, Burnett Mary and South East Queensland Natural Resource Management Regions' (DEWHA, 2008: 1). Flowering of *Fontainea venosa* has been recorded in January, February, April, May, June, August and October, fruiting in January, February, March, April, June, July, August, September, October and December and ripe fruit in August, September and October (Borsboom and Wang, 1997; Queensland Herbarium, 2012).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Queensland Nut Macadamia integrifolia	V	'Macadamia integrifolia' was originally associated with subtropical rainforest that was spread along a 600km coastal strip between Grafton in New South Wales and Maryborough in Queensland, extending up to 150km inland. Current distribution of wild M. integrifolia appears to be similar to the initial distribution area, however populations are more sparsely distributed, and overall numbers have declined as a result of agricultural and urban development. Although M. integrifolia is a rainforest species they tend to grow better in partially open areas such as rainforest edges. They can be found at elevations near sea level up to 600m, preferring well-drained sites on hill crests, hill slopes, scree slopes, foot slopes and along the edges of hoop pine Araucaria cunninghamii scrubs and creek beds. M. integrifolia grows best in mild frost-free weather with reasonably high rainfall and has been recorded fruiting as far south as Sydney. At many sites where M. integrifolia occurs there are less than ten plants remaining. The largest populations are recorded in Amamoor State Forest, Bahr's Scrub, Nicoll Scrub and Triunia National Parks, and they also occur in several other national parks and state forests as well as three nature refuges. M. integrifolia grows in complex notophyll vine forest, simple notophyll vine forest and in simple microphyll-notophyll vine forest with emergent Araucaria and Argyrodendron species. It can be found in uniformly dark surface soils that vary in texture from clayey sand through various types of loam to silty clay' [in Ryan, 2006: 2] Flowering is known from January, March and June (Forster et al. 1991) to November (Barry & Thomas 1994; Gross 1995; Stanley & Ross 1986). Fruits have been recorded from November–January and March–April (Barry & Thomas 1994; Forster et al. 1991in. (Threatened Species Scientific Committee, 2008)	Possible. Although favoured habitat for the Macadamia is absent it is widely established as an ornamental or orchard tree. Not recorded during field surveys.
Rough Shelled Bush Nut Macadamia tetraphylla	V	This species of nut tree is confined chiefly to the Richmond and Tweed Rivers in north-east NSW, extending just across the border into Queensland where it occurs within subtropical rainforest, particularly on basaltic soils. (Williams, Harden and McDonald, UNE, 1984; DECC, 2005). The species is also commonly noted as a paddock tree on soils of basaltic influence and as an ornamental or orchard tree associated with residential and/or rural activities. Flowering occurs from August to October with fruit ripe January to April (Floyd, 1989)	Possible. Although favoured habitat for the Bush Nut is absent it is widely established as an ornamental or orchard tree. Not recorded during field surveys.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Lloyds Olive Notelaea lloydii	V	Lloyd's Olive is known from eight sites at five locations within south-east Queensland (SE QLD). The following is a list of the species' known locations (Guymer 1987; Qld DNR 2000): • Mt Crosby area, on the western outskirts of the city of Brisbane • the Boonah district, south-west of Brisbane • Moggill State Forest (SF 494), west of Brisbane • State Forest 637 (unnamed) • Moogerah Peaks National Park, approximately 100km south-west of Brisbane. Lloyd's Olive is found in the ecotone between eucalypt open forests and vine thickets (Guymer 1987) at 80-480 m above sea level (asl) (Qld CRA/RFA Steering Committee 1998). The more frequent tree species recorded with this species are Narrow-leaved Ironbark (*Eucalyptus crebra*), Spotted Gum (*Corymbia maculata*), White Mahogany (*E. acmenoides*), Lemon-scented gum (*C. citriodora*) and Curracabah (*Acacia concurrens*) with associated trees and shrubs of Kurrajong (*Brachychiton populneus*), Red Ash (*Alphitonia excelsa*), Brown Salwood (*A.aulacocarpa*), Burra (*A. falcata*) and Ebony (*Diospyros ferrea* var. *geminata*) (Guymer 1987; Qld CRA/RFA Steering Committee 1998) [DoE, 2025; DEWHA, 2008]	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Cooneana Olive Notelaea ipsviciensis		'The Cooneana Olive is known from three closely clustered sub-populations in the Ipswich area (Dinmore) of southern Queensland (TSSC 2009a). The three locations are Murphy's Gully, a site adjacent to Cunningham Highway and Bergin's Hill (Beyleveld 2006) and occur across and area of less than 2km^2. The Cooneana Olive survives as an understorey plant in degraded, eucalypt dominated dry sclerophyll vegetation communities. Soils in the area are of low fertility, depauperate and sandstone-based (Beyleveld 2006, 2007; Lock et al. 2004). This species prefers open woodland communities with open canopies. The known population is adjacent to subdivided, modified and developed land (TSSC 2009) [DOE, 2025].	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Hawkweed Picris evae	V	Hawkweed occurs north of the Inverell area in NSW and has been collected at Elsmore (16 km east of Inverell), Oxley Park (Tamworth), and Dangars Falls in Oxley Wild Rivers National Park in the NSW northern tablelands (DECC, 2005a). This species also occurs at 30 sites in the Darling Downs and Moreton pastoral districts in south-east Queensland (Bostock & Holland, 2007). It occurs within the Border Rivers–Gwydir, Northern Rivers (NSW), South West Queensland, Border Rivers Maranoa–Balonne, and Condamine (Queensland) Natural Resource Management Regions. Hawkweed occurs in Eucalyptus open woodland with a grassy understorey composed of Dichanthium spp. Upper stratum species include Eucalyptus melliodora, E. crebra, E. populnea, E. albens, Angophora subvelutina, Allocasuarina torulosa, and Casuarina cunninghamiana (Holzapfel, 1994). Collections have been made along roadsides and in cultivated areas, such as paddocks, on black, dark grey or red-brown soils, reddish clay-loam or medium clay soils (DECC, 2005a) [DoE, 2008] The flowering and fruiting period is mainly October to January, with a few plants collected in flower or fruit until May (OEH, 2022).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Shiny-leaved Condoo Planchonella eerwah	E	Shiny-leaved Condoo is restricted to three areas of south-east Queensland: the Ipswich– Beaudesert area south-west of Brisbane; the Beenleigh–Ormeau– Pimpama area, south-east of Brisbane; and the Nambour–Maleny district on the Sunshine coast. The area is warm and subtropical with 60% of rain falling in the summer months. Annual rainfall is 650mm in the drier western areas, to more than 1000 mm at higher elevations. There are seven known populations with an estimated combined population of 160 to 180 individuals (Wiley et al., 1999). One population occurring in the Nambour–Maleny district is protected in the National Park. Part of one population in the Ipswich area is protected in a Conservation Reserve (Wiley et al., 1999). This species occurs within the South East Queensland Natural Resource Management Region. Shiny-leaved Condoo occurs on slopes 80–420 m above sea level. Populations in the Ipswich– Beaudesert area occur on rocky slopes and drainage lines on a variety of soils. Populations in the Beenleigh–Ormeau–Pimpama area occur on nutrient poor soils derived from metasediments. Populations in the Nambour– Maleny area all occur on well-drained basaltic, dark sandy loams (Barry & Thomas, 1994). The populations south of Brisbane occur in Araucarian Notophyll Vine Forest and Araucarian Microphyll Vine Forest dominated by *Flindersia* species, with occasional emergent *Araucaria cunninghamii* and *Harpullia pendula*. The northern populations occur in the canopy and lower strata of remnant Complex Notophyll Vine Forest dominated by *Argyrodendron* sp. (Kin Kin W.D.Francis AQ81198), *Atalaya multiflora*, *Choricarpia subargentea*, *Excoecaria dallachyana*, and *Flindersia australis* (Barry & Thomas, 1994; Wiley et al., 1999) [in TSSC, 2008:1].' Flowering is recorded from January to April, in June, and August to September. Fruits are reported from January to September and November to December (Forster et al. 1991) [DoE, 2025]	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Scrub Turpentine Rhodamnia rubescens	CE	The Scrub Turpentine occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Populations of R. rubescens typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000-1,600 mm. Rhodamnia rubescens commonly occurs in all rain forest subforms except cool temperate rainforest. The species occupies a range of volcanically derived and sedimentary soils and is a common pioneer species in eucalypt forests (Floyd 2008). Populations and individuals of R. rubescens are often found in wet sclerophyll associations in rainforest transition zones (including open forest of Eucalyptus tereticornis and E. bosistoana in the Sydney region) and creekside riparian associations (Benson and McDougall 1998). Flowering occurs flowers from late winter through spring, with a peak in October and fruits appear in December (TSSC, 2020)	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Native Guava Rhodoyrtus psidioides	CE	Native guava is know from coastal districts of NSW from Gosford to Maryborough in QLD with occurre3nce records typically restricted to coastal and sub-coastal areas of low elevation although occurrence in higher relevant is known from the border ranges (TSSC, 2020). Known habitat includes Subtropical Rainforests, Warm Temperate Rainforests, Littoral Rainforest and Wet Sclerophyll Forests (Keith 2004; Floyd 2008). Flowering occurs in late spring to early summer with fruiting occurring in summer (TSSS, 2020). This species is characterised being extremely susceptible to infection by Myrtle Rust (OEH, 2019).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Quassia Samadera bidwillii	V	Samadera bidwillii has been collected from Scawfell Island, east of Mackay, to as far south as Bauple and west to Biloela. The species is distributed within Byfield National Park, Goomboorian National Park, Mount Bauple National Park, Mount Walsh National Park, South Cumberland National Park, Byfield State Forest, Cordalba State Forest Tiaro State Forest, Tuan State Forest, Young State Forest 3 and Callide Timber Reserve (Queensland Herbarium, 2012). Samadera bidwillii commonly occurs in lowland rainforest often with Araucaria cunninghamii or on rainforest margins, but it can also be found in other forest types, such as open forest and woodland, it is commonly found in areas adjacent to both temporary and permanent watercourses up to 510 m altitude. Commonly associated trees in the open forest and woodlands include spotted gum (Corymbia citriodora), grey gum (Eucalyptus propinqua), white mahogany (E. acmenoides), forest red gum (E. tereticornis), pink bloodwood (Corymbia intermedia), ironbark (E. siderophloia), gum topped box (E. moluccana), Gympie messmate (E. cloeziana) and broad- leaved ironbark (E. fibrosa) (Queensland Herbarium, 2012) "Two moderately sized, yet significant, populations of Quassia have been found near Doolong Road South, Hervey Bay. These populations occur in an area of closed swamp box-eucalypt woodland, the centre of which is bisected by an electrical service which fragments these Quassia populations. Another location of Quassia in the Hervey Bay local government area lies on the riverbank at Dunathu (approximately 20 km south-west of the Doolong Road South locality)' (Belleng Pty Ltd 2004). Quassia flowers from December to March and fruits from February to May (DETSI, 2025).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Austral Toadflax Thesium australe	V	Austral Toadflax was considered extinct in Queensland prior to the mid-1980s (Griffith 1996). Collections since the 1990s have been made from Kumbia, Glen Rock Regional Park, arnarvon National Park, Crows Nest, Clifton, Warwick, Greenmount, Cambooya, Dalby, the Bunya Mountains, Blackbutt and Imbil (ALA 2013). In the 1990s, the species was described as common at a site at Clifton and rare at sites at Mt Moffatt National Park, Bunya Mountains and Blackbutt (ALA 2013). Austral Toadflax is semi-parasitic on roots of a range of grass species (Leigh et al. 1984), notably Kangaroo Grass (*Themeda triandra*) (Scarlett et al. 1994). It occurs in subtropical, temperate and subalpine climates over a wide range of altitudes. It occurs on soils derived from sedimentary, igneous and metamorphic geology on a range of soils including black clay loams to yellow podzolics and peaty loams (Leigh et al. 1984; Hunter et al. 1999; Cohn 2004). It occurs in shrubland, grassland or woodland, often on damp sites (George 1984; Harden 1992). Vegetation types include open grassy heath dominated by Swamp Myrtle (*Leptospermum myrtifolium*), Small-fruit Hakea (*Hakea microcarpa*), Alpine Bottlebrush (*Callistemon sieberi*), Woolly Grevillea (*Grevillea lanigera*), Coral Heath (*Epacris microphylla*) and *Poa* spp. (Griffith 1991); Kangaroo Grass grassland surrounded by *Eucalyptus* woodland; and grassland dominated by Barbed- wire Grass (*Cymbopogon refractus*) (Leigh et al. 1984; Hunter et al. 1999). At a NSW coastal site, associated plants included Coastal Wattle (*Acacia sophorae*), Coast Banksia (*Banksia integrifolia*), *Zieria prostrata* and Bitou Bush (*Chrysanthemoides monilifera*) (Cohn 2004). Austral Toadflax flowers and fruits throughout the year on the coast (Cohn 2004), and during summer at higher altitudes (Griffith 1996). [DoE, 2025].	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys. Although this is an inconspicuous species, favoured host grass species are scarce.

1.3 POTENTIALLY OCCURRING THREATENED FAUNA SPECIES

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Threatened Fauna Species-Bird			
Regent Honeyeater Anthochaera phrygia	CE	The Regent Honeyeater is mostly recorded within box-ironbark eucalypt and riparian associations incorporating River She-oak on the inland slopes of the Great Dividing Range (Menkhorst et al, 1999; NPWS, 1999). Only three key breeding regions are known [north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region] although non-breeding flocks have been recorded in flowering coastal Swamp Mahogany and Spotted Gum forests particularly on the central coast and occasionally on the upper north coast (DEC. 2005; Menkhorst et al, 1999). In Queensland, the Regent Honeyeater has been recorded from 15 sites, primarily south of a line between Chinchilla and the Sunshine Coast. There are several records on Bribie Island from between 1995–1998. There are several records from the Granite Belt between Warwick in the east, Gore in the west and Sundown NP in the south (Higgins et al. 2001; Webster & Menkhorst 1992). Regular records in the Gore-Karara area suggests a small breeding population may have been present in the mid 1990s (Geering 1997 unpub. data). A single record from the south-west of the state, near Eulo (Franklin et al. 1989), is likely to be erroneous (Geering 2005 pers. comm.) [online @ http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=82338]. Their diet is mostly reliant on nectar from 16 species of Eucalypt and two species of Mistletoe although the preferred sources are three species of eucalypt; Red Ironbark, White Box and Yellow box (Webster & Menkhorst 1992; NPWS, 1999; Menkhorst et al, 1999). At times of food shortage (e.g. when flowering fails in preferred habitats), Honeyeaters also use other woodland types and wet lowland coastal forest dominated by Eucalyptus robusta (Swamp Mahogany) or E. maculata (Spotted Gum) (Franklin et al. 1989b; Geering & French 1998; Ley & Williams 1992; Oliver et al. 1999; Webster & Menkhorst 1992). They sometimes use native pine Callitris woodlands, usually where mixed with eucalypts. They regularly occur in remnant trees or patches of woodland in farmland, partly cleared agricultural land and riverine forest of River Sheoak, usually infested by mistletoe, and sometimes mixed with eucalypts (Franklin et al. 1989; D. Geering 2005, pers. comm.; Geering 1997; Geering & French 1998; Ley et al. 1996; Ley & Williams 1994; Oliver et al. 1999). Regent Honeyeaters usually build their nests in rough-barked trees, mostly eucalypts such as ironbarks, stringybarks or River Sheoak, or sometimes in smooth or box-barked species (e.g. Blakely's Red Gum, White Box, Yellow Box) if rough-barked trees are not available (D. Geering 2005, pers. comm.; Geering 1997; Geering & French 1998; Geering & Herman 1999; Ley & Williams 1992, 1994; Oliver et al. 1998). Nests are often also built amongst mistletoes in trees (D. Geering 2005, pers. comm.; Geering & Herman 1999; Oliver et al. 1998; Webster & Menkhorst 1992).	Reasonably Unlikely. The subject site contains marginal habitat for the Regent Honeyeater and coupled with the area being towards the northernmost extent of its range, it is considered an unlikely occurrence. It has not been recorded on proximate sites in association with the reviewed previous surveys. Further discussed within Section 5.4.3 due to DCCEEW previous interest in EPBC referrals within the broader North Maclean locality. Not recorded during survey.
Australasian Bittern Botaurus poiciloptilus	E	The Australasian Bittern occurs mainly in freshwater wetlands and, rarely, in estuaries or tidal wetlands (Marchant & Higgins 1990). It favours wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water. It favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and reeds (e.g. Phragmites, Cyperus, Eleocharis, Juncus, Typha, Baumea, Bolboschoenus) or cutting grass (Gahnia) growing over a muddy or peaty substrate (Marchant & Higgins 1990). The diet of the Australasian Bittern includes aquatic animals such as small fish, frogs, freshwater crayfish, spiders, insects and small reptiles (Marchant & Higgins 1990; Garnett 1992 (TSSC, 2019; NPWS, 1999). The Australasian Bittern breeds from October to February in solitary pairs. However, sometimes several nests may be placed in close proximity to each other (Marchant & Higgins 1990). The species nests adjacent to relatively deep, densely vegetated freshwater swamps and pools, building its nests under dense cover over shallow water (Marchant & Higgins 1990). The species prefers to nest in vegetation that is up to 2.5 m tall and the nests are placed about 30 cm above the water level (Marchant & Higgins 1990) [TSSC, 2019]. In Queensland, the species occurs as far north as Yeppoon and west to Wyandra. In the southeast there is habitat remaining on Fraser Island, the Fraser Coast, North Stradbroke Island, Redlands and out into the Lockyer Valley. Key areas in Queensland where the species has been reliability seen in the past include the flood plains south of Byfield State Forest, Garnett's Lagoon and Lake Clarendon (TSSC, 2019).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Sharp-tailed Sandpiper Calidris acuminata	V	The Sharp-tailed Sandpiper spends the non-breeding season in Australia with small numbers occurring regularly in New Zealand. Most of the population migrates to Australia, mostly to the south-east and are widespread in both inland and coastal locations and in both freshwater and saline habitats. Many inland records are of birds on passage (Cramp 1985; Higgins & Davies 1996). In Queensland, they are recorded in most regions, being widespread along much of the coast and are very sparsely scattered inland, particularly in central and south-western regions (Higgins & Davies 1996). In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. They tend to occupy coastal mudflats mainly after ephemeral terrestrial wetlands have dried out, moving back during the wet season. They may be attracted to mats of algae and water weed either floating or washed up around terrestrial wetlands, and coastal areas with much beachcast seaweed. Sometimes they occur on rocky shores and rarely on exposed reefs (Higgins & Davies 1996). They forage at the edge of the water of wetlands or intertidal mudflats, either on bare wet mud or sand, or in shallow water. They also forage among inundated vegetation of saltmarsh, grass or sedges. They forage in sewage ponds, and often in hypersaline environments. After rain, they may forage in paddocks of short grass, well away from water. They may forage on coastal mudflats at low tide, and move to freshwater wetlands near the coast to feed at high tide. Occasionally they forage on wet or dry mats of algae and among rotting beachcast seagrass or seaweed, and sometimes they are recorded foraging around the edges of stony wetlands or among rocks in water, and rarely on exposed reef (Higgins & Davies 1996). Roosting occurs at the edges of wetlands, on wet open mud or sand, in shallow water, or in short sparse vegetation, such as grass or saltmarsh. Occasionally, they roost on sandy beaches, stony shores or on rocks in water (Higgins & Davies 1996). They have also been recorded roosting in mangroves (Minton & Whitelaw 2000) (DEWHA 2009aj) [DoE, 2025].	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Curlew Sandpiper Calidris ferruginea	CE	'Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters (Higgins & Davies 1996). Curlew Sandpipers forage on mudflats and nearby shallow water. In non-tidal wetlands, they usually wade, mostly in water 15–30 mm, but up to 60 mm, deep. They forage at the edges of shallow pools and drains of intertidal mudflats and sandy shores. At high tide, they forage among low sparse emergent vegetation, such as saltmarsh, and sometimes forage in flooded paddocks or inundated saltflats. Occasionally they forage on wet mats of algae or waterweed, or on banks of beachcast seagrass or seaweed. They rarely forage on exposed reefs (Higgins & Davies 1996). In Roebuck Bay, northern Western Australia, they are also said to feed on part of the mudflats that have been exposed for a longer period, foraging in small groups (Tulp & de Goeij 1994). Curlew Sandpipers generally roost on bare dry shingle, shell or sand beaches, sandspits and islets in or around coastal or near-coastal lagoons and other wetlands, occasionally roosting in dunes during very high tides and sometimes in saltmarsh (Higgins & Davies 1996). They have also been recorded roosting in mangroves in Inverloch, Victoria (Minton & Whitelaw 2000)' [DoE, 2025]	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
South-eastern Glossy Black-Cockatoo Calyptorhynchus lathami lahami	V	Glossy Black Cockatoos are uncommon parrots found in scattered localities in the forests and woodlands of eastern Australia and Kangaroo Island (Forshaw, 1981). The eastern subspecies of Glossy Black Cockatoos seems thinly distributed through its range with the highest densities occurring in south-eastern Queensland and north-eastern New South Wales (Forshaw, 1989). The main habitat of the eastern subspecies is Eucalyptus woodlands and forest with moderate-high densities of Allocasuarina which are required for feeding. It is also noted that the species will not feed on all trees in an area and will display fidelity towards specific trees selected for foraging (NPWS, 1999; Clout, 1989; Garnett, 1992b; Ingram, 2002; Blakers et al, 1984; Pepper, 1996). Suitable senescent trees (large hollow within a live or dead Eucalypt: 10-20m, Depth: 40- 120cm, Entry: ~21cm: Inside Dia: ~23cm (Forshaw, 1981; Gibbons & Lindenmayer, 2002)) are also required for nesting. Trees may be living or dead (Cameron 2006b). As a guide, potential nest hollows for the subspecies have the following traits (Cameron 2006b): 1) >8 m above ground; 2) Located in branches >30 cm in diameter; 3) Branch or stem no more than 45 degrees from vertical; and 4) Minimum entrance diameter of >15 cm (DCCEEW, 2022). Pairs breed during winter, mainly from April to July, although breeding has been recorded as late as August or as early as March (Beruldsen 2003). Females incubate and care for the young alone but are regularly attended and fed by the male. Only one egg is produced, which hatches in about 30 days. Once hatched the chick fledges in around 60 days but remains with its parents and is fed for another three months (Garnett et 1999).	Possible occurrence. DESI state government wildlife habitat suitability models and essential habitat mapping do not identify any possible high, known medium or known high essential habitat for the Glossy Black Cockatoo over the site. Two records occur within the locality (WILDNET) from 2000 and 1988. VC1 and VC2 provide potential regrowth bushland habitat for the cockatoo although stems of required foraging trees (Allocasuarina spp) were scarce (11 across the entire site). Further discussed within Section 5.4.3. Not recorded during survey.
Greater Sand Plover Charadrius leschenaultii	V	In the non-breeding grounds in Australasia, the species is almost entirely coastal, inhabiting littoral and estuarine habitats. They mainly occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons (Bamford 1988; Blakers et al. 1984; Lane 1987; Sibson 1948; Stewart et al. 2007), and inshore reefs, rock platforms, small rocky islands or sand cays on coral reefs (Abbott 1982; Morris 1989; Sedgwick 1978). They are occasionally recorded on near-coastal saltworks and saltlakes, including marginal saltmarsh, and on brackish swamps (C.D.T. Minton 2002 pers.comm; Sibson 1953; Storr 1964b, 1977; Storr et al. 1986). They seldom occur at shallow freshwater wetlands (Storr 1977). Once, during a severe drought, the species was recorded in a poorly grassed paddock with large bare areas, more than 1 km from the nearest water (Eckert 1968). Feeding habitat: Greater Sand Plovers usually feed from the surface of wet sand or mud on open intertidal flats of sheltered embayments, lagoons or estuaries (Ewart 1973; Sibson 1948; Marchant & Higgins 1993), more often on firm sandy flats than on soft muddy ones (Rogers 1999b). Roosting habitat: They usually roost on sand-spits and banks on beaches or in tidal lagoons, and occasionally on rocky points (Bamford 1988; Ewart 1973; Pegler 1983; Sibson 1948, 1953), or in adjacent areas of saltmarsh (Gosper & Holmes 2002) or claypans (Collins et al. 2001). They tend to roost further up the beach than other waders, sometimes well above high-tide mark (C.D.T Minton, 2002 pers.comm). Breeding habitat: The species does not breed in Australia. Greater Sand Plovers breed in open deserts or semi-arid areas which either support very sparse xerophytic vegetation or are completely barren, with expanses of bare gravel, clay or salt, or occasionally in sandhills or heavily grazed plateaux (Cramp & Simmons 1983; Dementev & Gladkov 1951; Wiersma 1996) [in DoE, 2025; DCCEEW, 2023)	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Brown Treecreeper (southeastern) Climacteris picumnus victoriae	V	Distribution Brown treecreepers (south-eastern) are endemic to south-eastern Australia from the Grampians (Schodde & Mason 1999), and from the coast to the inland slopes of Great Dividing Range. In New South Wales the western boundary of the range of Climacteris picumnus victoriae runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell and along this line the subspecies intergrades with the arid zone subspecies of Brown Treecreeper C. p. picumnus (DPIE 2017). The subspecies is less commonly found on coastal plains and ranges. While the overall range has not changed, the subspecies' failure to cross habitat gaps means it has been lost from many habitat fragments (Cooper & Walters 2002a; Ford et al. 2009). Brown treecreepers (south-eastern) occupy dry open eucalypt forests and woodlands (Bounds 2019; Ford et al. 2021). The subspecies mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species. They also occur in mallee, forests and woodlands subject to periodic inundation, e.g., river red gum (Eucalyptus	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
		camaldulensis) woodlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses in the upper Murray River (Loyn et al. 2002, 2019). The subspecies is not usually found in woodlands with a dense shrub layer, and it is absent from heavily degraded woodlands and steep rocky hills (Noske 1982). Optimal habitat for brown treecreeper (south-eastern) must experience some kind of ongoing disturbance regime (historically Indigenous burning practices) to keep the ground layer from becoming too dense and uniform (Doerr pers. comm. 2022) The species breeds in pairs or co-operatively in territories which range in size from 1.1 to 10.7 ha (mean = 4.4 ha). Each group is composed of a breeding pair with retained male offspring and, rarely, retained female offspring. Often in pairs or cooperatively breeding groups of two to five birds with breeding occurring from July to February [in DCCEEW, 2023; NSW OEH, 2024]	Not recorded during field surveys.
Coxen's Fig-parrot Cyclopsitta diophthalma coxeni	E	The small, predominantly green Coxen's Fig Parrot is found wherever fig trees are present in lowland and upland forest types, riparian corridors, farmland and urban environments (Coxen's Fig-Parrot Recovery Team 2001). Seeds of native figs are the major food source of this endangered bird species (Forshaw 1981, Romer and Spittall 1994, Pizzey and Knight 1997). The Moreton Bay Fig (Ficus macrophylla) and Green-leaved Strangler Fig (F. watkinsiana) are preferred species. Other fig species also selected as food source are Rusty Fig (F. rubiginosa), White Fig (F. virens), Small-leaved Fig (F. obliqua), Cluster Fig (F. racemosa), Sandpaper Figs (F. coronata and F. fraseri) and deciduous fig F. superba (Holmes 1990, Gynther et al. 1998). Other likely food sources include fruits of Lilly-Pillies (Syzygium spp., Acmena spp.), Blue Quandong (Elaeocarpus grandis), bolly gum (Litsea australis), Red Ash (Alphitonia excelsa) and nectar of Silky Oaks (Grevillea robusta) (Holmes 1990, Irby 1930). The Coxen's Fig Parrot may obtain a source of zinc through consumption of lichens (Romer and Spittall 1994). Fruiting trees in gardens and cultivated farmlands may also be suitable as food source, including Edible Fig (F. carica), Cotoneaster (Cotoneaster lacteus), Queen Palm (Syagrus romanzoffiana) and Loquat (Eriobotrya japonica) (Holmes 1990, Gynther et al. 1998, Forshaw 1969). Most records of Coxen's Fig-Parrot have been taken within small remnant stands, forest edges (Holmes 1994) or thin strips of gallery forest (Norris 1964). Subtropical rainforest, dry rainforest, sclerophyll forest and subtropical rainforest are preferred nesting sites (Coxen's Fig-Parrot Recovery Team 2001). High trees within or near the edge of rainforest are suitable for nesting. The nest chamber is found to be within the excavated underside of a dead or decaying limb or trunk in a living or dead tree. Habitat clearing and fragmentation are the major threats of this species (Holmes 1995, Pizzey and Knight 1997). Coxen's Fig-Parrot is estimated to occur in four subpopulations: greater Bundaberg region, Maleny/Imbil/Kin Kin Creek area, the Qld/NSW border area (Lamington National Park, Whian State Forest, Alstonville plateau), and the upper Hastings River catchment. This estimate is considered to be of low reliability (i.e. there is uncertainty about the number of subpopulations and the extent of genetic separation between subpopulations) (Garnett & Crowley 2000 in DSEWPC, 2013). Most recent records of the species are recorded from the Lamington Plateau (Qld) with only seven unconfirmed sightings recorded from NSW since 1981. It is estimated that the remaining wild population of the species may be less than 100 individuals (DSEWPC, 2013).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Red Goshawk Erythrotriorchis radiatus	V	This raptor utilises coastal-subcoastal tall forests/woodlands, savanna traversed by forested rivers and rainforest fringes (Marchant & Higgins, 1993; NPWS, 2002; NPWS, 1999). In south-east Qld, Araucaria vine forests and open forests are a significant component of the vegetation mosaics frequented by Red Goshawks (Czechura 1996). In north-east NSW and south-east Qld, Red Goshawks are mainly found in rugged terrain (Debus 1993; Czechura 1996) as most suitable lowland forest has been cleared or modified. In northern Australia, they nest in both rugged terrain and lowland sites (Aumann & Baker-Gabb 1991 in NPWS, 2002) The population size is difficult to estimate because the red goshawk has a very sparse and discontinuous distribution over a wide area — from the Kimberley in Western Australia across northern Australia, and down the east coast of Queensland to northern New South Wales. It is estimated there are between 100 and 200 breeding pairs in Queensland. Some researchers have suggested that the species is extinct in New South Wales, although there is evidence that some pairs do remain along the Queensland-New South Wales border (Ryan, 2006). Based on analysis during 2001, the distribution of the Red Goshawk in south-east Qld has been recorded from areas of different land tenure. Six pairs are centred in National Park lands and four pairs are recorded from either private land or other crown land (e.g. State Forests) (Stewart & Hobson 2002 in NPWS, 2002). Hunting occurs for medium-large birds within open forests and riparian/gallery forests over a very large home range of up to 200km^2 (Blakers et al., 1984, Aumann and Baker-Gabb, 1991, Czechura and Hobson, 2000; NPWS, 2002). The home range of the red goshawk is extremely large — estimates for five pairs in south- east Queensland vary from 50 to 220sq.km. A Northern Territory telemetry study estimate the home range for females at 120sq.km and males at 200sq.km (Ryan, 2006; Debus & Czechura, 1988; DCCEEW, 2023). Nesting is restricted to tall trees within proximity of a creek, river or wetland (NPWS, 1999; NT Parks & Wildlife Commission, 2002). Nests are usually built towards the outer edge of the canopy on a substantial live horizontal limb and braced against a vertical branch on the limb. Favoured nest trees are taller than 20m and species in the genera Eucalyptus, Melaleuca, Corymbia and, less frequently, Angophora. Red goshawks commonly nest in the tallest and largest tree in a stand of tall trees, often directly beside but always within 1km of a permanent waterway or wetland (Ryan, 2006).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Grey Falcon Falco hypoleucos	V	The species occurs in arid and semi-arid Australia, including the Murray-Darling Basin, Eyre Basin, central Australia and Western Australia (Marchant and Higgins 1993). The species is mainly found where annual rainfall is less than 500 mm, except when wet years are followed by drought, when the species might become marginally more widespread, although it is essentially confined to the arid and semi-arid zones at all times (Schoenjahn 2018). The species appears to be absent from Cape York Peninsula, areas east of the Great Dividing Range in Queensland and New South Wales, south of the Great Dividing Range in Victoria, and south of latitude 26ºS in Western Australia (Barrett et al. 2003; Schoenjahn 2018). The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses (Garnett et al. 2011; Watson 2011; Schoenjahn 2013, 2018; Janse et al. 2015; Ley and Tynan 2016). The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter (Olsen and Olsen 1986; Schoenjahn 2018). While breeding Grey Falcons feed almost exclusively on birds (Cupper and Cupper 1980, 1981; Harrison 2000; Aumann 2001c; Falkenberg 2011; Sutton 2011; Schoenjahn 2013; Janse et al. 2015; Ley and Tynan 2016). Prey species include doves, pigeons, small parrots and cockatoos, and finches, but a variety of other bird prey species has been recorded (Marchant and Higgins 1993, Hollands 1984; Debus and Rose 2000; Schoenjahn 2013, Cook 2014, Fisher 2015). Nonavian prey recorded by direct observation include small mammals on three occasions (Schoenjahn 2013, Moore 2016) and a lizard (Czechura 1981). Breeding occurs from June to November. Clutch size can vary from 1 – 4 eggs (Olsen and Olsen 1986; Garnett et al. 2011; Schoenjahn 2013). Eggs are laid in the old nests of other birds, particularly those of other raptors or corvids. The nests chosen are usually in the tallest trees along watercourses, particularly River Red Gum (Eucalyptus camaldulensis) and Coolibah (E. coolabah), but falcons also nest in telecommunication towers (Marchant and Higgins 1993; Schoenjahn 2013, 2018; Falkenberg 2010) [TSSC, 2020]	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Latham's Snipe Gallinago hardwickii	V	'In Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level (Chapman 1969; Naarding 1981). They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies) (Frith et. al. 1977; Naarding 1983; Weston 2006, pers. comm.). However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity (Frith et al. 1977; Naarding 1983). The foraging habitats of Latham's Snipe are characterized by areas of mud (either exposed or beneath a very shallow covering of water) and some form of cover (e.g. low, dense vegetation) (Frith et al. 1977; Todd 2000). The species is omnivorous and feeds on seeds and other plant material (mainly from species in families such as Cyperaceae, Poaceae, Juncaceae, Polygonaceae, Ranunculaceae and Fabaceae), and on invertebrates including insects (mainly flies and beetles), earthworms, spiders, and occasionally molluscs, isopods, and centipedes (Frith et al. 1977; Todd 2000). They shelter during the day in small wetlands including urban water bodies, saltmarshes, as well as creek edges, where there is adequate shallow flooded or inundated substrate. They also use crops and pasture. They mostly are found among dense cover comprising sedges, grasses, lignum, reeds, and rushes. The bird tends to disperse after dusk to forage over larger areas. Breeding habitat Latham's snipes breed in Hokkaido and highland areas of Honshu in Japan, and in Sakhalin and the nearby Kuril Islands of far eastern Russia. Breeding occurs in a variety of grassland habitats including meadowlands, croplands, dry reed and sedge fields, clearings and edges of woodland, and low-density urban fringes (Higgins & Davies 1996; Ura 2007; RDBSO 2016) [in DCCEEW, 2025]. The New East Asian-Australasian Flyway population estimate for the species is 30000 within a breeding range size of 251927km^2 (Hansen et al, 2016).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Squatter Pigeon Geophaps scripta scripta	V	The Squatter Pigeon is a medium-sized (approximately 30 cm long) ground-dwelling pigeon (NSW NPWS 1999a) that inhabits tropical, open, dry sclerophyll woodlands and, savannahs of north-eastern Australia (Higgins & Davies 1996). The species is noted to mostly inhabit grassy woodlands and open forests that are dominated by eucalypts close to permanent water bodies (Frith, 1982; Higgins & Davies, 1996; Schodde & Mason, 1997; Garnett & Crowley, 2000; Garnett, 1992). It feeds on a wide range of seeds from grasses, legumes, herbs, trees and shrubs, as well as insects (Higgins & Davies, 1996). Nests are found on the ground, occasionally among, or sheltered by vegetation, including short, dry grass, grass tussocks or bushes (Frith 1982). The subspecies' peak breeding period is not fixed, but is likely to coincide with the dry season (April to October), when their primary source of food, grass seed, is most abundant (EPA 2006; Frith 1982b; Squatter Pigeon Workshop 2011) [DoE, 2025]. The potential distribution of the Squatter Pigeon (southern) extends southwards from the Burdekin-Lynd divide to south-east Queensland, south-west to Stanthorpe, near the Queensland-NSW border, south along the western slopes of the Great Dividing Range to the area around Glen Innes, NSW, west through the Gwydir River region to Bellata, and north-westwards through Goondiwindi and the Brigalow Belt in Queensland to Charleville (Cooper et al. 2014; Squatter Pigeon Workshop 2011). all of the relatively small, isolated and sparsely distributed sub-populations occurring south of the Carnarvon Ranges in Central Queensland are considered to be important sub-populations of the subspecies (Squatter Pigeon Workshop 2011). This includes, but is not limited to (Squatter Pigeon Workshop 2011): • populations occurring in the Condamine River catchment and Darling Downs of southern Queensland • the populations known to occur in the Warwick-Inglewood-Texas region of southern Queensland, and • any populations potentially occurring in northern NSW (DoE, 2025]	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Painted Honeyeater Grantiella picta	V	This highly nomadic species is distributed mainly west of the Great Dividing Range, and occurs from north Queensland, south to the Australian Capital Territory and Victoria where breeding populations appear to have declined. In Queensland, the species regularly occurs west of the Great Dividing Range (Whitmore and Eller 1982). However, non-breeding individuals have been recorded occasionally from coastal areas along the eastern seaboard (Watson 2012; WildNet 2012), where it is considered vagrant. The honeyeater mostly occurs in woodland habitats which have an abundance of mistletoes. These woodlands are usually dominated by Acacia spp. (e.g. brigalow A. harpophylla, weeping myall A. pendula, and mulga A. aneura), belah Casuarina cristata and bull-oak Allocasuarina luehmannii. Also found in white cypress Callitris glaucophylla woodlands in the eastern part of their range, if mistletoes are abundant. Riparian woodlands of Eucalyptus spp. (e.g. river red gum E. camaldulensis) are also utilised, particularly those affiliated with acacia shrubs. The highly specialised diet of painted honeyeater consists mainly of mistletoe fruit (e.g. Maiden's mistletoe Amyema maidenii), although when there is a shortage of this food item, nectar and insects will also be consumed (Higgins et al. 2001; Oliver et al. 2003). In addition, birds have also been recorded feeding on similar sized fruit from other plant species, including the introduced pepper-corn tree Schinus molle and grapes Vitis vinifera (Watson 2012)' [Rowland, 2012: 1-2].	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
White-throated Needletail Hirundapus caudacutus	V	In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground (Coventry 1989; Tarburton 1993; Watson 1955). Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable (Cramp 1985), but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland (Higgins 1999). They also commonly occur over heathland (Cooper 1971; Learmonth 1951; McFarland 1988), but less often over treeless areas, such as grassland or swamps (Cooper 1971; Gosper 1981; Learmonth 1951). When flying above farmland, they are more often recorded above partly cleared pasture, plantations or remnant vegetation at the edge of paddocks (Emison & Porter 1978; Friend 1982; Tarburton 1993). In coastal areas, they are sometimes seen flying over sandy beaches or mudflats (Cooper 1971; Crompton 1936; Davis 1965), and often around coastal cliffs and other areas with prominent updraughts, such as ridges and sand-dunes (Cooper 1971; Dawson et al. 1991; Loyn 1980; Mitchell et al. 1996; Schulz & Kristensen 1994). They are sometimes recorded above islands well out to sea (Brandis et al. 1992; Cooper 1971; Warham 1957). The species has been recorded roosting in trees in forests and woodlands, both among dense foliage in the canopy or in hollows (Corben et al. 1982; Day 1993; Quested 1982; Tarburton 1993), though the number of references to Needletails roosting in trees possibly over-emphasizes such occurrences (Higgins 1999). It has been suggested that they also sometimes roost aerially (Currie 1928; Dove 1919; Schulz & Kristensen 1994), and it was formerly erroneously thought that the species did not alight while in Australia (Pescott 1983). White-throated Needletails may take refuge during extreme conditions. Many birds were seen perching on the trunks of trees during a bushfire (Currie 1916; Currie 1928); during cold weather, one was found roosting during the day in the hollow branch of a eucalypt (Pettigrew & Wilson 1985) and some were seen sheltering in stunted scrub during bad weather on the high plains (Paterson 1930). They may also alight on the trunks or branches of trees during hot or inclement weather (Davies 1982; Littler 1910a; Loyn 1980; Whackett 1989; Wheeler 1959); and there is a record of Needletails resting on a lawn under sprinklers during hot weather (Davies 1982) [DoE, 2025].	Possible. This highly mobile species flies over a large variety of habitats including those which occur on the subject site and have been recorded previously within the locality. Further discussed within Section 5.4.3. Not recorded during survey.
Swift Parrot Lathamus discolor	CE	The required breeding habitats for this species is limited to southeast Tasmania in Eucalypt Forest containing suitable densities of hollow-bearing trees required for nesting (Swift Parrot Recovery Team, 2000). Within the winter period it is present on the mainland foraging on a small variety of winter-flowering Eucalyptus as it stores resources to enable its spring return to Tasmania (Swift Parrot Recovery Team, 2000). 'The Swift Parrot migrates from its Tasmanian breeding grounds to overwinter in the box-ironbark forests and woodlands of Victoria, New South Wales and southern Queensland. The principal wintering grounds are the inland slopes of the Great Dividing Range and along the eastern coastal plains (Saunders et al, 2010; DEWHA, 2009). In Victoria, approximately 38% of the total box-ironbark habitat (including habitat on private and public land) occurs within reserves (Environment Conservation Council, 2001). In New South Wales, only 5% of ironbark and woodland communities are reserved (DSEWPC, 2013). Key habitats for the species on the coast and coastal plains of New South Wales include Spotted Gum (Corymbia maculata), Swamp Mahogany (E. robusta) and Forest Red Gum (E. tereticornis) (Saunders 2002b). These tree species provide foraging and roosting habitat for the species. In northern New South Wales and south-eastern Queensland, Narrow-leaved Red Ironbark (E. crebra), Forest Red Gum forests and Yellow Box forest are commonly utilized (Swift Parrot Recovery Team 2001)' (Department of the Environment, Water, Heritage and the Arts, 2009: 5). Priority habitat in Queensland includes Bowman Park, Bardon; Rafting Creek Reserve Kenmore/Fig Tree Pocket (Brisbane) and Glen Lomond Park (Toowoomba) [Saunders et al, 2011]. Habitat critical to the survival for the Swift Parrot includes: Breeding and foraging habitat in Tasmania • In different years the majority of the breeding population may be concentrated within a subset of the potential breeding range, according to spatially and temporally variable flowering patterns of preferred foraging species. • Therefore, within areas where breeding is most likely to occur based on known breeding records, scientific literature and expert opinion, habitat critical to survival of Swift Parrots comprises both potential foraging habitat – which is native forest and woodland containing either Blue Gum (E. globulus) and/or Black Gum (E. ovata) as a dominant, subdominant or low density species, and potential nesting habitat – which is forests or woodlands containing hollow-bearing eucalypt trees within foraging range (~10 km) of potential foraging habitat that is old enough to flower. Foraging habitat on the Australian mainland • All preferred foraging species within known and likely foraging habitat on the mainland including Yellow Gum (E. leucoxylon); Red Ironbark (E. tricarpa); Mugga Ironbark (E. sideroxylon); Grey Box (E. macrocarpa); White Box (E. albens); Yellow Box (E. melliodora); Swamp Mahogany (E. robusta); Forest Red Gum (E. tereticornis); Blackbutt (E. pilularis); and Spotted Gum (Corymbia maculata) [DCCEEW, 2024].	Reasonably Unlikely. The subject site contains marginal habitat for the Swift Parrot and coupled with the area being towards the northernmost extent of its range, it is considered an unlikely occurrence. It has not been recorded on proximate sites in association with the reviewed previous surveys. Further discussed within Section 5.4.3 due to DCCEEW previous interest in EPBC referrals within the broader North Maclean locality. Not recorded during survey.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Eastern Curlew Numenius madagascariensis	CE	*Foraging habitat and diet* Like most migratory shorebird species, the far eastern curlew exhibits substantial site-specific differences in its foraging behaviour (Mu & Wilcove 2020). During the non-breeding season, the far eastern curlew mainly forages around sheltered intertidal sandflats or mudflats that are open and without vegetation or seagrass. The species often also forages near mangroves, on saltflats or saltmarsh, around rockpools, amongst rubble on coral reefs, and on ocean beaches near the tideline. The species shows a preference for soft substrates containing little or no hard material (e.g., rock, shell grit, coral, debris) that provide better access to their prey (Finn et al., 2007, 2008). *Roosting habitat* In the non-breeding season, the species' distribution is essentially coastal, occurring in sheltered estuaries, mangrove swamps, saltmarshes, and intertidal flats, particularly those with extensive seagrass (Zosteraceae) meadows (del Hoyo et al. 1996). Far eastern curlews roost during high tide periods on sandy spits and islets, especially on dry beach sand near the high-water mark and amongst coastal vegetation, including low saltmarsh or mangroves. Far eastern curlews occasionally roost on reef-flats, in the shallow water of lagoons, and other near-coastal wetlands. In exceptionally warm conditions, they may roost around sites where damp substrate lowers the local temperature. Where natural habitat is limited in availability, anthropogenic wetlands such as aquaculture ponds, saltworks, and sewage farms can provide alternative coastal habitats for the species (Higgins & Davies, 1996; Jackson et al. 2020; Lei et al. 2021). *Breeding habitat* Breeding takes place each year in Siberia, far eastern Russia, and north-eastern China. Nesting occurs within a range of environments including within open mossy or transitional bogs; moss- lichen bogs and wet meadows; and, on the swampy shores of small lakes. They nest on small mounds in swampy ground, often near areas where wild berries are growing. The nests are lined with dry grass and twigs [DoE, 2025] The New East Asian-Australasian Flyway population estimate for the species is 35000 with a breeding range size of 748226km^2 (Hansen et al, 2016).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Australian Painted Snipe Rostratula australis	E	Little is known of the ecology, habitat requirements and reproductive biology of the Painted Snipe excepting that they are known to feed within shallow water or at the waters' edge and on mudflats, taking seeds and invertebrates such as insects, worms, molluscs and crustaceans (DSEWPC, 2013). Smith (1991) notes that wetlands containing grasses, lignum and/or samphire cover are favoured while Marchant and Higgins (1993) note that artificial habitats such as dams, sewerage ponds and flooded grassland are sometimes utilized. 'Australian Painted Snipe breeding habitat requirements may be quite specific: shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby. Nest records are all, or nearly all, from or near small islands in freshwater wetlands (D. Rogers 2002, pers. comm.), provided that these islands are a combination of very shallow water, exposed mud, dense low cover and sometimes some tall dense cover (Rogers et al. 2005). The Australian Painted Snipe has also been recorded nesting in and near swamps, canegrass swamps, flooded areas including samphire, grazing land, among cumbungi, sedges, grasses, salt water couch (Paspalum), saltbush (Halosarcia) and grass, also in ground cover of water-buttons and grasses, at the base of tussocks and under low saltbush (Marchant & Higgins 1993). One nest has been found in the centre of a cow-pat in a clump of long grass (Marchant & Higgins 1993). The nest is usually placed in a scrape in the ground (Pringle 1987), and either has scant lining or is a shallow bowl-shaped nest of dry grass or other plant material (Marchant & Higgins 1993). The closely related Rostratula benghalensis nests on the ground, sometimes on low hummocks or mounds, normally concealed in thick marshy vegetation. They sometimes nest in more open aquatic environments e.g. on a dense mat of floating water weed. Nests are usually lined with leaves and stems, and are occasionally built up with interwoven plant material, but infrequently bare (del Hoyo et al. 1996). The Australian Painted Snipe can use modified habitats, such as low-lying woodlands converted to grazing pasture, sewage farms, dams, bores and irrigation schemes (Marchant & Higgins 1993), however they do not necessarily breed in such habitats (D. Rogers 2002, pers. comm.)' [DoE, 2025]	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Diamond Firetail Stagonopleura guttata	V	Diamond firetails occur on the south-east mainland of Australia from south-east Queensland to Eyre Peninsula, South Australia, and about 300 km inland from the sea (Higgins et al. 2007). Diamond firetails occur in eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats, including farmland and grassland with scattered trees (Higgins et al. 2007). They prefer areas with relatively low tree density, few large logs, and little litter cover but high grass cover (Antos et al. 2008). Diamond firetails usually occur in flocks of between 5 to 40, and occasionally more. Diamond firetails feed predominantly at ground level, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects (especially during the breeding season) (Blakers et al. 1984; Read 1994). As such, birds are often observed hopping around on the ground (Higgins et al. 2007 in DCCEEW (2023)) Habitat critical to the survival of the diamond firetail includes areas of: • Eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats; • low tree density, few large logs, and little litter cover but high grass cover for foraging, roosting and breeding; • Drooping she-oak (Allocasuarina verticillata) within the Mt Lofty Ranges [DCCEEW, 2023]	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Common Greenshank Tringa nebularia		'Non-breeding distribution: The Common Greenshank does not breed in Australia, however, the species occurs in all types of wetlands and has the widest distribution of any shorebird in Australia (Higgins & Davies 1996). Queensland: The species is widespread in the Gulf country and eastern Gulf of Carpentaria. It has been recorded in most coastal regions, possibly with a gap between north Cape York Peninsula and Cooktown. Inland, there have been a few records south of a line from near Dalby to Mt Guide, and sparsely scattered records elsewhere (Higgins & Davies 1996). Typical habitat: The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass. Habitats include embayments, harbours, river estuaries, deltas and lagoons and are recorded less often in round tidal pools, rock-flats and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and saltflats. It will also use artificial wetlands, including sewage farms and saltworks dams, inundated rice crops and bores. The edges of the wetlands used are generally of mud or clay, occasionally of sand, and may be bare or with emergent or fringing vegetation, including short sedges and saltmarsh, mangroves, thickets of rushes, and dead or live trees. It was once recorded with Black-winged Stilts (Himantopus himantopus) in pasture, but are generally not found in dry grassland (Higgins & Davies 1996). Feeding habitat: The species is known to forage at edges of wetlands, in soft mud on mudflats, in channels, or in shallows around the edges of water often among pneumatophores of mangroves or other sparse, emergent or fringing vegetation, such as sedges or saltmarsh. It will occasionally feed on exposed seagrass beds (Higgins & Davies 1996). Roosting habitat: The Common Greenshank roosts and loafs round wetlands, in shallow pools and puddles, or slightly elevated on rocks, sandbanks or small muddy islets. Occasionally the species will perch and roost on stakes (Higgins & Davies 1996). The species is known to have roosted on an inland claypan near Roebuck Bay, Western Australia; this site may be an important roost site for this species at least during the non-breeding season (Collins et al. 2001). Life Cycle: The Common Greenshank nests on the ground in the open, but usually next to a piece of dead wood or beside rocks, trees, fences or sticks, which act as nest markers (Snow & Perrins 1998). The nest is a shallow scrape lined with some plant material (del Hoyo et al. 1996). Three to five (mostly four) eggs are laid in late April to June (del Hoyo et al. 1996, Robinson 2005). Incubation lasts for 22–26 days (del Hoyo et al.	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
		1996; Robinson 2005) and chicks fledge approximately 25–31 days after hatching. Around 74% of eggs hatch and 32% of hatchlings fledge (del Hoyo et al. 1996). Age of first breeding is thought to be two years (Robinson 2005), but some return to breeding grounds when only one year old (del Hoyo et al. 1996). The oldest ringed bird was 15 years and 10 months (Robinson 2005). Feeding: The Common Greenshank is carnivorous. In Australia is has been recorded eating molluscs, crustaceans, insects, and occasionally fish and frogs. Elsewhere, it has also been recorded eating annelids, lizards, and rodents (Higgins & Davies 1996). The species feeds during both day and night time. It is active and agile, finding prey by sight or, occasionally, by touch. The birds wade in shallow water along edge of water in tidal estuaries, muddy claypans, saltworks and saltpans (Higgins & Davies 1996). They glean from the surface of mud, vegetation or water and pursue insects on the surface of the water and in the air. Prey is occasionally manipulated, crushed and washed before being swallowed whole, especially large items such as eels (Higgins & Davies 1996)' [DoE, 2025]. The New East Asian-Australasian Flyway population estimate for the species is 110000 with a breeding range size of 927690km^2 (Hansen et al, 2016)	
Black-breasted Button-quail Turnix melanogaster	V	The Black-breasted Button-quail is patchily distributed in coastal and sub-coastal valleys from Rockhampton in Queensland to northern NSW (Garnett 1992; Readers Digest, 2002). Within this range the quail is 'restricted to rainforests and forests, mostly in areas with 770-1200 mm rainfall per annum (Bennett 1985; Hughes & Hughes 1991; Marchant & Higgins 1993). They prefer drier low closed forests, particularly semi-evergreen vine thicket, low microphyll vine forest, araucarian microphyll vine forest and araucarian notophyll vine forest (Bennett 1985; Hughes & Hughes 1991; Marchant & Higgins 1993; Milledge and McKinley, 1998; Smyth et al. 2001). They may also be found in low, dense acacia thickets and, in littoral area, in vegetation behind sand dunes (Smith & Mathieson, 2004). An extensive dense leaf-litter layer is required for foraging (Hughes & Hughes 1991) and possibly also roosting (McConnell & Hobson 1995). Fallen logs and a dense, heterogeneously distributed shrub layers are also considered to be important habitat characteristics for shelter and breeding (Smith et al. 1998; Smyth & Young 1996). The species has also recorded from vine forest remnants between Hoop Pine plantations and agricultural land (Smith et al. 1998) and occasionally in areas of pasture grass adjacent to habitat areas (Hughes & Hughes 1991)' [DoE, 2025]. The diet is mostly invertebrates, taken from litter on the forest floor and birds use a pivot foraging action, digging in leaf litter with their feet and pivoting in a circular fashion before moving onto a new location (McConnell & Hobson 1995). Foraging birds create distinctive crater-like depressions (called platelets) in the leaf litter (Hughes & Hughes 1991; Marchant & Higgins 1993). The breeding season generally occurs from September to April-May [DoE, 2025, TSSC, 2015]]	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Frogs			
Fleay's Frog Mixophyes fleayi	E	This species occurs in leaf litter and along fast flowing watercourses in mostly rainforest and adjoining wet sclerophyll forests. Males are highly philopatric and call from rocks in streams or from pools at the margins of these streams or from the forest floor where Females have been located several hundred metres from these breeding sites (EPA, 2005; Threatened Species Network, undated; Anstis, 2002; Doak, 2005, DECC, 2005). Hines et al (2002) notes that permanent and semi-permanent streams between 100-1000m altitude in rainforest and other range forest are critical for breeding. A breeding ecology study by Stratford et al (2010) noted Fleays Barred Frog to vocalise in aggregates or calling clusters along rainforest streams with large numbers present in some five metres sections and none in other sections. Air temperature in combination with stream height was the most significant predictor of numbers of individuals observed and the formation of chorus aggregations which was similarly reported by O'reilly and Hines (2002). Adults may be found in leaf litter and along watercourses in rainforest and adjoining wet sclerophyll forests (Hines & SEQTFRT 2002). At some locations where the species has been recorded, riparian vegetation has been disturbed and replaced by weeds, however this is considered marginal habitat (Mahony et al. 1997). Tadpoles do occur with several species of native fish, however no introduced fish species have been observed in sympatry with this species (Meyer et al. 2001; Mahony et al. 1997). In Queensland, important habitat has been defined as: 'permanent and semi-permanent freshwater streams, between 100-1000 m in altitude, in rainforest and other forest communities of the McPherson, Main and Conondale Ranges, Mt Tamborine, and the Mistake and Bunya Mountains' (Hines & SEQTFRT 2002) [DoE, 2025]	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Insect			
Australian Fritillary Argynnis hyperbius inconstans	CE	The Australian Fritillary is restricted to south-east Queensland and north-east NSW in open swampy coastal areas where the larval food plant Arrowhead Violet Viola betonicifolia occurs (NSW OEH 2017). The Australian fritillary usually occurs around river estuaries or open, swampy coastal regions (McCubbin 1971; Sands & New 2002). While the Australian fritillary has been successfully reared on Viola hederaceae in captivity (Sands, pers. comm., 2016), the subspecies is believed to be host-plant specific in the wild and therefore only occurs in areas where its larval food plant, the arrowhead violet, occurs (Andren pers. comm., 2016; Sands, pers. comm., 2016). The arrowhead violet is a small perennial herb which usually grows in damp niches in open habitats (Australian National Herbarium 2015). It often grows beneath grasses and other plants, often in association with Lomandra longifolia (long leaved matrush) and Imperata cylindrica (bladey grass) (QLD DEHP 2010)	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Mammal			
Large Pied Bat Chalinolobus dwyeri	V	The Large-eared Pied Bat occurs within drier habitats, including dry sclerophyll forests and woodlands (Hoye and Schulz in Van Dyck and Strahan, 2008) although it has been recorded within a range of habitats, including wet and dry sclerophyll forest, Cyprus pine dominated forest, tall open eucalypt forest with a rainforest sub-canopy, sub-alpine woodland, but typically in association with sandstone relief. In south-eastern Queensland it has been noted primarily within higher altitude moist tall open forest adjacent to rainforest (Schulz et al. 1999) including Main Range National Park and land west of Mt Barney (Hoye 2005). 'Little is known about the habitat and roosting requirements of the Large-eared Pied Bat, but natural roosts may depend heavily on sandstone outcrops. It has been found roosting in disused mine shafts, caves and overhangs for shelter and to raise young (Hoye & Dwyer 1995; Schulz 1998). Disused Fairy Martin (*Hirundo ariel*) nests have also been used by males to overwinter (Churchill, 2008). "The structure of nursery roosts appears to be very specific, i.e. arch caves with dome roofs (that need to be deep enough to allow juvenile bats to learn to fly safely inside) and with indentations in the roof (presumably to allow the capture of heat). These physical characteristics are very uncommon in the landscape and therefore a limiting factor. Retaining connectivity between remnant vegetation is likely to be important. (DECC, 2007; Pennay, 2008; Pennay, pers. comm., 2010). Despite extensive bat surveys across the species' range only three maternity roosts for it have been located in the past 50 years, all in New South Wales" [in TSSC, 2010: 1].	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Spotted- tail Quoll (southeastern mainland population) Dasyurus maculatus maculatus	E	The species has been recorded from a wide range of habitats such as rainforest, open forest, woodland, coastal heathland, and inland riparian forest (Edgar and Belcher, 2002; Forest Practices Board, 2002). Additional 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) (NSWNPWS, 1999; Edgar & Belcher, 2001; Belcher, 2000; Jones & Ross, 1996). 'Diet: Spot-tailed Quolls are predators of mainly medium-sized mammals (500–5000 g) (Edgar & Belcher 2008). The main prey items include: Ringtail Possum (*Pseudocheirus pererinus*), Common Brushtail Possum (*Trichosurus vulpecula*), Mountain Brushtail Possum (*Trichosurus caninus*), Greater Gilder (*Petauroides volans*) and Rabbit (Alexander 1980 cited in Dawson 2005; Belcher 1995, 2000b). Additionally, the subspecies consume insects, lizards, crayfish, poultry, birds, small mammals, frogs, fish, plant material and refuse that has been discarded by humans (Dawson 2005; Jones et al. 2001). Seasons and different habitats provide different primary feeding resources (Dawson et al. 2007). In tall wet forests of the escarpment ranges of southern NSW, Greater Gliders occur at high densities and are the main prey item of the subspecies (Belcher 2000b). In a dry rainshadow woodland habitat of the Kosciusko NP found Common Brushtail Possums to be the most utilised prey, with largomorphs (Rabbits and Hares (*Lepus europaeus*)) becoming increasingly utilised following wildfire in the area (Dawson et. al 2007). Feeding behaviour: The Spot-tailed Quoll is adept at climbing high into trees and can capture possums, tree-roosting domestic Chickens (*Gallus gallus domesticus*) and sleeping birds at night (Fleay 1940; Jones 1995 cited in Jones et al. 2001). Spot-tailed Quolls have been recorded in tree hollows hunting Great Gliders (Belcher 2000b). Home ranges/territories: Radio-tracking studies (Claridge et al. 2005) of the Spot-tailed Quoll in Kosciuszko NP in 2002 resulted in home range estimates of 620–2560 ha for males, and 90–650 ha for females. The mean home range for males was 992 ± 276 ha, and 244 ± 72 ha for females (Claridge et al. 2005). Belcher and Darrant's (2004) studies in 1994–99 in Victoria and NSW indicated that adult female Spot-tailed Quolls occupied exclusive territories throughout the year. Females tolerated their female offspring within their territory, at least until the offspring reached sexual maturity. The home ranges of males overlapped extensively with other males and with females throughout the year (Belcher & Darrant 2004). The Spot-tailed Quolls in Belcher and Darrant's (2004) study were solitary following mating. It was observed that males did not assist in the rearing of young. The Spot-tailed Quolls in Belcher and Darrant's (2004) study occupied very large home ranges, with males occupying significantly larger home ranges than females. The mean home range size for males was more than three times the mean for females. This difference is partly due to differences between the sexes in weight and energy requirements (Harestad & Bunnell 1979 cited in Belcher & Darrant 2004). Male home range size may also be influenced by the need to gain access to females (Lindstedt et al. 1986 cited in Belcher & Darrant 2004). Latrines: Latrines of the Spot-tailed Quoll are sites where groups of individuals repeatedly urinate and defecate over long periods of time. This results in the bleaching of the soil substrate and an accumulation of scats (Dawson 2005; Kruuk & Jarman 1995). For a highly cryptic species such as the Spot-tailed Quoll, latrines provide focal points for studies into distribution, diet, habitat, population structure, and management (Dawson 2005). Latrines are typically found in rocky creek beds, at the bases of cliffs, and on roads (Burnett 2000 cited in Jones et al. 2001; Kruuk & Jarman 1995). Visits to latrines occur throughout the night, with activity peaks during the breeding season (Belcher 1994 cited in Jones et al. 2001)' (DoE, 2025).	Possible. Records, including roadkill, scats and community observations, have been made of the Quoll within the locality since 1991 although no quolls have been captured, photographed or determined to be detected by sniffer dogs within the broader locality or nearby areas (refer Burnett and Whyte, 2006; WPSQ, 2012; Barrenger and White, 2015; Planit, 2011; 28 South Environmental, 2015). Sufficient historical data existed at desktop stage to consider the Spotted-tail Quoll as possible to occur (whether resident or transient) although recent (post 2006) confirmed sightings in the locality are absent despite numerous targeted surveys being performed. However, the site contains poor habitat for the quoll and it was not recorded during survey. Further discussed within Section 5.4.3.
Ghost Bat Macroderma gigas	V	Ghost bats are the largest microchiropteran bat in Australia and the second largest in the world, weighing up to 150 g and having a wingspan of 60 cm. They currently occupy habitats ranging from the arid Pilbara to tropical savanna woodlands and rainforests. During the daytime they roost in caves, rock crevices and old mines. Roost sites used permanently are generally deep natural caves or disused mines with a relatively stable temperature of 23°–28°C and a moderate to high relative humidity of 50–100 percent (Pettigrew et al., 1986; Churchill & Helman 1990; Churchill 1991; Armstrong & Anstee 2000; J. Toop unpublished data). The species' current range is discontinuous, with geographically disjunct colonies occurring in the Pilbara (Armstrong & Anstee 2000; McKenzie & Bullen 2009), Kimberley (including several islands; McKenzie & Bullen 2012), northern Territory (including Groote Eylandt), the Gulf of Carpentaria (Australian Wildlife Conservancy 2010), coastal and near coastal eastern Queensland from Cape York to near Rockhampton (Richards et al., 2008), and western Queensland (including Riversleigh and Cammoweal districts; Bullen pers. comm., 2015 in TSSC, 2016).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Greater Glider Petauroides volans	V	The greater glider is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. It is primarily folivorous, with a diet mostly comprising eucalypt leaves, and occasionally flowers (Kehl & Borsboom 1984; Kavanagh & Lambert 1990; van der Ree et al., 2004). It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows (Andrews et al., 1994; Smith et al., 1994, 1995; Kavanagh 2000; Eyre 2004; van der Ree et al., 2004; Vanderduys et al., 2012). The distribution may be patchy even in suitable habitat (Kavanagh 2000). The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species (Kavanagh 1984). During the day it shelters in tree hollows, with a particular selection for large hollows in large, old trees (Henry 1984; Kehl & Borsboom 1984; Lindenmayer et al., 1991; Smith et al., 2007; Goldingay 2012). In Grafton/Casino, Urbenville and the Urunga/Coffs Harbour Forestry Management Areas (FMAs) in northern New South Wales (NSW), the abundance of greater gliders on survey sites was significantly greater on sites with a higher abundance of tree hollows (Andrews et al., 1994; Smith et al., 1994, 1995). In the Grafton/Casino FMA, the greater glider was absent from surveyed sites with fewer than six tree hollows per hectare (Smith et al., 1994). In southern Queensland, greater gliders require at least 2–4 live den trees for every 2 ha of suitable forest habitat (Eyre 2002). Home ranges are typically relatively small (1–4 ha: Henry 1984; Kehl & Borsboom 1984; Comport et al., 1996; Gibbons & Lindenmayer 2002; Pope et al., 2005), but are larger in lower productivity forests and more open woodlands (up to 16 ha: Eyre 2004; Smith et al., 2007). They are larger for males than for females (Kavanagh & Wheeler 2004; Pope et al., 2005), with male home ranges being largely non-overlapping (Henry 1984; Kavanagh & Wheeler 2004; Pope et al., 2005). The greater glider is considered to be particularly sensitive to forest clearance (Tyndale-Biscoe & Smith 1969a) and to intensive logging (Kavanagh & Bamkin 1995; Kavanagh & Webb 1998; Kavanagh & Wheeler 2004; Kavanagh et al., 2005), although responses vary according to landscape context and the extent of tree removal and retention (Kavanagh 2000; Taylor et al., 2007). The greater glider is also sensitive to wildfire (Lunney 1987; Andrews et al., 1994; Lindenmayer et al., 2011), and is slow to recover following major disturbance (Kavanagh 2004). In the Urbenville FMA of northern NSW, the abundance of greater gliders on survey sites was significantly greater in forests that were infrequently burnt (Andrews et al., 1994). Notwithstanding relatively small home ranges, but in part because of low dispersal ability, greater gilders may be sensitive to fragmentation (Eyre 2006; McCarthy & Lindenmayer 1999ab; Lindenmayer et al., 2000; Taylor & Goldingay 2009), have relatively low persistence in small forest fragments, and disperse poorly across vegetation that is not native forest. Modelling suggests that they require native forest patches of at least 160 km2 to maintain viable populations (Eyre 2002). Kavanagh & Webb (1989) found no significant movement of greater gliders into unlogged reserves from surrounding logged areas. Females give birth to a single young from March to June (Tyndale-Biscoe & Smith 1969b; McKay 2008). Sexual maturity is reached in the second year (Tyndale-Biscoe & Smith 1969b). Longevity has been estimated at 15 years (Harris & Maloney 2010), so generation length is likely to be 7–8 years. The relatively low reproductive rate (Henry 1984) may render small isolated populations in small remnants prone to extinction (van der Ree 2004; Pope et al., 2005)" [in Threatened Species Scientific Committee, 2016cy:2-3]	Possible. Regrowth eucalypt forest/woodland with hollow bearing trees represents potential habitat within the site although large contiguous areas of remnant forest are not well connected to this site. The greater glider is from the Berrinba Wetlands Nature Refuge approximately 15km to the north (4site, 2005), adjacent areas to the north (Pedersen Biological, 2003) and north of Flesser Reserve within RE12.9-10.4 (pers obs). Surveys conducted by WPSQLD (2023) note up to 14 individuals recorded in one night north of the Logan River within Park Ridge south Further discussed within Section 5.4.3. Not recorded during survey.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Yellow-bellied Glider [south-eastern] Petaurus australis australis	V	The yellow-bellied glider (south-eastern) occurs in eucalypt-dominated woodlands and forests, including both wet and dry sclerophyll forests (Kavanagh et al. 1995; Rees et al. 2007). Abundance is highly dependent on habitat suitability, which is in turn determined by forest age and floristics (Woinarski et al. 2014). The subspecies shows a preference for large patches of mature old growth forest that provide suitable trees for foraging and shelter (Milledge et al. 1991; Eyre & Smith 1997; Incoll et al. 2001; Eyre & Goldingay 2003; Eyre 2002, 2004; van der Ree et al. 2004; Kavanagh et al. 2021). There is also a clear preference for forests with a high proportion of winter-flowering and smooth-barked eucalypts (Kavanagh 1987a; Eyre & Smith 1997; Eyre 2004; Irish & Kavanagh 2011; Woinarski et al. 2014). Smooth-barked eucalypts are important due to the range of foraging substrates (and therefore food resources) they provide, as loose bark hanging in strips from these trees provides shelter for insect prey (Eyre & Smith 1997). Yellow-bellied gliders (south-eastern) also require some level of floristic diversity to provide a year-round food supply, and they are unlikely to persist in forests dominated by only one or two tree species (Kavanagh 1987a). The subspecies is social and lives in family groups of two to six individuals (though usually three to four) of varying age and sex composition, throughout an exclusive home range of approximately 50–65 ha (plausible range 25–85 ha) (Craig 1985; Goldingay 1992; Goldingay & Kavanagh 1993; Goldingay & Possingham 1995; Goldingay & Quin 2004). Home ranges are necessarily large, because the trees used as foraging substrates are dispersed and use of trees can vary through time and space (Woinarski et al. 2014). These ranges are defended territories and are advertised by vocalisations (Goldingay 1994; Goldingay et al. 2011). Due to these large home ranges, large areas of forests are required to maintain subpopulation viability. Goldingay and Possingham (1995) suggest that minimum habitat areas of 180–350 km2 are required to maintain a viable subpopulation, with a minimum of 150 glider groups within a habitat area required to achieve a probability of persistence of 0.95 over 100 years. Eyre (2002) suggests that 320 km2 of forest is the minimum area required for subpopulation viability in southern Qld. During the day, the yellow-bellied glider (south-eastern) shelters in hollows found in large, old trees, usually more than one metre in diameter (Kambouris et al. 2013). Hollow-bearing trees are a critical habitat feature for the yellow-bellied glider (south-eastern) (Goldingay 2011; Goldingay et al. 2019) due to their usage as dens. Hollow-bearing trees used by the yellow-bellied glider (south-eastern) are primarily living, smooth-barked eucalypts of multiple species. Stags (standing dead trees) account for only two percent of den trees in certain forest types (Goldingay 2011).	Reasonably Unlikely. The subject site contains marginal potential habitat for the Yellow Glider due to the absence of remnant forest, scarcity of locality records and insufficient extensive and connected remnant forests in the vicinity of the site. It has not been recorded on proximate sites in association with the reviewed previous surveys. Two ALA records occur within the locality with a 2016 record 5km to the northeast and north of the Logan River and a 2022 record 3km to the southeast. However, this record has a precision accuracy of 29km and recommends sightings from Tamborine. Further discussed within Section 5.4.3 due to DCCEEW previous interest in EPBC referrals within the broader North Maclean locality. Not recorded during survey.
Brush-tailed Rock Wallaby Petrogale penicillata	V	Populations of the Brush-tailed Rock-wallaby occur, or did occur, throughout the Great Dividing Range from the border with NSW to Nanango, 100 km northwest of Brisbane (where it forms a hybrid zone with *Petrogale herberti*) (Eldridge & Close 1992). Although there are no recent surveys published from Queensland, this species is considered to be declining and vulnerable (Clancy & Close 1997). It appears that the population in Lamington National Park is now extinct (Maxwell et al. 1996). This species prefers rocky habitats, including loose boulder-piles, rocky outcrops, steep rocky slopes, cliffs, gorges and isolated rock stacks (Murray et al. 2008; Short 1982). It also utilises tree limbs (Maxwell et al. 1996; Sharman & Maynes 1983). While it appears that most Brush-tailed Rock-wallaby colonies are on north-facing slopes and cliff lines (Short 1982), colonies have been found on south-facing cliffs in Kangaroo Valley (Kutzner & Dodd 1996; Wong 1997), in the Macleay River Gorge (Bayne 1994), in the Warrumbungles and at Mt Kaputar (Soderquist undated, pers. comm., cited in NSW NPWS 2003a), although usually in lower densities. Rocky outcrops appear crucial to current habitat selection by rock-wallabies, however, vegetation structure and composition is also considered to be an important factor (Bugg 1995; Lim & Giles 1987; Pearson 1992). In many parts of their range, including at the Warrumbungles, rock-wallabies are closely associated with dense arboreal cover, especially fig trees (NSW NPWS 2003a). The vegetation on and below the cliff appear to be important to this species as a source of food and shelter and in some cases may provide some protection from predation (Wong 1993; 1997). Brush-tailed Rock-wallabies typically shelter during the day in rock crevices, caves and overhangs, yet often bask in exposed sunny spots (Sharman & Maynes 1983). Within their home range, rock-wallabies habitually use the same refuges, sunning spots, feeding areas and pathways (Joblin 1983) and these are often defended vigorously (Bayne 1994).An investigation on habitat-choice of the Brush-tailed Rock-wallaby was carried out during winter from May to September 2001, on a population of the species located on private property at Hurdle Creek, near the township of Mt Colliery, Queensland. This investigation showed that Brush-tailed Rock-wallabies selected foraging locations that tended to be more open and with more short green grasses and forbs than other locations nearby. The study showed that foraging Brush-tailed Rock-wallabies did not favour areas that were concealed by tussocks or near to the cliffs (Carter & Goldizen 2003). The diet of the Brush-tailed Rock-wallaby is primarily grasses (35–50%), forbs (25–40%) and "browse" (shrubs, trees and climbers) (12–30%) with ferns and sedges of very minor importance (Short 1989). It is also reported to eat *Themeda triandra* (Kangaroo Grass) more than other grass species (Jarman & Phillips 1989). Rock-wallabies forage mostly at night (NSW NPWS 2003a). Brush-tailed Rock-wallabies are polygamous and a dominant male will be found with up to four females. They appear to live in family groups of two to five adults and usually one or two juveniles and sub-adult individuals (Joblin 1983; Short 1980), but are also known to occur in male-female pairs (Bayne undated pers. comm., cited in DEC 2005c). A rocky habitat with an abundant supply of ledges, caves and potential pathways, plus a northerly aspect were found to be important for rock-wallabies to breed (Short 1982) [DoE, 2025	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Koala Phascolarctos cinereus	V	This species primarily occurs within Eucalypt Forest and Woodlands containing a suitable density of favoured food trees within coastal eastern and southeastern Australia. Preferred habitat generally contains a high percentage of primary food trees although underlying geology and soil type can be an important factor. Eucalypt Forests associated with drainage lines and floodplains of richer soil types (i.e. moisture and nutrients) can also be favoured due to feed trees containing higher levels of nutrients and less potential for toxicity (Hindell & Lee, 1990; Moore & Foley, 2000). Recent studies (Biolink, 2007; GCCC, 2014) indicate that Eucalyptus tereticornis, E. microcorys and E. propinqua/E. biturbinata are the most preferred koala food trees throughout the Gold Coast LGA. Previous research undertaken by Phillips & Callaghan (1996) in Tweed Shire indicates that Swamp Mahogany (E. robusta) and Blue Gum (E. tereticornis) [including hybrids of the two] on alluvial deposits and Quaternary and Neranleigh-Fernvale Group geomorphologies were considered to be primary habitats. Areas with sub-dominance of these species on Neranleigh-Fernvale alliances supporting Blue Gum (E. tereticornis), Tallowwood (E. microcorys) and/or Grey Gum (E. propinqua) comprise secondary habitat or primary habitat depending on the density of the latter two species. Updated studies by Biolink (2011) indicate E. robusta, E. tereticornis, E. microcorys and E. propinqua to be the most preferred tree species for koalas within the Tweed Coast study area. Additional local shire studies (Phillips & Callaghan, 1998) noted Tallowwood to be a primary browse species and two types of Grey Gum (E. propinqua, E. biturbinata) to be secondary browse species in Currumbin. Within utilized Eucalypt Forest habitat the koala spends most of its time in distinct home-ranges which may overlap if available habitat area is reduced. Males are territorial but a dominance-hierarchy exists and they may fight during the summer breeding season. Home ranges of the species are considered to be large and can vary dependent upon habitat quality and extent. Studies have shown various home range sizes exist with the males usually larger than the female (Male 135ha, Female: 110ha [Ellis et al, 2002], Male: 34.4ha, Female: 15ha [White, 1999]).	Scats recorded via SAT survey. Potential Koala habitat is present within regrowth eucalypt forest/woodlands. Further discussed within Section 5.4.3.

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Long-nosed Potoroo (SE Mainland) Potorous tridactylus tridactylus	V	The Long-nosed Potoroo (SE Mainland) has scattered populations extending from south-eastern Queensland through to NSW. The species has been recorded at Many Peaks Range, south-east of Gladstone, Bellthorpe near Beerwah and in the Border Ranges (Amos 1982). It has also been seen at Bulburin, south-west of Miriam Vale (Lindenmayer & Viggers 1994). In NSW it has been seen at several locations (Mason 1997). The Queensland populations are considered to be reasonably secure (Amos 1982) (DoE, 2025) Long-nosed Potoroos are generally restricted to areas with an annual rainfall greater than 760 mm where they inhabit dry and wet sclerophyll forests and woodland with a heathy understorey (Johnson in Strahan, 2002; DEC, 2005). Studies have shown that the species requires a mosaic of mico-habitats within its home range ranging from dense, floristically simple sites for nesting, to open, floristically diverse sites for foraging (Claridge et al, 2007). In all habitats the species requires relatively thick groundcover growing on friable soils (Bennett, 1993). Within these areas the Potoroo digs for its food the main component of which is hypogeal fungi with other important items including hard-bodied arthropods, vascular plant tissues, seeds and fleshy fruits (Bennett & Baxter, 1989; Claridge et al, 2007). It is also noted that a small, disjunct population of Potoroos exists in a small area of Crown land between the northern shore of Cobaki Broadwater and the NSW-Queensland border (Bali et al, 2003; Ecopro, 2004; Warren & Associates, 1992; Hero, 2001). The extensive 2003 survey undertaken by Bali et al notes that "within the Cobaki area, potoroos were most frequently trapped in Scribbly Gum Mallee Heathland followed by, Tree Broom Heathland, Scribbly Gum/Swamp Mahogany Forest, Black She-oak Heathland, Swamp Mahogany Forest and Scribbly Gum Forest. Our results suggest that potoroos prefer Scribbly Gum Mallee Heathland with an understorey of sedges and grasses such as Restio spp., Lomandra spp. And Gahnia spp., which is found along both sides of the Cobaki Lakes" (Bali et al, 2003: 16). The northern long-nosed potoroo are threatened by habitat loss and fragmentation; predation by invasive species, particularly European red foxes (Vulpes vulpes) and feral cats (Felis catus), and to a lesser extent wild dogs (Canis familiaris) [DAWE, 2022].	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
New Holland Mouse Pseudomys novaehollandiae	V	'The New Holland Mouse is a small, burrowing native rodent. The species is similar in size and appearance to the introduced house mouse (Mus musculus), although it can be distinguished by its slightly larger ears and eyes, the absence of a notch on the upper incisors and the absence of a distinctive 'mousy' odour. The species is grey-brown in colour and its dusky-brown tail is darker on the dorsal side. The species has a head-body length of approximately 65–90 mm, a tail length of approximately 80–105 mm and a hind foot length of approximately 20–22 mm (Menkhorst and Knight, 2001)' ((Threatened Species Scientific Committee (TSSC), 2010k: 1). 'The New Holland Mouse currently has a disjunct, fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. At a landscape scale, the species appears to be clumped in its distribution, most likely due to its specific habitat requirements' (Posamentier and Recher, 1974; Braithwaite and Gullan, 1978; Fox and Fox, 1978; Fox and Mckay, 1981 in (Threatened Species Scientific Committee (TSSC), 2010j: 2). Across the species' range the New Holland Mouse is known to inhabit open heathlands, open woodlands with a heathland understorey and vegetated sand dunes (Keith and Calaby, 1968; Posamentier and Recher, 1974; Fox and Fox, 1978; Hocking, 1980; Fox and Mckay, 1981; Norton, 1987; Pye, 1991; Wilson, 1991; Lazenby et al., 2008). The New Holland Mouse is a social animal, living predominantly in burrows shared with other individuals (Kemper, 1980; Lazenby et al., 2008). The home range of the New Holland Mouse ranges from 0.44 ha to 1.4 ha (Lazenby et al., 2008; Lazenby, 1999). The species peaks in abundance during early to mid stages of vegetation succession typically induced by fire (Posamentier and Recher, 1974; Braithwaite and Gullan, 1978; Fox and Fox, 1978; Fox and Mckay, 1981)' (TSSC, 2010k: 2). 'It is likely that the species spends considerable time foraging aboveground for food, predisposing it to predation by native predators and introduced species, including the red fox (Vulpes vulpes), cat (Felis catus) and dog (Canis familiaris)' (Lazenby, 1999 in Threatened Species Scientific Committee (TSSC), 2010j: 2).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.
Grey-headed Flying-fox Pteropus poliocephalus	V	The Grey-headed Flying-fox inhabits subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps (Eby, 1995). Urban gardens and cultivated fruit crops also provide habitat for this species (NSW NPWS 1999c). Grey-headed Flying-foxes forage on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca, Banksia (Eby, 2000) and fruits of rainforest trees and vines (NSW NPWS 1999c). During periods when native food is limited, Grey-headed Flying-foxes disperse from colonial roosts, often foraging in cultivated gardens and fruit crops (NSW NPWS 1999c). This species roosts in large aggregations or camps in close proximity (20 km or less) to a regular food source, often in stands of riparian rainforest, Paperbark or Casuarina forest (Eby, 1995). This species is a canopy-feeding frugivore, blossom-eater and nectarivore of rainforests, open forests, woodlands, Melaleuca swamps and Banksia woodlands. As such, it plays an important ecosystem function by providing a means of seed dispersal and pollination for many indigenous tree species (Eby 1996; Pallin 2000). Grey-headed Flying-foxes roost in large aggregations in the exposed branches of canopy trees (Ratcliffe 1931, Nelson 1965a, Parry-Jones and Augee 1992). The locations of camps are generally stable through time, and several sites have documented histories that exceed 100 years (Lunney and Moon 1997). Camps provide resting habitat, sites of social interactions and refuge for animals during significant phases of their annual cycle, such as birth, lactation and conception (Parry-Jones and Augee 1992, 2001). On the basis of current knowledge, roosting habitat that meets at least one of the following criteria can be explicitly identified as habitat critical to survival, or essential habitat, for Greyheaded Flying-foxes. Roosting habitat that: – is used as a camp either continuously or seasonally in > 50% of years – has been used as a camp at least once in 10 years (beginning in 1995) and is known to have contained > 10 000 individuals, unless such habitat has been used only as a temporary refuge, and the use has been of limited duration (i.e. in the order of days rather than weeks or months) – has been used as a camp at least once in 10 years (beginning in 1995) and is known to have contained > 2 500 individuals, including reproductive females during the final stages of pregnancy, during lactation, or during the period of conception (i.e. September to May) (in DECCW, 2009).	Likely to occur with potential habitat present within regrowth eucalypt forest/woodlands and records common within the locality Further discussed within Section 5.4.3.
Reptile			
Three-toed Snake-tooth Skink Coeranoscincus reticulatus	V	In Queensland, the Three-toed Snake-tooth Skink has a disjunct north-south distribution, with the species absent from apparently suitable habitat in the D'Aguilar Ranges (Wilson 2005). There is also a possible disjuncture in the northern part of its range between the lowland areas of Fraser Island and Cooloola and upland records from Blackall Range and Corondale Range (Borsboom 2009), although a record from the Maroochydore and Noosa areas (DERM 2009a cited in Borsboom 2009) indicates that the disjuncture is less severe than previously thought (Borsboom 2009). Other collections in Queensland have been made from Binnaburra, Emuvale, Tambourine Mountain, Beechmont, Lamington NP, Binna Burra, south-east of Maleny, Cooloola SF and Cunningham's Gap NP (Cogger et al. 1993; Greer & Cogger 1985). The Three-toed Snake-tooth Skink has been found in loose, well mulched friable soil, in and under rotting logs, in forest litter, under fallen hoop pine bark and under decomposing cane mulch (DERM 2009a cited in Borsboom 2009; Duncan 209; Ehmann 1987; McDonald 1977; Queensland Museum 2009 cited in Borsboom 2009). Projected foliage cover was estimated at 70–80% at two sites (Ehmann 1987). In the Cooloola and Fraser Island area, the species is found in forest that grows on silica sand (McDonald 1977); in upland areas, the species is found in forests occuring on basalt derived soils (Couper et al. 1992). In Queensland, the Three-toed Snake-tooth Skink has been recorded in rainforest, closed forest, wet sclerophyll forest, tall open Blackbutt (Eucalyptus pilularis) forest, tall layered open eucalypt forest and closed Brush Box (Lophostemon confertus) forest (Couper et al. 1992; DERM 2009a cited in Borsboom 2009; Ehmann 1987; Greer & Cogger 1985; McDonald 1977; Queensland Museum 2009 cited in Borsboom 2009). It has also been recorded from extensive regrowth in heavily logged areas (Czechura 1974) [DoE, 2025].	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys

Threatened Species or Ecological Community	EPBC Act Status	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Collared Delma Delma torquata	V	The Collared Delma is known from the western suburbs of Brisbane, Queensland, and the following sites: Bunya Mountains, Blackdown Tableland National Park (NP), Bullyard Conservation Park, D'Aguilar Range NP, Expedition NP, Naumgna and Lockyer Forest Reserves, Western Creek near Millmerran and the Toowoomba Range (Davidson, 1993; Ryan, 2006). The Collared Delma occurs within the South East Queensland, Condamine, Burnett Mary and Fitzroy (Queensland) Natural Resource Management regions (TSSC, 2008: 1). The Collared Delma normally inhabits eucalypt dominated woodland and open forest where it is associated with suitable micro-habitats (exposed rocky outcrops). The ground cover is predominantly native grasses, such as Kangaroo Grass (Themeda triandra), Barbed-wire Grass (Cymbopogon refractus), Wiregrass (Aristida sp.) and Lomandra (Lomandra sp.) (Peck & Hobson 2007). EPA (2006) also note that potential habitat for the collared delma is rocky sloped or ridge-top areas, often westerly-facing, in eucalypt and acacia dominated woodland with a 3 to 10cm depth of leaf litter and a sparse understorey of tussock grass and shrubs or semi-evergreen vine thicket. Within this habitat the collared delma can be located under weathered loose rocks, flattish bedrock outcroppings, logs or mats of leaf litter, or in cracks and crevices among tussock grasses. It is often found in areas with many small rocks (less than 30cm) and fewer large rocks, and in areas with reasonably sparse vegetation. The Collared Delma is a sedentary species that stays within a very small area, possibly using the same rock for shelter. Their diet consists of invertebrates including native cockroaches and spiders (EPA 2006: 1-2).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys
Dunmall's Snake Furina dunmalli	V	Dunmall's Snake is a venomous snake that belongs to the Elapidae family (Cogger 2000) occurring primarily in the Brigalow Belt region in the south-eastern interior of Queensland. Dunmall's Snake prefers a broad range of habitats between 200 to 500m above sea level including: forests and woodlands on black alluvial cracking clay and clay loams dominated by Brigalow (*Acacia harpophylla*), other Wattles (*A. burowii*, *A. deanii*, *A. leioclyx*), native Cypress (*Callitris* spp.) or Bulloak (*Allocasuarina luehmannii*) (Brigalow Belt Reptiles Workshop 2010; Covacevich et al. 1988; Stephenson & Schmida 2008); or various Blue Spotted Gum (*Corymbia citriodora*), Ironbark (*Eucalyptus crebra* and *E. melanophloia*), White Cypress Pine (*Callitris glaucophylla*) and Bulloak open forest and woodland associations on sandstone derived soils (Brigalow Belt Reptiles Workshop 2010; Stephenson & Schmida 2008, Threatened Species Network 2008). A nocturnal species, Dunmall's snake diet consists of small skinks and geckos. Threats to the snake are identified as extensive clearing of habitat for development (mining and urban), agriculture or pasture improvement, extensive overgrazing of habitat, loss of fallen timber and ground litter, e.g. fuel reduction burns, invasion of habitat by predatory animals and introduced weeds (DECCW 2005; Cogger et al. 1993; McDonald et al. 1991).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys
Grey Snake Hemiaspis damelii	E	In Queensland, the grey snake has a broad and more dispersed distribution, with most records along the Macintyre and Condamine Rivers and associated floodplains of the southern Brigalow Belt from Goondiwindi and Dalby west to Glenmorgan, on the Darling Downs and western Lockyer Valley, near Rockhampton on the central Queensland coast, and on the Darling Riverine Plains near Currawinya in south-western Queensland (Hobson 2012; Rowland 2012; Queensland Government 2020). In Queensland, grey snake habitat is Brigalow Acacia harpophylla and Belah Casuarina cristata woodlands on heavy, dark brown to black cracking clay soils, particularly in association with water bodies, areas with small gullies and ditches, and floodplain environments where the species shelters beneath logs, rocks and soil cracks (Queensland Government 2020). Habitat in Queensland also includes Queensland bluegrass Dichanthium sericeum and/or Mitchell grass Astrebla spp. grassland on alluvial plains with cracking clay soils (Queensland Herbarium 2021). Grey snake occurrence on the western downs of Queensland has a strong positive association with red sodosol soils which have a strong texture contrast between the A horizon and sodic B horizon, and which are often quite dense and coarsely structured (blocky, prismatic or column favouring the crack-inhabiting and foraging ecology of this species (Apan et al. 2010) in DCCEEW, 2022).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys.

1.4 LIKELIHOOD OF OCCURRENCE - LISTED MIGRATORY SPECIES

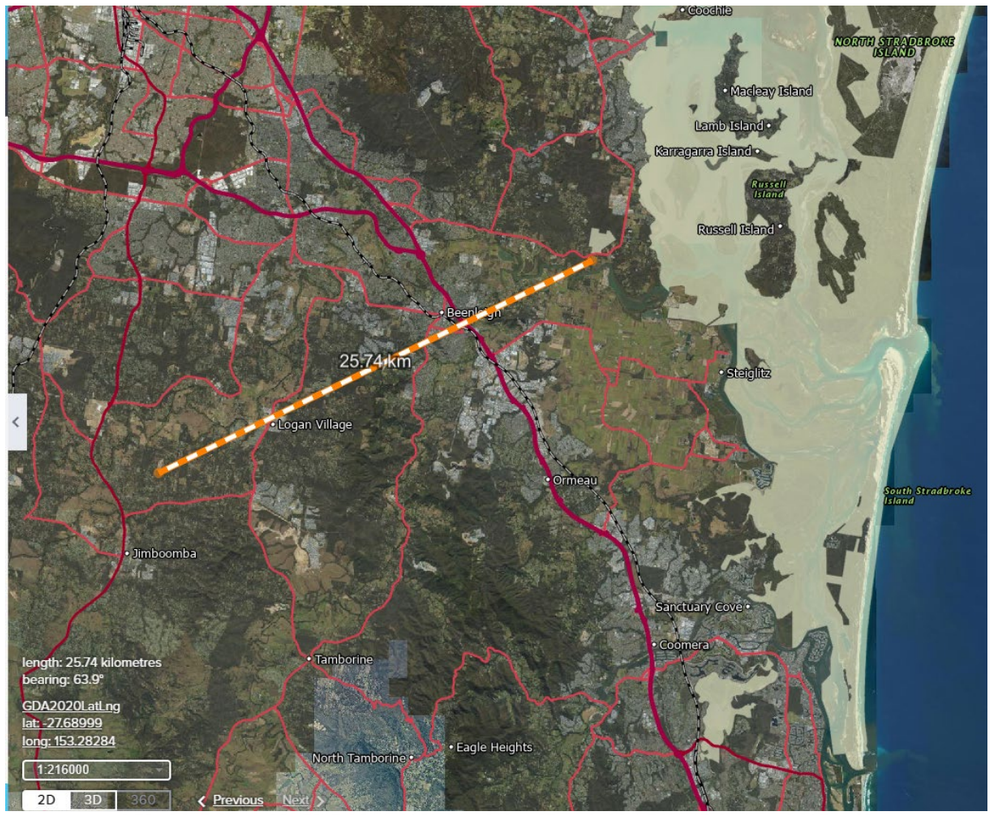
Migratory Species	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Fork-tailed Swift Apus pacificus	The Fork-tailed Swift is a non-breeding visitor to all states and territories of Australia (Higgins 1999). There are scattered records of the Fork-tailed Swift in the Gulf Country, and a few records on Cape York Peninsula. In the north- east region there are many records east of the Great Divide from near Cooktown and south to Townsville. They are also widespread but scattered in coastal areas from 20° S, south to Brisbane and in much of the south south-eastern region. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches, as well as over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. The sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines (Higgins 1999). They forage aerially, up to hundreds of metres above ground, but also less than 1 m above open areas or over water. They often occur in areas of updraughts, especially around cliffs. They are said to search along edges of low-pressure systems, which assist flight. Low-flying Swifts are said to be precursors of unsettled weather, possibly because insect prey fly at a lower altitude when the air is humid and when the air density is low (Cameron 1952). They sometimes feed aerially among treetops in open forest (Higgins 1999). They probably roost aerially but are occasionally observed to land (Higgins 1999). They were once recorded roosting in trees, using a bare exposed branch emergent above the foliage (Newell 1930). Sometimes they loaf in the air, by allowing strong winds to support them (Boehm 1939). There have been rare records of loafing elsewhere including Swifts briefly resting on ground and alighting on wire netting of a tennis court. Once, one was seen attempting to land on the wall of a lighthouse (Scarff 1990).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys
Oriental Cuckoo Cuculus optatus	The Oriental Cuckoo is a regular migrant to Australia, where it spends the non-breeding season (Sept- May) in coastal regions across northern and eastern Australia as well as offshore islands. The species uses a range of vegetated habitats such as monsoon rainforest, wet sclerophyll forest, open woodlands and appears quite often along edges of forests, or ecotones between forest types (BirdLife International, 2015). This cuckoo feeds arboreally, foraging for invertebrates on loose bark on the trunks and branches of trees, and among the foliage, including in mistletoes. It will forage from the ground, but requires shrubs or trees from which it sallies and returns to consume prey items. Caterpillars are a favoured food (BirdLife International, 2015).	Reasonably Unlikely. Regrowth eucalypt forest/woodland represents potential habitat within the site with such habitat abundant in the locality. No breeding habitat is present. No local records were encountered, and the species was not recorded during survey. The area of the action is insignificant when considered in the context of actions which constitute substantial loss or modification of important habitat for the species (DoE, 2015: Table 4).

Migratory Species	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
White-throated Needle-tail Hirundapus caudacutus	Addressed in threatened species above	Addressed in threatened species above
Black-faced Monarch Monarcha melanopsis	The Black-faced Monarch is widespread in eastern Australia (Blakers et al. 1984; Coates 1990a; Schodde & Mason 1999). It is vagrant to Western Australia; a single bird was detected 16 km east-north-east of Mt Brookes, June 1987 (Johnstone 1991). In Queensland, it is widespread from the islands of the Torres Strait and on Cape York Peninsula, south along the coasts (occasionally including offshore islands) and the eastern slopes of the Great Divide, to the New South Wales border (Beruldsen 1990; Blakers et al. 1984; Draffan et al. 1983; Storr 1984c). The species also occasionally occurs further inland, for example, at Forty Mile Scrub in April 1976, and Eight Mile Plain in October 1991; a single vagrant was recorded at Windorah, south-western Queensland in March 1989 (Britton 1990, 1992; Ford et al. 1980). The Black-faced Monarch mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest, subtropical (notophyll) rainforest, mesophyll (broadleaf) thicket/shrubland, warm temperate rainforest, dry (monsoon) rainforest and (occasionally) cool temperate rainforest (Blakers et al. 1984; Bravery 1970; Emison et al. 1987; Ford et al. 1980; Gill 1970; Gosper 1992; Laurance et al. 1996; Morris et al. 1981; Officer 1969; Schodde & Mason 1999; Smith 1984; Storr 1984c). The Black-faced Monarch breeds in rainforest habitat, and generally nests near the top of trees with large leaves, in the tops of small saplings, or in lower shrubs (BA NRS 2002; Campbell 1900; Marchant 1986; North 1901—14). The nests are usually well concealed by foliage and usually secured in a three-pronged fork (Beruldsen 2002, pers. comm; Campbell 1900; North 1901—14). The species nests less often on horizontal forks or on horizontal branches with thin lateral twigs or shoots (BA NRS 2002; North 1901—14). Tree and shrub species used as nest sites include: daisybushes (*Olearia* spp.), Lilly Pilly (*Acmena smithii*), Yellow Sassafras (*Doryphora sassafras*), wattles (*Acacia* spp.), Coachwood (*Ceratopetalum apetalum*), Grey Myrtle (*Backhousia myrtifolia*) and Turpentine (*Syncarpia* glomulifera) (BA NRS 2002 [DoE, 2025].	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys. The area of the action is insignificant when considered in the context of actions which constitute substantial loss or modification of important habitat for the species (DoE, 2015: Table 4).
Spectacled Monarch Monarcha trivirgatus	In QLD the Spectacled Monarch occurs on islands in Torres Strait where it is migratory and on Cape York Peninsula where considered resident or partly migratory. Widespread along east coast including off shore islands and on east slopes of Great Dividing Range from Cooktown to NSW border. The Spectacled Monarch is an insectivore, mostly taking insects across a range of forest strata, though most often at low or middle levels (5-15m The species occupies dense vegetation, mainly in rainforest but also in moist or wet sclerophyll forest and occasionally in other densely vegetated habitats such as mangroves, drier forest, woodlands, parks and gardens.above ground). Birds usually forage in pairs, keeping to the inner foliage rather than the outer edges, where they sit and wait for prey, which they capture either by gleaning or sallying. Breeding has been recorded from September to April with little apparent difference between the subspecies. The nest is usually built in a vertical fork of a tree, sapling or shrub, and an association with water courses has been noted. Nests are deep and cup-shaped, but vary in overall shape depending on the nest site location. Usually two eggs are laid, with the female doing most of the incubation. Incubation period is 15-18 days. Both parents feed nestlings. Time to fledging is 17-20 days, and newly fledged young are fed for a few days by both parents. One young was recorded as being cared for by its parent for 5-6 weeks post fledging. The global population size has not been quantified, but the species is reported to be generally common. It is suspected to be stable in the absence of evidence for any declines or substantial threats. In Australia this species is considered to be secure across its range. Estimated to occupy about 210,000 km2 when breeding. Assuming habitat occupancy 1% (southern subspecies) and 2.5% (Wet Tropics and Cape York subspecies) and density 0.31 birds/ha (mean of two estimates range 0.11 - 0.55 birds/ha) population 65,000 (23,000 -120,000).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys. The area of the action is insignificant when considered in the context of actions which constitute substantial loss or modification of important habitat for the species (DoE, 2015: Table 4).
Yellow Wagtail Motacilla flava	The Yellow Wagtail is a regular wet season visitor to northern Australia. Increasing records in NSW suggest this species is an occasional but regular summer visitor to the Hunter River region. The species is considered a vagrant to Victoria, South Australia and southern Western Australia. Habitat requirements for the Yellow Wagtail are highly variable, but typically include open grassy flats near water. Habitats include open areas with low vegetation such as grasslands, airstrips, pastures, sports fields; damp open areas such as muddy or grassy edges of wetlands, rivers, irrigated farmland, dams, waterholes; sewage farms, sometimes utilise tidal mudflats and edges of mangroves. Preliminary estimate of the global population size is 48-168 million individuals, although further validation of this estimate is needed. In Australia the species is a regular but uncommon non-breeding summer visitor to the north. Records in the south are considered vagrants. Birds are generally seen singly or in small groups. Larger flocks of up to c.50 individuals have been recorded. Mixed flocks with Australasian Pipits are not uncommon [DoE, 2015].	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys. The area of the action is insignificant when considered in the context of actions which constitute a serios disruption to an ecologically significant proportion of the population of the species (DoE, 2015: Table 5).
Satin Flycatcher Myiagra cyanoleuca	Satin Flycatchers are found extensively along the Great Dividing Range along the eastern and south-east seaboard of Australia – from Cape York to eastern South Australia. The species is also widespread within Tasmania. The Satin Flycatcher shows a north-south migration throughout this range. It is a breeding summer migrant to the south□east and Tasmania (see distribution map below), being almost entirely absent from this region in winter. The species winters in northern Queensland, New Guinea and the Bismarck Archipelago. After breeding, Satin Flycatchers leave southern Australia in February – April. Whilst most birds migrate north through the eastern coastal region, a small number consistently deviate from the coast and migrate inland through South Australia, generally recorded between December – June. Satin Flycatchers are eucalypt forest and woodland inhabitants. They are particularly common in tall wet sclerophyll forest, often in gullies or along water courses. In woodlands they prefer open, grassy woodland. The diversity of occupied habitats expands during migration, with the species recorded in most wooded habitats. Wintering birds in northern Queensland will use the rainforest - gallery forests interfaces, and birds have been recorded wintering in mangroves and paperbark swamps. Satin Flycatchers are mostly insectivorous. They primarily forage arboreally, flitting from one perch to another, taking prey by sallying for insects in the air or picking insects off foliage and branches. They tend to forage in the canopy and sub□canopy, though occasionally forage in lower strata or descend to drink at forest streams. The core breeding distribution of the Satin Flycatcher is in the eucalypt forests and woodlands along the east coast and across south-eastern mainland Australia and Tasmania. On mainland Australia the species is a high-attitude breeder. Returning migrants arrive in Victoria and Tasmania around mid October. Breeding commences soon after with the construction of a small cup shaped nest. Nests are well camouflaged and can resemble part of the branch itself. One to three eggs are laid with both sexes sharing the incubation. Incubation is c. 17 days with both parents brooding and feeding nestlings. Nestling periods are estimated at 15-18 days before fledging occurs. The global population size has not been quantified, but the species is reported to be commonest in the south of its range in Australia (especially Tasmania) and scarce in the north. The range of the population and the extent of the habitat used suggest that the population is at least tens of thousands [DoE, 2015].	Reasonably Unlikely. Regrowth eucalypt forest/woodland represents potential habitat within the site with such habitat abundant in the locality. No breeding habitat is present. No local records were encountered, and the species was not recorded during survey. The area of the action is insignificant when considered in the context of actions which constitute substantial loss or modification of important habitat for the species (DoE, 2015: Table 4).

Migratory Species	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Rufous Fantail Rhipidura rufifrons	Rufous Fantail inhabit moist, dense habitats, including mangroves, rainforest, riparian forests and thickets, and wet eucalypt forests. Structural features of suitable habitat include a moderately dense canopy cover often with two lower strata: a 2-6 m high layer and a shrubby or heath understorey 1-2 m high. When on passage a wider range of wooded habitats are used including dry eucalypt forests and woodlands, Brigalow shrublands and domestic gardens and parks and tropical islands. Foraging activities usually occur singly or in pairs. Birds are very active and forage mostly in the air taking insects. Birds may also flush and pursue prey, or glean from foliage. Rufous Fantails forage mostly in the dense low understorey of forests and rainforest, but will use other strata including the canopy and sub-canopy. Breeding occurs throughout the species' range although the subspecies R. r. intermedia is a non-breeding visitor to New Guinea. Nests are tightly woven open cups that are bound to twigs with spiders' web. Throughout the range of the Rufous Fantail eggs are laid from September – February with a clutch size usually of 2-3 eggs. Incubation period is 15-17 days with both the male and female sharing the incubation. After hatching both parents feed young. Young fledge at c.11 days. Parents continue to feed fledglings for a further 4-5.5 weeks before young are fully independent. The global population size has not been quantified but, given the area of the habitat occupied and the densities recorded, must be at least 100s of thousands. In Australia this species is considered to be common and secure and there is no evidence of population change. Estimated to occupy about 260,000 km2 when breeding. Assuming 1% suitable habitat and density 0.18 birds/ha (mean of four estimates range 0.02-2.66 birds/ha) population 344,000 (15,000-2.0 million) [DoE, 2015].	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys. The area of the action is insignificant when considered in the context of actions which constitute a serios disruption to an ecologically significant proportion of the population of the species (DoE, 2015: Table 5).
Common Sandpiper Actitis hypoleucos	Salt-water and fresh-water ecosystems: The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow, and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags (Geering et al. 2007; Higgins & Davies 1996). Generally the species forages in shallow water and on bare soft mud at the edges of wetlands; often where obstacles project from substrate, e.g. rocks or mangrove roots. Birds sometimes venture into grassy areas adjoining wetlands (Higgins & Davies 1996). Roost sites are typically on rocks or in roots or branches of vegetation, especially mangroves. The species is known to perch on posts, jetties, moored boats and other artificial structures, and to sometimes rest on mud or 'loaf' on rocks (Higgins & Davies 1996). The New East Asian-Australasian Flyway population estimate for the species is 190000 with a breeding range size of 1907819 km^2 (Hansen et al, 2016).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys. The area of the action does not represent important habitat for migratory shorebirds following CoE (2017).
Sharp-tailed Sandpiper Calidris acuminata	Addressed in threatened species above	Addressed in threatened species above
Curlew Sandpiper Calidris ferruginea	Addressed in threatened species above	Addressed in threatened species above
Pectoral Sandpiper Calidris melanotos	In Queensland, most records for the Pectoral Sandpiper occur around Cairns. There are scattered records elsewhere, mainly from east of the Great Divide between Townsville and Yeppoon. Records also exist in the south-east of the state as well as a few inland records at Mount Isa, Longreach and Oakley. In New South Wales (NSW), the Pectoral Sandpiper is widespread, but scattered. Records exist east of the Great Divide, from Casino and Ballina, south to Ulladulla. West of the Great Divide, the species is widespread in the Riverina and Lower Western regions. In Victoria the Pectoral Sandpiper is mainly found from Port Phillip Bay and the valley of the Murray River between Kerang and Piangil. It has also been recorded at Coronet Bay (in Westernport Bay), Wimmera and Mallee (Higgins & Davies 1996). Breeding distribution The Pectoral Sandpiper breeds in northern Russia and North America. In Russia, its breeding distribution is from the Yamal Peninsula, east along the Arctic coast, through the Deltas of Lena and Kolmyra Rivers, to the Chukotskiy Peninsula. In North America, its breeding distribution extends from Goodnews Bay, north through Wales to Point Barrow, east and north Canada from the northern regions of Yukon and Mackenzie, north to Banks, Bathurst, Devon, north Baffin Island and south and west to Hudson Bay. Habitat In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. They forage in shallow water or soft mud at the edge of wetlands (Higgins & Davies 1996). Feeding The Pectoral Sandpiper is omnivorous, consuming algae, seeds, crustaceans, arachnids and insects. While feeding, they move slowly, probing with rapid strokes. They walk slowly on grass fringing water (Higgins & Davies 1996) [DoE, 2025]. The New East Asian-Australasian Flyway population estimate for the species is 1220000-1930000 with a breeding range size of 1030745km^2 (Hansen et al, 2016).	Reasonably Unlikely. Favoured habitat for this species is considered absent from the site and it has not been recorded on proximate sites in association with the reviewed previous surveys. Not recorded during field surveys. The area of the action does not represent important habitat for migratory shorebirds following CoE (2017).
Latham's Snipe, Gallinago hardwickii	Addressed in threatened species above	Addressed in threatened species above
Eastern Curlew, Far Eastern Curlew Numenius madagascariensis	Addressed in threatened species above	Addressed in threatened species above

Migratory Species	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Common Greenshank Tringa nebularia	Addressed in threatened species above	Addressed in threatened species above

1.5 *LIKELIHOOD OF OCCURRENCE – WETLANDS OF INTERNATIONAL IMPORTANCE*

Wetlands of International Importance	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
Moreton Bay Ramsar Wetland Site	The development site is located >25 kilometres upstream of the mapped Moreton Bay Ramsar Wetland site. Moreton Bay is noted as being a semi-enclosed basin bounded on its eastern side by two of the largest sand islands in the world. It is one of only three extensive intertidal areas of seagrass, mangroves and saltmarsh on the eastern coast of Australia that provide habitat for a number of water birds. Information obtained from Wetlands International (2012) identified that the Moreton Bay sites meets the following Ramsar criteria: – *1b Moreton Bay is one of the largest estuarine bays in Australia which are enclosed by a barrier island of vegetated sand dunes.* – *1c Moreton Bay plays a substantial role in the natural functioning of a major coastal system through its protection from oceanic swells providing habitat for wetland development, receiving and channelling the flow of all rivers and creeks east of the Great Dividing Range from the McPherson Range in the south to the north of the D'Aguilar Range.* – *2a Moreton Bay supports appreciable numbers of the vulnerable green and hawksbill turtles, the endangered loggerhead turtle and is ranked among the top ten dugong habitats in Queensland.* – *2b Moreton Bay supports over 355 species of marine invertebrates, at least 43 species of shorebirds, 55 species of algae associated with mangroves, seven species of mangrove and seven species of seagrass.* – *2c It is a significant feeding ground for green turtles and is a feeding and breeding ground for dugong. The Bay also has the most significant concentration of young and mature loggerhead turtles in Australia.* – *3a Moreton Bay supports more than 50,000 wintering and staging shorebirds during the non-breeding season.* – *3b At least 43 species of shorebirds use intertidal habitats in the Bay, including 30 migratory species listed by JAMBA and CAMBA.* – *3c The Bay is particularly significant for the population of wintering Eastern curlews (3,000 to 5,000) and the Grey-tailed tattler (more than 10,000), both substantially more than 1% of the known Flyway population.*(Wetlands International, 1999)  SITE LOCATION IN CONTEXT OF MAPPED RAMSAR WETLAND OF INTERNATIONAL IMPORTANCE In addition to the criteria outlined above, the values associated with the Moreton Bay Ramsar Wetland are summarised below:	Unlikely. The site does not represent a RAMSAR wetland. The action is also unlikely to have a significant impact on the well removed (>25km) wetland as: No areas of the RAMSAR wetland will be modified – The action will not have a downstream hydraulic impact on the wetland as onsite detention and management will occur in accordance with the stormwater management plan (refer Attachment 8) – The action is considered too remote from the RAMSAR wetland to impact on the habitat or lifecycle of any native species contained therein – The action will not have a downstream water quality related impact on the wetland as construction and operational stormwater quality improvement devices and erosion and sediment controls will be implemented in accordance with the stormwater management plan (refer Attachment 8) – The action is considered too remote from the RAMSAR wetland to introduce or establish any invasive species

Wetlands of International Importance	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
	Hydrological Values On the large sand islands of Moreton and North Stradbroke rainfall filters through the sand dunes to emerge in lakes and swamps and thence into Moreton Bay and the Pacific Ocean. On North Stradbroke Island some of this fresh water is extracted by the Local Authority for domestic use. Increased urbanisation of the central bay islands and the adjacent mainland may result in increased demands for water extraction from North Stradbroke Island. Increases in waste discharges and runoff into the bay may also occur. The bay receives most of the sewage and industrial effluent of the wider Caloundra-Brisbane-Gold Coast metropolitan areas as well as the storm water runoff containing sediment, fertilisers, pesticides and other pollutants from the urban and rural areas. These areas comprise the catchments of several large rivers and smaller creeks rising in the Lamington Plateau in the south, north along the Great Dividing Range to the D'Aguilar Range. These rivers are: Nerang, Pimpama, Coomera, Albert, Logan, Brisbane, Bremer, Pine, and Caboolture Rivers (Laycock, 1975). The hydrodynamic nature of Moreton Bay is determined by interaction of the semi-diurnal tide, propagating mainly through the northern entrance, with the depth variations inside the bay. The tidal range inside the bay is about 20% greater than outside the bay. The patterns of the tide-height contours and the tidal currents in the bay are strongly influenced by the depth-topography of the bay. The tidal currents vary from 0.2 ms-' in the shallow western region to 1.0 ms-1 in the deep channels to the north-east. The salinity of Moreton Bay is higher on the eastern side because freshwater flows into the western side. Therefore the spatial and temporal distribution of salinity in the bay depends on the varying rainfall in the catchment of the rivers flowing into it. Higher temperatures in summer and lower temperatures in winter are recorded in the shallow western bay compared with the north-eastern area of the bay and near South Passage due to the moderating influence of the Pacific Ocean on the latter areas. Surges due to cyclones off the Queensland coast occur in Moreton Bay while severe local storms can cause transient changes in the water level of the bay. (Harding, 1979). Ecological Features The Moreton Bay region is an important habitat for many species of birds and is one of only four recognised sites of significance to wintering migratory wading birds along the eastern Australian coast (Thompson and Kikkawa, 1988). Australia is a signatory to the Japan-Australia (JAMBA) and China-Australia (CAMBA) migratory bird agreements which require the habitats used by certain species listed in the agreements to be set aside as reserves. At least 34 listed species have been recorded from Moreton Bay including the eastern curlew; whipbird; bar-tailed godwit; grey-tailed tattler; ruddy turnstone; rednecked stint; sanderling; curlew; sandpiper and common sandpiper (Thompson and Kikkawa, 1988). At least 254 species of bird have been recorded from North Stradbroke Island including gould's petrel, the arctic tern and the long-tailed jaeger (Vernon and Martin. 1975). Image analysis of all intertidal areas in Moreton Bay, including Pumicestone Passage estimated that a total of 23,000 ha of tidal flats are exposed at low water datum characterised by marked differences in substrate type and species of waders present (Thompson, 1990b). Four types of roosts and four habitats have been determined for waders in Moreton Bay (Thompson, 1991 Appendix 1) using particle size analysis. The main habitats were: – muddy intertidal, often with seagrass; – muddy intertidal with no seagrass, usually associated with sewage outlets; – sandy; and – coral. High amounts of silt were found at very muddy sites associated with slow currents. High amounts of fine sand occurred at very sandy sites with fast currents. The amount of fine sand and very fine sand in the substrate reflected estuarine conditions at a site. High percentages of fine sand were recorded at oceanic influenced sites where fast currents and limited riverine sediment deposition led to large average particle sizes. Sites with very fine sand are associated with muddy riverine conditions due to slower currents and the contribution of fine particles from nearby rivers. A relationship was shown to exist between the location of those habitat sites with high species numbers and the location of roosts. Species of waders present differed significantly among the four habitats. The ruddy turnstone was found to be a key indicator species of the coral habitat strewn with coral rubble giving the surface considerable topographic relief. The bar-tailed godwit characterised the other extreme distinguished by sandy sites with a lush covering of seagrass (Thompson,1990 a, 1991). A total of 19 plant formations occur on the tidal wetlands. Six of those formations are dominated by the mangrove Avicennia marina. Climatic conditions in Moreton Bay provide optimum temperatures of 18-24 degrees for the growth of Avicennia marina for six to seven months of the year. Behind the fringing mangroves, salt-marsh is usually zoned parallel to the shoreline and consists of three plant communities broadly classified as: – shrublands, the dominant species being Sarcocornia spp. and Suaeda australis; – sedge (Juncus krausii) and rush swamps ; and – grasslands (Sporobolus virginicus) as well as bare salt pans. Seven species of mangroves are found in Moreton Bay and major areas of mangroves are located throughout the Bay and in particular along the Pimpama River, Coomera River, North Arm and the wetlands and waterways of McCoys Creek and Woogoompah Creek. Mangroves are the nursery areas and ultimate source of food for many commercial and recreational fish species and are necessary for the prevention of erosion, the provision of habitat, landscape value and to provide roosting areas for wildlife (Arthington and egerl, 1988). Four main types of shore bird roosts are identifiable in Moreton Bay (Thompson, 1991): 1. open sandy island or beach: found mainly on Moreton and North Stradbroke Islands with only two similar roosts known on, or adjacent to, the western side of Moreton Bay. These types of roosts are used by most species; 2. salt and clay pan: scattered within and behind the mangrove fringe. Birds may find cover under mangrove trees or shelter within clumps of samphire and sedge.These roosts are also used by most species; 3. inland freshwater marshes: restricted to the western side of the bay and used by species such as the sharp-tailed sandpiper, greenshank and the black-winged stilt at all stages of the tidal cycle; 4. mangroves: this is the preferred roosting situation of the grey-tailed tattler which roost standing on the branches of the mangrove trees. The whimbrel, curlew, sandpiper, terek sandpiper and the greenshank may also roost in this situation. Saltmarsh and saltpan areas are integral with and generally adjacent to mangrove areas. Apart from providing valuable feeding and crucial roosting areas for waders (Thompson and Kikkawa, 1989), these areas also represent buffers for the mangroves and function as a source of material for detrital food chains.	

Wetlands of International Importance	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
	North and South Stradbroke Islands are barrier islands feeding sand sediments from ancient dune deposits into the eastern part of Moreton Bay (Maxwell, 1970). The two islands are separated by an opening nearly 2 kilometres wide at Jumpinpin; this bar and the Southport Bar at the southern end of South Stradbroke Island are fairly unstable and do not allow a seagrass population to establish. At the northern end of North Stradbroke Island a different situation occurs. Here the orientation of this island and Moreton Island allow for large sheltered sand banks flushed twice daily by oceanic water. From Amity Point to the northern end of Canaipa Passage shallow sand and muddy sand flats with protection from prevailing winds and strong currents make a good habitat for seagrasses. At South Passage sand has formed a fan-shaped bank known as Amity Banks. Further south the sand becomes muddier with clay and silt from the mainland and low offshore islands. Between Canaipa Passage and the Southport Bay at the southern end of South Stradbroke Island a series of low, small islands form the deltaic complexes of the Logan, Albert, Coomera and Pimpama Rivers. Between these islands are shallow mud flats and deeper channels. These areas, protected on one side by Stradbroke Island and on the other by the mainland or offshore islands, offer excellent habitats for seagrasses (Kirkman, 1975). Intertidal and shallow waters support seven species of seagrass which occur over an area of 6522 ha. This provides food and habitat for turtles, dugong, commercially and recreationally important fish and invertebrate populations in the bay. Research indicates that seagrass meadows are particularly vulnerable to disturbance by humans and are very slow to recover (Poiner, 1989). South Passage and the Rous Channel plus the sand banks of the bay, particularly the Moreton and Amity Banks area, represent an internationally significant habitat for dugong. Population estimates of at least 600 have been made for this species, a high number considering the proximity of their habitat to a major city such as Brisbane (Preen et al, 1989). Dugong feed mainly on seagrass and their survival is closely linked to the protection of these seagrass communities. Three species of turtle inhabit Moreton Bay year round. Hawksbill turtles occur only occasionally while loggerhead turtles occur in their thousands and feed on molluscs, crabs and sponges (Bustard, 1972). Moreton Bay is also a significant site for feeding green turtles (Limpus,C in press). Seagrass is a significant feature and likely to have influenced feeding behaviour and distribution of shore birds. Seagrass coverage is highest in those sites around Moreton Island and North Stradbroke Island where clean oceanic waters promote high rates of photosynthesis. Seagrass coverage is reduced in the muddy waters along the mainland of Moreton Bay and in sites with coral substrate. The sewage affected sites in Bramble Bay are entirely devoid of seagrass, as are a few sites in Pumicestone Passage and Southern Moreton (Thompson, 1991). Driscoll (1991) found that the substrate and conditions in Pumicestone Passage were not uniform throughout and that different locations had variations in the numbers of wader species present. Most species showed a preference for particular locations but great knots and curlew sandpipers were not as consistent and habitat links for these species were hard to define. The differences were related to: – the pattern of substrate deposition; – the extent of feeding areas; and – the peculiarities of the tidal range in the Passage.	
Noteworthy Flora	Species dependent on mangrove estuarine areas comprise up to 67% of the entire commercial catch of fisheries in eastern Australia. Mangroves form a fringe around much of the shoreline of Moreton Bay. Seven species have been identified but only three are considered abundant - *Avicennia marina, Aegiceras corniculata, Ceriops tagal.* Other species of mangrove include *Rhizophora stylosa, Excoecaria agallocha* and *Bruguiera gymnorhiza.* Fifty-five species of algae are associated with mangroves in the bay and 2000 ha of salt marsh vegetation have been identified. Saltmarsh includes samphires, sedges, salt couch, bare saltflats and stunted mangroves. Important saltmarsh species include *Suaeda australia, Salicornia quinquelflora.* Threatened communities consisting of Wallum woodland *(Melaleuca quinquenervia)* grow in saturated areas close to the shores of Moreton Bay. The high diversity of marine plants include seven species of seagrass belonging to five different communities. Species are: *Zostera capricorni, Halodule uninervis, Syringodium isoetifolium, Halophila ovalis, Halophila spinulosa, Cymodocea serrulata, Halophila dicipiens.* Seagrasses have been shown to be important in the life history stages of commercially important fishes and crustaceans (Hyland. 1988,1989). Dugongs, turtles, swans, waders, fishes feed in or on seagrasses. Seagrass allows long-billed waders (e.g. bar-tailed godwit) to penetrate deeply into the substrate. Seagrasses provide important settlement areas for the post-larval stage of penaeid prawns.	
Noteworthy Fauna	With the combination of muddy habitats (western side), sandy habitats (eastern side), coral and seagrass habitats, Moreton Bay is extremely important as a site for shorebird species (Thompson 1991). At least 43 species of wading birds use intertidal habitats in the bay, including 30 migratory species listed by JAMBA and CAMBA. More than 50 000 wintering and staging waders depend on Moreton Bay during the non-breeding season (Thompson, 1990b). The bay is particularly significant for the Eastern curlew *Numenius madagascariensis* (3000 to 5000 birds) and the Grey-tailed tattler *Tringa brevepes (>* 10 000 birds) in winter. This diversity of habitats and species utilising the area indicates the importance of both sides of the bay when considering conservation measures. Moreton Bay also has particularly large populations of cormorants and terns, white herons, spoonbills, ibises and egrets. The bay is ranked among the top ten dugong habitats in Australia and together with the Gulf of Carpentaria and Torres Strait is considered one of the most important areas for dugong in Queensland. Herds of dugong of up to 104 individuals have been observed. Three species of sea turtles inhabit Moreton Bay in significant numbers. Of these species, the hawksbill and green turtles are considered to be endangered and the loggerhead is regarded as threatened in a world context. However within Australia the loggerhead is listed as an endangered species while the green and hawksbill turtles are listed as vulnerable. Feeding green turtles are found in Princess Charlotte Bay, Moreton Bay, Shoalwater Bay, Hervey Bay and Repulse Bay. Of these locations, Moreton Bay has the largest concentration of feeding green turtles in Australia. Tagging studies have shown that the green turtles resident in Moreton Bay migrate to the southern Great Barrier Reef (Lady Musgrave, Heron, Wreck and North West Islands) and the northern Great Barrier Reef (Raine Island) to breed. Major concentrations of loggerhead turtles are found in Moreton and Hervey Bays and the southern part of the Great Barrier Reef. Significant numbers of young and mature loggerhead turtles inhabit Moreton Bay. This is the most significant concentration of loggerheads in Australia (C. Limpus in press).	

Wetlands of International Importance	Description/Preferred Habitat/Ecological requirements	Likelihood of Occurrence
	A total of 175 species of fish are listed for Flinders Reef off Cape Moreton and at least 100 species occur inside the bay. In excess of 80 species of echinoderms have been recorded from Moreton Bay and adjacent reefs. One study identified 355 invertebrate species from 400 subtidal sites within the bay. A small number of Humpback whales enter the bay, probably accidentally, each year on their way north to their breeding grounds at Hervey Bay, north of Fraser Island. Nine species of birds are dependent on mangrove vegetation. Many first year-birds of migratory species remain in the bay during the breeding season when the number of migratory species present in the bay increases as they move northwards with the onset of winter. Large populations of resident birds depend on the fringing wetlands and large populations of marine birds feed in the open waters of the bay. Moreton Bay provides significant habitat for the water mouse (false water rat) *Xeromys myoides* which is listed as Vulnerable in EPBC and NCA. Social and Cultural Values Some of the best remaining evidence of Aboriginal adaptation to a marine-based resource is to be found on Moreton Island. Other sites of significant Aboriginal cultural heritage are located on Bribie, North Stradbroke, Peel, St Helena, Macleay, Lamb, Karragarra and Russell Islands as well as Toorbul Point, Caboolture River and Victoria Point. Types of sites include middens, fish traps, artefact scatters, quarries and scarred trees. The shoreline of Moreton Bay was the first area in the Brisbane region to be settled by Europeans. Coochie Mudlo Island was the site of the first landing by Matthew Flinders during his exploration of Moreton Bay and the Brisbane River. St Helena Island which was used as a prison and quarantine station at different periods was the first historical area in Queensland to be reserved as a National Park solely because of its historic ruins. Other areas settled by Europeans include Peel Island, used first as a quarantine station and then as a leper colony, Dunwich and Amity Point on North Stradbroke Island and Redcliffe on the mainland which was the site initially chosen for the penal colony before it was moved up the Brisbane River to the site now occupied by the business centre of Brisbane.	