

---

# Appendix D

## Likelihood of occurrence assessments

---

## D.1 Threatened ecological communities (TECs)

**Table D.1 Likelihood of occurrence assessment –TECs**

Community name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
Shale Sandstone Transition Forest in the Sydney Basin Bioregion	CE	CE	Occurs at the edges of the Cumberland Plain, where clay soils from the shale rock intergrade with earthy and sandy soils from sandstone, or where shale caps overlay sandstone. The boundaries are indistinct, and the species composition varies depending on the soil influences. The main tree species include Forest Red Gum ( <i>Eucalyptus tereticornis</i> ), Grey Gum ( <i>E. punctata</i> ), stringybarks ( <i>E. globoidea</i> , <i>E. eugenioides</i> ) and ironbarks ( <i>E. fibrosa</i> and <i>E. crebra</i> ). Areas of low sandstone influence (more clay-loam soil texture) have an understorey that is closer to Cumberland Plain Woodland.	<b>Potential to occur within the impact areas</b>	There is suitable habitat present for this TEC to occur, and TEC is associated with PCT 3321 which is mapped across most of the site.
Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion	-	E	This community occurs primarily in the Castlereagh area in the north-west of the Cumberland Plain (also referred to as the Cumberland sub-region), with other known occurrences near Holsworthy (some patches at Holsworthy are just outside the Cumberland sub-region), Kemps Creek and Longneck Lagoon. The ecological community is typically a low woodland, with canopy species reaching an average 15 m in height, but with some trees growing to around 20 m. The ecological community's understorey has a prominent and diverse mid-layer of sclerophyll shrubs. It typically has a patchy ground cover of sedges and grasses. However, in areas of poorly drained soil there may be less species diversity in the mid layer and the ground layer may contain a high diversity of sedges and grasses.	Unlikely	TEC is not associated with the vegetation types present on the site.
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. The ecological community most commonly occurs at elevations below 20 m above sea-level (ASL) but may occur occasionally up to 220 m 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%.	Unlikely	TEC is not associated with the vegetation types present on the site.

**Table D.1 Likelihood of occurrence assessment –TECs**

Community name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
Coastal Upland Swamps in the Sydney Basin Bioregion	E	E	The Coastal Upland Swamp in the Sydney Basin Bioregion includes open graminiod heath, sedgeland and tall scrub associated with periodically waterlogged soils on the Hawkesbury sandstone plateaux. The Coastal Upland Swamp is generally associated with soils that are acidic and vary from yellow or grey mineral sandy loams with a shallow organic horizon to highly organic spongy black peat soils with pallid subsoils. The vegetation of the Coastal Upland Swamp may include tall open scrubs, tall closed scrubs, closed heaths, open graminoid heaths, sedgelands and fernlands. Larger examples may include a complex of these structural forms. The flora comprising the upland swamp is diverse there are 73 plant species listed as characterising the ecological community.	Unlikely	TEC is not associated with the vegetation types present on the site.
Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion	E	CE	Has a very restricted natural distribution and mainly occurs on clay soils derived from the deposits of ancient river systems (alluvium), or on shale soils of the Wianamatta Shales. Can intergrade into Shale-Gravel Transition Forest (where the alluvium is shallow), Castlereagh Swamp Woodland (in moist depressions) and Castlereagh Scribbly Gum Woodland (on sandier soils). Ranges from open forest to low woodland, with a canopy dominated by Broad-leaved Ironbark ( <i>Eucalyptus fibrosa</i> ) and Paperbark ( <i>Melaleuca decora</i> ). The canopy may also include other eucalypts such as Woollybutt ( <i>E. longifolia</i> ).	Unlikely	TEC is not associated with the vegetation types present on the site.
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	-	CE	The Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest represents certain occurrences of the coastal plain grassy eucalypt woodlands that are endemic to the shale hills and plains of the Sydney Basin Bioregion in NSW and which occur primarily in, but not limited to, the Cumberland Sub-region. The ecological community incorporates the grassy eucalypt shale hills and plains woodlands and the shale-gravel transition forests of this region. The ecological community ranges from grassy woodland to forest, with the understorey (i.e. the ground plus shrub layers) varying from predominately grassy to predominately shrubby. Some stands are much denser than the typical woodland form, particularly in the shale-gravel transition forest variant.	Unlikely	TEC is not associated with the vegetation types present on the site.

**Table D.1 Likelihood of occurrence assessment –TECs**

Community name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
Elderslie Banksia Scrub Forest in the Sydney Basin Bioregion	-	CE	This community is a type of scrubby forest or woodland limited to sandy substrates associated with deep Tertiary sand deposits above the present day Nepean River floodplain, primarily in the Camden area within the Macarthur District of south-western Sydney, New South Wales (NSW). Key elements of the canopy include <i>Banksia integrifolia</i> subsp. <i>integrifolia</i> (Coast Banksia), <i>Angophora subvelutina</i> (Broad-leaved Apple), <i>Eucalyptus botryoides</i> x <i>E. saligna</i> (a natural hybrid of Bangalay and Sydney Blue Gum) and various other species of <i>Eucalyptus</i> over a mostly shrubby understorey.	Unlikely	TEC is not associated with the vegetation types present on the site.
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	-	CE	The ecological community occurs on alluvial landforms related to coastal river floodplains and associated sites where transient water accumulates, including floodplains, river-banks, riparian zones, lake foreshores, creek lines (including the floors of tributary gullies), floodplain pockets, depressions, alluvial flats, fans, terraces, and localised colluvial fans. Floodplains may be occasionally or more often saturated, water-logged or inundated. The ecological community is typically found below 50 metres above sea-level (m ASL), although it can occur up to 250 m ASL. The community is generally a tall open forest to woodland, but there may be localised areas of closed forest and/or low forest, often associated with disturbance (including flooding). The structure tends to be lower and less dense in the wider floodplains, whereas taller denser forests occur in the more confined floodplains. The canopy is dominated by eucalypt species, often with several species present.	May occur within the site	There is suitable habitat present for this TEC to occur, and the TEC is associated with PCT 3145. PCT 3145 occurs in the Ousedale Creek gully and will not be impacted by the proposed works.
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	As the name suggests, this EEC is found on the river flats of the coastal floodplains. It has a tall open tree layer of eucalypts, which may exceed 40 m in height, but can be considerably shorter in regrowth stands or under conditions of lower site quality. Associated with silts, clay-loams and sandy loams, on periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains. Generally occurs below 50 m elevation, but may occur on localised river flats up to 250 m ASL. The structure of the community may vary from tall open forests to woodlands, although partial clearing may have reduced the canopy to scattered trees. Typically form mosaics with other floodplain forest communities and treeless wetlands, and often fringe treeless floodplain lagoons or wetlands with semi-permanent standing water.	May occur within the site	There is suitable habitat present for this TEC to occur, and the TEC is associated with PCT 3145. PCT 3145 occurs in the Ousedale Creek gully and will not be impacted by the proposed works.

**Table D.1 Likelihood of occurrence assessment –TECs**

Community name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion	-	E	This community is typically tall open eucalypt forests found on basalt and basalt-like substrates in, or adjacent to, the Sydney Basin Bioregion. The ecological community usually occurs at elevations between 650 m and 1,050 m ASL. The structure of the ecological community varies from tall open forest to woodland depending on aspect, slope, soil conditions, soil depth, and previous disturbance. Typically, the ecological community has a sparse to dense layer of shrubs and vines, and a diverse understorey of native grasses, forbs, twiners and ferns.	Unlikely	The impact areas on the site are located between 100 m – 130 m ASL, while this TEC occurs above 350 m ASL. The TEC is not associated with the vegetation types present on site.
Western Sydney Dry Rainforest and Moist Woodland on Shale	-	CE	The ecological community varies from a low closed rainforest, typically in lower slopes and gullies, to a more open moist woodland form on upper slopes and disturbed sites. Emergent trees can be up to around 25 m high and a lower tree layer is often present. Dominant species of the canopy and the sub-canopy vary across the latitudinal range of the ecological community, and also according to the available moisture and shelter. The ground stratum of the dry rainforest form typically is comprised of a mixture of fern and forb species with grasses being absent to uncommon and mosses also rare. In the moist woodland form, some rainforest-affiliated species also remain and grasses can be more abundant, comprising shade and moisture-tolerant species such as <i>Echinopogon ovatus</i> (forest hedgehog grass), <i>Microlaena stipoides</i> (weeping grass) and <i>Oplismenus imbecillis</i> (creeping beardgrass).	Unlikely	TEC is not associated with the vegetation types present on the site.

## D.2 Threatened fauna

**Table D.2 Likelihood of occurrence assessment - Fauna**

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Actitis hypoleucos</i>	Common Sandpiper	-	Mig	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.	Excluded	The site does not contain suitable habitat. The species prefers coastal or inland wetlands.
<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	CE	The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Apus pacificus</i>	Fork-tailed Swift	-	Mig	The Fork-tailed Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher.	Unlikely	The species is almost exclusively aerial and is unlikely to use any of the habitat within the site.
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V	-	Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Austrocordulia leonardi</i>	Sydney Hawk Dragonfly	E	E	This species appears to have specific habitat requirements, including slow-flowing water in rocky rivers with steep sides that provide shady resting areas. All specimens collected in the Sydney region came from deep riverine pools with cooler water along the Woronora River, Kangaroo Creek and Nepean River. <i>A. leonardi</i> is found under rocks, where it may coexist with the southern form of <i>A. refracta</i> .	May occur within the site	Although there may be suitable habitat for this species in Ousedale Creek, the impact areas do not provide any suitable aquatic habitat.

**Table D.2 Likelihood of occurrence assessment - Fauna**

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E	E	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes and spikerushes.	Unlikely	There are no suitable waterbodies, or permanent freshwater wetlands within the site.
<i>Burhinus grallarius</i>	Bush Stone-curlew	E	-	Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. Largely nocturnal, being especially active on moonlit nights. Feed on insects and small vertebrates, such as frogs, lizards and snakes. Nest on the ground in a scrape or small bare patch. Two eggs are laid in spring and early summer.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	-	Mig	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.	Unlikely	The site does not contain suitable wetland habitat.
<i>Calidris ferruginea</i>	Curlew Sandpiper	E	CE	Generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland.	Unlikely	The site does not contain suitable intertidal or coastal habitat.
<i>Calidris melanotos</i>	Pectoral Sandpiper	-	Mig	Species 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.	Unlikely	The site does not contain suitable wetland habitat.
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V	E	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.

**Table D.2 Likelihood of occurrence assessment - Fauna**

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Callocephalon fimbriatum</i> - endangered population	Gang-gang Cockatoo population in the Hornsby and Ku-ring-gai Local Government Areas	EP	-	Occurs within a variety of forest and woodland types. Usually frequents forested areas with old growth attributes required for nesting and roosting purposes. Also utilises less heavily timbered woodlands and urban fringe areas to forage, but appears to favour well timbered country through which it habitually flies as it moves about.	Excluded	The site does not occur within the LGAs the population occurs in.
<i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	V	V	Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak ( <i>Allocasuarina littoralis</i> ) and Forest Sheoak ( <i>A. torulosa</i> ) are important foods.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V	-	Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. They may occupy small patches of vegetation in fragmented landscapes and although the species prefers habitat with a rich shrub understory, they are known to occur in grassy woodlands and the presence of Eucalypts alone is sufficient to support populations in low densities.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin ( <i>Petrochelidon ariel</i> ), frequenting low to mid-elevation dry open forest and woodland close to these features. Found in well-timbered areas containing gullies.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Chthonicola sagittata</i>	Speckled Warbler	V	-	The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understory, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.

**Table D.2 Likelihood of occurrence assessment - Fauna**

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Circus assimilis</i>	Spotted Harrier	V	-	Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.	Unlikely	The site does not contain suitable open woodland habitat for this species.
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V	-	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum ( <i>Eucalyptus camaldulensis</i> ) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Cuculus optatus</i>	Oriental Cuckoo, Horsfield's Cuckoo	-	Mig	It mainly inhabits forests, occurring in coniferous, deciduous and mixed forest. It feeds mainly on insects and their larvae, foraging for them in trees and bushes as well as on the ground. It is usually secretive and hard to see.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	-	Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Dasyornis brachypterus</i>	Eastern Bristlebird	E	E	Habitat for central and southern populations is characterised by dense, low vegetation including heath and open woodland with a heathy understorey. In northern NSW the habitat occurs in open forest with dense tussocky grass understorey and sparse mid-storey near rainforest ecotone; all of these vegetation types are fire prone.	Unlikely	The site does not contain suitable open woodland or heath habitat for this species.

**Table D.2** Likelihood of occurrence assessment - Fauna

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V	E	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Quolls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites.	May occur within the site	Although the species may occasionally use habitat within the site, it is unlikely to use any of the habitat within the impact areas.
<i>Delma impar</i>	Striped Legless Lizard, Striped Snake-lizard	V	V	Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses.	Unlikely	The species is not associated with any of the PCTs mapped on the site, and there is no suitable grassland habitat within the site.
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E	-	Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries.	Unlikely	The site does not contain suitable wetland habitat for this species.
<i>Erythrotriorchis radiatus</i>	Red Goshawk	CE	V	Red Goshawks inhabit open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water, and are often found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers.	Unlikely	The species is not associated with the PCTs mapped on site, and the site does not contain optimal habitat for the species.
<i>Falco hypoleucos</i>	Grey Falcon	V	V	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey.	Unlikely	The site does not contain suitable habitat for this species.

**Table D.2 Likelihood of occurrence assessment - Fauna**

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Falco subniger</i>	Black Falcon	V	-	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. Some reports of 'Black Falcons' on the tablelands and coast of New South Wales are likely to be referable to the Brown Falcon. Habitat is usually in the arid and semi arid zones. It is usually found near watercourses or utilizing patches of isolated trees.	Unlikely	The site does not contain suitable habitat for this species.
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	-	Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. Hunts beetles, moths, weevils and other flying insects above or just below the tree canopy.	May occur within the site	Although the site may provide some suitable habitat for this species, it is unlikely to occur within the impact areas.
<i>Gallinago hardwickii</i>	Latham's Snipe, Japanese Snipe	-	Mig	Species occurs in permanent and ephemeral wetlands up to 2,000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation	Unlikely	The site does not contain suitable wetland habitat for this species.
<i>Glossopsitta pusilla</i>	Little Lorikeet	V	-	Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Grantiella picta</i>	Painted Honeyeater	V	V	Inhabits Boree/Weeping Myall ( <i>Acacia pendula</i> ), Brigalow ( <i>A. harpophylla</i> ) and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias.	Unlikely	The site does not contain suitable habitat for this species.
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V	-	Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.

**Table D.2** Likelihood of occurrence assessment - Fauna

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V	V	Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Spends more than 95% of its time in non-breeding habitat in areas up to 300 m from breeding sites. Whilst in non-breeding habitat it burrows below the soil surface or in the leaf litter.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Hieraaetus morphnoides</i>	Little Eagle	V	-	Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Hirundapus caudacutus</i>	White-throated Needletail	-	V	The White-throated Needletail is widespread in eastern and south-eastern Australia. In NSW, this species extends inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains. In Australia, the White-throated Needletail is almost exclusively aerial, 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.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	E	V	Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring. Moves from the sandstone rocks to shelters in crevices or hollows in large trees within 500 m of escarpments in summer. Feeds mostly on geckos and small skinks; will also eat frogs and small mammals occasionally.	<b>Potential to occur within the impact areas</b>	There is some potential habitat for this species in the rocky areas at the proposed log climb structure.
<i>Isodon obesulus obesulus</i>	Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern)	E	E	Southern Brown Bandicoots are largely crepuscular (active mainly after dusk and/or before dawn). They are generally only found in heath or open forest with a heathy understorey on sandy or friable soils. They feed on a variety of ground-dwelling invertebrates and the fruit-bodies of hypogeous (underground-fruiting) fungi. Their searches for food often create distinctive conical holes in the soil.	Unlikely	The site does not contain suitable heathy habitat for this species, and they are not associated with any of the PCTs mapped on the site.

**Table D.2** Likelihood of occurrence assessment - Fauna

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Ixobrychus flavicollis</i>	Black Bittern	V	-	Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves.	Unlikely	The site does not contain suitable wetland habitat for this species.
<i>Lathamus discolor</i>	Swift Parrot	E	CE	Migrates to the Australian south-east mainland between February and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations.	Unlikely	There is some suitable Eucalypt habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Limicola falcinellus</i>	Broad-billed Sandpiper	V	-	Broad-billed Sandpipers favour sheltered parts of the coast such as estuarine sandflats and mudflats, harbours, embayments, lagoons, saltmarshes and reefs as feeding and roosting habitat. Occasionally, individuals may be recorded in sewage farms or within shallow freshwater lagoons.	Unlikely	The site does not contain suitable aquatic habitat for this species.
<i>Litoria aurea</i>	Green and Golden Bell Frog	E	V	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes ( <i>Typha</i> spp.) or spikerushes ( <i>Eleocharis</i> spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow ( <i>Gambusia holbrooki</i> ), have a grassy area nearby and diurnal sheltering sites available.	Unlikely	The impact areas do not contain any aquatic habitat suitable for this species.
<i>Litoria littlejohni</i>	Littlejohn's Tree Frog, Heath Frog	E	E	This species breeds in the upper reaches of permanent streams and in perched swamps. Non-breeding habitat is heath based forests and woodlands where it shelters under leaf litter and low vegetation, and hunts for invertebrate prey either in shrubs or on the ground.	Unlikely	The impact areas do not contain any aquatic habitat suitable for this species to breed. The species is not associated with any of the PCTs mapped on site, and has never been recorded in the region.

**Table D.2 Likelihood of occurrence assessment - Fauna**

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Litoria watsoni</i>	Watson's Tree Frog	E	E	Found in southeast NSW from near Woollongong in the north to northeastern Victoria in the south. The species occurs in a variety of forest types, as well as woodland, bushland and heathland. It prefers moister sites, especially in or near tall moist forest. The most important habitat factor is the presence of pools that contain water long enough for tadpoles to complete metamorphosis. It has not been recorded from previously wooded land cleared for farming or plantation forestry.	Unlikely	The species is not associated with any of the PCTs mapped on the site, and has not been recorded in the area. Although there may be marginal habitat in the site, the species is unlikely to use the habitat within the impact areas.
<i>Lophoictinia isura</i>	Square-tailed Kite	V	-	Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Macquaria australasica</i>	Macquarie Perch	E (FM Act)	E	This species prefers clear water and deep, rocky holes with lots of cover. As well as aquatic vegetation, additional cover may comprise of large boulders, debris and overhanging banks.	Excluded	The impact areas do not contain any aquatic habitat suitable for this species.
<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V	-	Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	Unlikely	The habitat within the site does not contain optimal habitat for this species.
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	V	-	Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts. Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.

**Table D.2** Likelihood of occurrence assessment - Fauna

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	E	-	Primarily inhabits Cumberland Plain Woodland (a critically endangered ecological community). This community is a grassy, open woodland with occasional dense patches of shrubs. It is also known from Shale Gravel Transition Forests, Castlereagh Swamp Woodlands and the margins of River-flat Eucalypt Forest, which are also listed communities. Lives under litter of bark, leaves and logs, or shelters in loose soil around grass clumps. Occasionally shelters under rubbish. Can dig several centimetres into soil to escape drought.	<b>Potential to occur within the impact areas</b>	The site and the impact areas contain potential suitable habitat for this species.
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V	-	Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures. Usually solitary but also recorded roosting communally, probably insectivorous.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Miniopterus australis</i>	Little Bent-winged Bat	V	-	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat (formerly Eastern Bentwing Bat)	V	-	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Maternity caves have very specific temperature and humidity regimes. At other times of the year, populations disperse within about 300 km range of maternity caves.	May occur within the site	There is potential suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.  However, as WaterNSW has documented this species occurring within the region impact assessment was undertaken as a precautionary approach.

**Table D.2 Likelihood of occurrence assessment - Fauna**

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Mixophyes balbus</i>	Stuttering Frog, Southern Barred Frog (in Victoria)	E	V	Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Outside the breeding season adults live in deep leaf litter and thick understorey vegetation on the forest floor.	Unlikely	The impact areas do not contain any suitable rainforest habitat for this species. The species is not associated with any of the PCTs mapped on site, and has never been recorded in the region.
<i>Monarcha melanopsis</i>	Black-faced Monarch	-	Mig	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.	Unlikely	This site does not contain suitable rainforest habitat for this species.
<i>Motacilla flava</i>	Yellow Wagtail	-	Mig	Yellow Wagtail has an extremely large range, extending from Europe, east through Siberia to west Asia and northwestern China; and south through the Arabian Peninsula to Egypt. This species occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steppe and grassy tundra. In the north of its range it is also found in large forest clearings.	Unlikely	This is a migratory species and is unlikely to use any of the habitat within the site, which does not contain optimal damp habitats.
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	-	Mig	Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Myotis macropus</i>	Southern Myotis	V	-	Generally roost in groups of 10–15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface.	May occur within the site	There is potential suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.

**Table D.2 Likelihood of occurrence assessment - Fauna**

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Neophema pulchella</i>	Turquoise Parrot	V	-	Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Ninox connivens</i>	Barking Owl	V	-	Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey found on these fertile riparian soils.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Ninox strenua</i>	Powerful Owl	V	-	The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Notamacropus parma</i>	Parma Wallaby	V	-	Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest. Typically feed at night on grasses and herbs in more open eucalypt forest and the edges of nearby grassy areas. During the day they shelter in dense cover.	Unlikely	Although the habitat within the site broadly fits the species requirements, the species is not known from this area and generally occurs north of Sydney. It is not associated with any of the PCTs mapped on the site.
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	-	CE	It generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts.	Unlikely	The site does not contain suitable wetland or estuarine habitat for this species.
<i>Pandion cristatus</i>	Eastern Osprey	V	-	Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water. Breed from July to September in NSW. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	Unlikely	The site does not provide suitable habitat for this coastal species (usually within 1 km of coastline, the impact areas are over 20 km from the coastline).

**Table D.2 Likelihood of occurrence assessment - Fauna**

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Pandion haliaetus</i>	Osprey	V	-	The species requires extensive areas of open fresh, brackish or saline water for foraging. They are mostly found in coastal areas but occasionally travel inland along major rivers.	Unlikely	The site does not contain suitable coastal or estuarine habitat for this species.
<i>Petauroides volans</i>	Greater Glider	E	E	Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelter during the day in tree hollows and will use up to 18 hollows in their home range. Occupy a relatively small home range with an average size of 1 to 3 ha.	May occur within the site	Although the site may provide some suitable habitat for this species, it is unlikely to occur within the impact areas.
<i>Petaurus australis</i>	Yellow-bellied Glider	V	V	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.	May occur within the site	Although the site may provide some suitable habitat for this species, it is unlikely to occur within the impact areas.
<i>Petaurus norfolcensis</i>	Squirrel Glider	V	-	Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey. Live in family groups of a single adult male one or more adult females and offspring. Require abundant tree hollows for refuge and nest sites.	May occur within the site	There is potential suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	E	V	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night when foraging. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. Highly territorial and have strong site fidelity with an average home range size of about 15 ha.	Unlikely	The species is not associated with the PCTs mapped on site, and the site does not contain suitable rocky escarpment habitat for the species.

**Table D.2 Likelihood of occurrence assessment - Fauna**

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Petroica boodang</i>	Scarlet Robin	V	-	The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Petroica phoenicea</i>	Flame Robin	V	-	Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. Occasionally occurs in temperate rainforest, and also in herbfields, heathlands, shrublands and sedgeland at high altitudes.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Phascolarctos cinereus</i>	Koala	E	E	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Inactive for most of the day, feeding and moving mostly at night. Spend most of their time in trees, but will descend and traverse open ground to move between trees.	May occur within the site	The species is known from the region and there are many records in the area. The site provides suitable habitat for the species but they are unlikely to use the habitat within the impact areas (no trees are present within the impact areas).
<i>Pommerhelix duralensis</i>	Dural Land Snail	E	E	The species has a strong affinity for communities in the interface region between shale-derived and sandstone-derived soils, with forested habitats that have good native cover and woody debris. It favours sheltering under rocks or inside curled-up bark. It does not burrow nor climb. The species has also been observed resting in exposed areas, such as on exposed rock or leaf litter, however it will also shelter beneath leaves, rocks and light woody debris.	<b>Potential to occur within the impact areas</b>	The site and the impact areas contain potential suitable habitat for this species.

**Table D.2** Likelihood of occurrence assessment - Fauna

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Pseudomys novaehollandiae</i>	New Holland Mouse, Pookila	-	V	Known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes. It is a social animal, living predominantly in burrows shared with other individuals. Distribution is patchy in time and space, with peaks in abundance during early to mid stages of vegetation succession typically induced by fire.	Unlikely	The species is not associated with any of the PCTs mapped on the site, and there is no suitable heathland habitat within the site.
<i>Pseudophryne australis</i>	Red-crowned Toadlet	V	-	Occurs in open forests, mostly on Hawkesbury and Narrabeen Sandstones. Inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings. Shelters under rocks and amongst masses of dense vegetation or thick piles of leaf litter.	May occur within the site	Although the species may occur on the site, there is no suitable habitat within the impact areas.
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	May occur within the site	There is some suitable habitat for this species within the site, but it is unlikely to use the habitats within the impact areas.
<i>Pycnoptilus floccosus</i>	Pilotbird	-	V	Species inhabits temperate wet sclerophyll forests and occasionally temperate rainforest, where there is dense undergrowth with abundant debris.	Unlikely	The species is not associated with the PCTs mapped on site, and the site does not contain optimal habitat for the species.
<i>Rhipidura rufifrons</i>	Rufous Fantail	-	Mig	Mainly inhabits wet sclerophyll forests, often in gullies. They also occur in subtropical and temperate rainforests.	Unlikely	The site does not contain suitable wet sclerophyll or rainforest habitat for this species.
<i>Rostratula australis</i>	Australian Painted Snipe	E	E	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	Unlikely	The site does not contain suitable wetland habitat for this species.

**Table D.2** Likelihood of occurrence assessment - Fauna

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat	V	-	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.	May occur within the site	There is potential suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V	-	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings. Forages after sunset, flying slowly and directly along creek and river corridors at an altitude of 3–6 m. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects; this species has been known to eat other bat species.	May occur within the site	There is potential suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Stagonopleura guttata</i>	Diamond Firetail	V	-	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.
<i>Tringa nebularia</i>	Common Greenshank, Greenshank	-	Mig	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.	Unlikely	The site does not contain suitable wetland or coastal habitat for this species.
<i>Tyto novaehollandiae</i>	Masked Owl	V	-	Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.	May occur within the site	There is suitable habitat for this species present within the site, but the species is unlikely to use any of the habitat within the impact areas.

**Table D.2** Likelihood of occurrence assessment - Fauna

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Tyto tenebricosa</i>	Sooty Owl	V	-	Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Roosts by day in the hollow of a tall forest tree or in heavy vegetation; hunts by night for small ground mammals or tree-dwelling mammals	Unlikely	The site does not contain suitable rainforest habitat for this species.
<i>Varanus rosenbergi</i>	Rosenberg's Goanna	V	-	Found in heath, open forest and woodland. Associated with termites, the mounds of which this species nests in; termite mounds are a critical habitat component. Individuals require large areas of habitat. Feeds on carrion, birds, eggs, reptiles and small mammals. Shelters in hollow logs, rock crevices and in burrows, which they may dig for themselves, or they may use other species' burrows, such as rabbit warrens.	May occur within the site	The site provides some suitable habitat for this species, although it is unlikely to use the habitat within the impact areas.

## D.3 Threatened flora

**Table D.3** Likelihood of occurrence assessment - Flora

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Acacia bynoeana</i>	Bynoe's Wattle	E	V	Occurs in heath or dry sclerophyll forest on sandy soils. Seems to prefer open, sometimes slightly disturbed sites such as trail margins, edges of roadside spoil mounds and in recently burnt patches. Associated overstorey species include Red Bloodwood, Scribbly Gum, Parramatta Red Gum, Saw Banksia and Narrow-leaved Apple.	<b>Potential to occur within the impact areas</b>	There is suitable habitat for this species present within the impact areas.
<i>Acacia gordonii</i>	Acacia gordonii	E	E	Grows in dry sclerophyll forest and heathlands amongst or within rock platforms on sandstone outcrops. Flowers August to September and produces fruit October to February. The fruit is a pod containing hard-coated seed. The seed ultimately forms a persistent soil stored seedbank. Fire promotes germination of the soil stored seedbank and seed germination will not occur in the absence of fire as the hard-coated seed requires heat to break seed dormancy, as is typical of species within Fabaceae.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Acacia pubescens</i>	Downy Wattle	V	V	Occurs on alluviums, shales and at the intergrade between shales and sandstones. The soils are characteristically gravelly soils, often with ironstone. Occurs in open woodland and forest, in a variety of plant communities, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland. Flowers from August to October.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.

**Table D.3 Likelihood of occurrence assessment - Flora**

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Allocasuarina glareicola</i>	-	E	E	Grows in Castlereagh woodland on lateritic soil. Found in open woodland with <i>Eucalyptus parramattensis</i> , <i>Eucalyptus fibrosa</i> , <i>Angophora bakeri</i> , <i>Eucalyptus sclerophylla</i> and <i>Melaleuca decora</i> . Common associated understorey species include <i>Melaleuca nodosa</i> , <i>Hakea dactyloides</i> , <i>Hakea sericea</i> , <i>Dillwynia tenuifolia</i> , <i>Micromyrtus minutiflora</i> , <i>Acacia elongata</i> , <i>Acacia browniei</i> , <i>Themeda australis</i> and <i>Xanthorrhoea minor</i> . Spreads by vegetative means, such that clumps of up to 100s of stems may be a single individual. The time taken for the plants to flower and set seed is not known, but only those plants growing in areas unburnt for some time produced substantial numbers of fruit.	Unlikely	This species is not associated with the PCTs present on the site, it has not been recorded in the surrounding area and there is no suitable habitat within the impact areas.
<i>Caladenia tessellata</i>	Thick-lipped Spider-orchid, Daddy Long-legs	E	V	Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. The single leaf regrows each year. Flowers appear between September and November (but apparently generally late September or early October in extant southern populations).	Unlikely	This species is not associated with the PCTs present on the site, it has not been recorded in the surrounding area and there is no suitable habitat within the impact areas.
<i>Callistemon linearifolius</i>	Netted Bottle Brush	V	-	Grows in dry sclerophyll forest on the coast and adjacent ranges. Flowers spring – summer. For the Sydney area, recent records are limited to the Hornsby Plateau area near the Hawkesbury River. The species was more widespread in the past, and there are currently only 5–6 populations remaining from the 22 populations historically recorded in the Sydney area.	May occur within the site	There is suitable habitat for this species present within the site, but it has not been recorded in the surrounding area, and shrubs of this size will not be included in the impact areas.

**Table D.3 Likelihood of occurrence assessment - Flora**

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Commersonia prostrata</i>	Dwarf Kerrawang	E	E	Occurs on sandy, sometimes peaty soils in a wide variety of habitats: Snow Gum ( <i>Eucalyptus pauciflora</i> ) Woodland and Ephemeral Wetland floor at Rowes Lagoon; Blue leaved Stringybark ( <i>E. agglomerata</i> ) Open Forest at Tallong; and in Brittle Gum ( <i>E. mannifera</i> ) Low Open Woodland at Penrose; Scribbly Gum ( <i>E. haemostoma</i> )/ Swamp Mahogany ( <i>E. robusta</i> ) Ecotonal Forest at Tomago. Associated native species may include <i>Imperata cylindrica</i> , <i>Empodisma minus</i> and <i>Leptospermum continentale</i> . Appears to respond positively to some forms of disturbance, however, there are conflicting reports about the response of the species to fire.	Unlikely	This species is not associated with the PCTs present on the site, it has not been recorded in the surrounding area and there is no suitable habitat within the impact areas.
<i>Cryptostylis hunteriana</i>	Leafless Tongue-orchid	V	V	Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by Scribbly Gum ( <i>Eucalyptus sclerophylla</i> ), Silvertop Ash ( <i>E. sieberi</i> ), Red Bloodwood ( <i>Corymbia gummifera</i> ) and Black Sheoak ( <i>Allocasuarina littoralis</i> ); appears to prefer open areas in the understorey of this community and is often found in association with the Large Tongue Orchid ( <i>C. subulata</i> ) and the Tartan Tongue Orchid ( <i>C. erecta</i> ).	Unlikely	This species is not known from the IBRA subregion, is not associated with the PCTs present on the site, and has not been recorded in the surrounding area.
<i>Cynanchum elegans</i>	White-flowered Wax Plant	E	E	The White-flowered Wax Plant usually occurs on the edge of dry rainforest vegetation. Other associated vegetation types include littoral rainforest; Coastal Tea-tree <i>Leptospermum laevigatum</i> – Coastal Banksia <i>Banksia integrifolia</i> subsp. <i>integrifolia</i> coastal scrub; Forest Red Gum <i>Eucalyptus tereticornis</i> aligned open forest and woodland; Spotted Gum <i>Corymbia maculata</i> aligned open forest and woodland; and Bracelet Honey myrtle <i>Melaleuca armillaris</i> scrub to open scrub.	Unlikely	This species is not associated with the PCTs present on the site, and has not been recorded in the surrounding area. There is no suitable habitat within the impact areas.

**Table D.3** Likelihood of occurrence assessment - Flora

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Darwinia biflora</i>	Darwinia biflora	V	V	Occurs on the edges of weathered shale-capped ridges, where these intergrade with Hawkesbury Sandstone. Associated overstorey species include Eucalyptus haemastoma, Corymbia gummifera and/or E. squamosa. The vegetation structure is usually woodland, open forest or scrub-heath.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Darwinia peduncularis</i>	Darwinia peduncularis	V	-	Usually grows on or near rocky outcrops on sandy, well drained, low nutrient soil over sandstone. Flowers in winter to early spring. Not likely to be capable of vegetative spread but may resprout after some disturbance. Likely to be killed by fire, based on the response of other Darwinia species.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Deyeuxia appressa</i>	Deyeuxia appressa	E	E	Given that D. appressa hasn't been seen in over 60 years, little is known of the species' habitat and ecology. Flowers spring to summer and grows on wet ground.	May occur within the site	The impact areas are well drained and do not contain suitable wet habitat for this species.
<i>Dillwynia tenuifolia</i>	Dillwynia tenuifolia	V	-	In western Sydney, may be locally abundant particularly within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays. May also be common in transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland. At Yengo, is reported to occur in disturbed escarpment woodland on Narrabeen sandstone. Flowering occurs sporadically through the year with a peak from August to March depending on environmental conditions.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Epacris purpurascens</i> var. <i>purpurascens</i>	Epacris purpurascens var. purpurascens	V	-	Found in a range of habitat types, most of which have a strong shale soil influence. Lifespan is recorded to be 5–20 years, requiring 2–4 years before seed is produced in the wild. Killed by fire and re-establishes from soil-stored seed.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.

**Table D.3** Likelihood of occurrence assessment - Flora

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Eucalyptus benthamii</i>	Camden White Gum	V	V	Requires a combination of deep alluvial sands and a flooding regime that permits seedling establishment. Recruitment of juveniles appears to be most successful on bare silt deposits in rivers and streams. Occurs in open forest.	Unlikely	Occurs on the alluvial flats of the Nepean River and its tributaries. There is no suitable habitat within the impact areas as they are not located on alluvial flats
<i>Eucalyptus nicholii</i>	Narrow-leaved Black Peppermint	V	V	Typically grows in dry grassy woodland, on shallow soils of slopes and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock. Seedling recruitment is common, even in disturbed soils, if protected from grazing and fire. Tends to grow on lower slopes in the landscape.	Unlikely	The impact areas are outside the distribution of this species, and it is not associated with the PCT mapped on the site. No trees are included in the impact areas.
<i>Genoplesium baueri</i>	Bauer's Midge Orchid	E	E	Grows in dry sclerophyll forest and moss gardens over sandstone. Flowers February to March. The species has been recorded from locations between Ulladulla and Port Stephens.	<b>Potential to occur within the impact areas</b>	There is suitable habitat for this species present within the impact areas.
<i>Grammitis stenophylla</i>	Narrow-leaf Finger Fern	E	-	Moist places, usually near streams, on rocks or in trees, in rainforest and moist eucalypt forest.	<b>Potential to occur within the impact areas</b>	There is suitable habitat for this species present within the impact areas.
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	Juniper-leaved Grevillea	V	-	Grows on reddish clay to sandy soils derived from Wianamatta Shale and Tertiary alluvium (often with shale influence), typically containing lateritic gravels. Recorded from Cumberland Plain Woodland, Castlereagh Ironbark Woodland, Castlereagh Scribbly Gum Woodland and Shale/Gravel Transition Forest. Plants are killed by fire with regeneration solely from soil-stored seed.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.

**Table D.3** Likelihood of occurrence assessment - Flora

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	Small-flower Grevillea	V	V	Grows in sandy or light clay soils usually over thin shales, often with lateritic ironstone gravels and nodules. Sydney region occurrences are usually on Tertiary sands and alluvium, and soils derived from the Mittagong Formation. Soil landscapes include Lucas Heights or Berkshire Park. Occurs in a range of vegetation types from heath and shrubby woodland to open forest. In Sydney it has been recorded from Shale Sandstone Transition Forest and in the Hunter in Kurri Sand Swamp Woodland. however, other communities occupied include <i>Corymbia maculata</i> - <i>Angophora costata</i> open forest in the Dooralong area, in Sydney Sandstone Ridgetop Woodland at Wedderburn and in Cooks River/Castlereagh Ironbark Forest at Kemps Creek.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Grevillea parviflora</i> subsp. <i>supplicans</i>	<i>Grevillea parviflora</i> subsp. <i>supplicans</i>	E	-	Occurs in heathy woodland associations on skeletal sandy soils over massive sandstones. Local observations (by Douglas) do not support the description by Olde & Marriott (1995) of its habitat as "wet heath", rather that this taxon is strongly associated with clay-capped ridged of the Lucas Heights and Faulconbridge soil landscapes, but that it is quite restricted within these areas, suggesting it has a preference for yellow clays with periodically impeded drainage. May be associated with the margins of the Sydney Turpentine Ironbark Forest endangered ecological community and, to a greater extent, with Shale/Sandstone Transition Forest endangered ecological community.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Gyrostemon thesioides</i>		E	-	In NSW, known from hillsides, slopes, terraces and riverbanks within 180 m of watercourses. A fire-opportunist, with recruitment occurring from soil-stored seed bank following fire. Adult plants are killed by fire. Plants may reach maturity in less than a year and plants are presumably short-lived.	Unlikely	This species is not associated with the PCTs present on the site, and there is no suitable habitat within the impact areas.

**Table D.3** Likelihood of occurrence assessment - Flora

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Haloragis exalata</i> subsp. <i>exalata</i>	Wingless Raspwort, Square Raspwort	V	V	Square Raspwort appears to require protected and shaded damp situations in riparian habitats. Flowering specimens in NSW are recorded from November to January.	Unlikely	This species is not associated with the PCTs present on the site, it has not been recorded in the surrounding area and there is no suitable habitat within the impact areas.
<i>Hibbertia fumana</i>	Hibbertia fumana	CE	-	Species is known to occur in a long intergrade between Castlereagh Scribbly Gum Woodland and Castlereagh Ironbark Forest. Also recently found associated with aeolian sand deposits. Species has been found to occur in a variety of structural habitats including open areas, disturbed sites and also within thick ground cover dominated by a heavy cover of sedges, rushes and grasses. Has the potential to occur in similar intergrade alluvial habitats rich in sands and laterite in other parts of western Sydney.	Unlikely	This species is not associated with the PCTs present on the site, it has not been recorded in the surrounding area and there is no suitable habitat within the impact areas.
<i>Hibbertia puberula</i>	Hibbertia puberula	E	-	Occurs on sandy soil often associated with sandstone, or on clay. Habitats are typically dry sclerophyll woodland communities, although heaths are also occupied. One of the recently (2012) described subspecies also favours upland swamps.	<b>Potential to occur within the impact areas</b>	There is suitable habitat for this species present within the impact areas.
<i>Hibbertia superans</i>	Hibbertia superans	E	-	The species occurs on sandstone ridgetops often near the shale/sandstone boundary. Occurs in both open woodland and heathland, and appears to prefer open disturbed areas, such as tracksides. The fruit is dehiscent and the seed has a fleshy aril which attracts ants and encourages them to disperse the seeds. The soil seedbank is persistent. Highly sensitive to both frequent and infrequent fire and other disturbance regimes.	<b>Potential to occur within the impact areas</b>	There is suitable habitat for this species present within the impact areas.

**Table D.3** Likelihood of occurrence assessment - Flora

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Isotoma fluviatilis</i> subsp. <i>fluviatilis</i>		-	Extinct	Known to grow in damp places, on the Cumberland Plain, including freshwater wetland, grassland/alluvial woodland and an alluvial woodland/shale plains woodland (Cumberland Plain Woodland) ecotone. May be an early successional species that benefits from some disturbance. Possibly out competed when overgrown by some species such as <i>Cyndon dactylon</i> .	Excluded	Not listed under the BC Act and declared extinct under the EPBC Act.
<i>Lasiopetalum joyceae</i>	Lasiopetalum joyceae	V	V	Grows in heath on sandstone. Has a restricted range occurring on lateritic to shaley ridgetops on the Hornsby Plateau south of the Hawkesbury River. It is currently known from 34 sites between Berrilee and Duffys Forest. Seventeen of these are reserved.	Unlikely	There is no suitable heath habitat within the impact areas. It has not been recorded in the surrounding area.
<i>Leucopogon exolasius</i>	Woronora Beard-heath	V	V	The plant occurs in woodland on sandstone. Flowering occurs in August and September.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Leucopogon fletcheri</i> subsp. <i>fletcheri</i>	Leucopogon fletcheri subsp. <i>fletcheri</i>	E	-	Occurs in dry eucalypt woodland or in shrubland on clayey lateritic soils, generally on flat to gently sloping terrain along ridges and spurs. Flowers August to September. Fruit produced October.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> - endangered population	Marsdenia viridiflora R. Br. subsp. <i>viridiflora</i> population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	EP	-	Grows in vine thickets and open shale woodland.	Excluded	Impact areas are not in the LGAs where the population is found.
<i>Melaleuca deanei</i>	Deane's Paperbark	V	V	The species occurs mostly in ridgetop woodland, with only 5% of sites in heath on sandstone. Flowers appear in summer but seed production appears to be small and consequently the species exhibits a limited capacity to regenerate.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.

**Table D.3** Likelihood of occurrence assessment - Flora

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Micromyrtus minutiflora</i>	Micromyrtus minutiflora	E	V	Grows in Castlereagh Scribbly Gum Woodland, Ironbark Forest, Shale/Gravel Transition Forest, open forest on tertiary alluvium and consolidated river sediments. Sporadic flowering, June to March. Response to fire and mechanical disturbance is uncertain. Regeneration may be due to resprouting or germination of soil-stored seed.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Persicaria elatior</i>	Knotweed, Tall Knotweed	V	V	This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	Unlikely	This species is not associated with the PCTs present on the site, it has not been recorded in the surrounding area and there is no suitable habitat within the impact areas.
<i>Persoonia bargoensis</i>	Bargo Geebung	E	V	The Bargo Geebung occurs in woodland or dry sclerophyll forest on sandstone and on heavier, well drained, loamy, gravelly soils of the Wianamatta Shale and Hawkesbury Sandstone. It favours interface soil landscapes such as between the Blacktown Soil Landscape and the complex Mittagong Formation soils (Lucas Heights Soil Landscape) with the underlying sandstone (Hawkesbury Soil Landscape and Gynea Soil Landscape). Some of the vegetation the species occurs within would be recognised as the Shale/Sandstone Transition Forest, a listed community.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Persoonia glaucescens</i>	Mittagong Geebung	E	V	The Mittagong Geebung grows in woodland to dry sclerophyll forest on clayey and gravelly laterite. The preferred topography is ridge-tops, plateaux and upper slopes. Aspect does not appear to be a significant factor. This species seems to benefit from the reduced competition and increased light available on disturbance margins including roadsides.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.

**Table D.3 Likelihood of occurrence assessment - Flora**

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Persoonia hirsuta</i>	Hairy Geebung	E	E	The Hairy Geebung is found in clayey and sandy soils in dry sclerophyll open forest, woodland and heath, primarily on the Mittagong Formation and on the upper Hawkesbury Sandstone. It is usually present as isolated individuals or very small populations. Plants are generally killed by all but the lowest intensity fire or partial burning. Fire may promote germination of soil-stored seed, although it may also kill some of the seedbank if it is of high severity. Extreme wet-dry weather cycles may also promote germination of soil-stored seed.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Persoonia nutans</i>	Nodding Geebung	E	E	Northern populations are confined to aeolian and alluvial sediments and occur in a range of sclerophyll forest and woodland vegetation communities, with the majority of individuals occurring within Agnes Banks Woodland or Castlereagh Scribbly Gum Woodland and some in Cooks River/Castlereagh Ironbark Forests. Southern populations also occupy tertiary alluvium, but extend onto shale sandstone transition communities and into Cooks River/Castlereagh Ironbark Forest.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Pimelea curviflora</i> var. <i>curviflora</i>	<i>Pimelea curviflora</i> var. <i>curviflora</i>	V	V	Occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. Also recorded in Illawarra Lowland Grassy Woodland habitat at Albion Park on the Illawarra coastal plain.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Pimelea spicata</i>	Spiked Rice-flower	E	E	In both the Cumberland Plain and Illawarra environments this species is found on well-structured clay soils. On the Cumberland Plain sites it is associated with Grey Box communities (particularly Cumberland Plain Woodland variants and Moist Shale Woodland) and in areas of ironbark.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.

**Table D.3** Likelihood of occurrence assessment - Flora

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Pomaderris brunnea</i>	Brown Pomaderris	E	V	Brown Pomaderris grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines. The species has been found in association with Eucalyptus amplifolia, Angophora floribunda, Acacia parramattensis, Bursaria spinosa and Kunzea ambigua.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Pomaderris cotoneaster</i>	Cotoneaster Pomaderris	E	E	Cotoneaster Pomaderris has been recorded in a range of habitats in predominantly forested country. The habitats include forest with deep, friable soil, amongst rock beside a creek, on rocky forested slopes and in steep gullies between sandstone cliffs. Populations are not apparently influenced by local variations in habitat – it is not obvious why they are only growing where they are.	Unlikely	This species is not associated with the PCTs present on the site, it has not been recorded in the surrounding area and there is no suitable habitat within the impact areas.
<i>Pomaderris prunifolia</i> - endangered population	<i>P. prunifolia</i> in the Parramatta, Auburn, Strathfield and Bankstown Local Government Areas	EP	-	Known from only three sites within the listed local government areas, at Rydalmere, within Rookwood Cemetery and at The Crest of Bankstown.	Excluded	Impact areas are not in the LGAs where the population is found.
<i>Pterostylis saxicola</i>	Sydney Plains Greenhood	E	E	Most commonly found growing in small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines. The vegetation communities above the shelves where <i>Pterostylis saxicola</i> occurs are sclerophyll forest or woodland on shale/sandstone transition soils or shale soils.	Potential to occur within the impact areas	There is suitable habitat for this species present within the impact areas.
<i>Pultenaea aristata</i>		V	V	The species occurs in either dry sclerophyll woodland or wet heath on sandstone. Flowering has been recorded in winter and spring. Prickly Bush-pea is restricted to the Woronora Plateau, a small area between Helensburgh, south of Sydney, and Mt Kiera above Wollongong.	Unlikely	This species is not associated with the PCTs present on the site, it has not been recorded in the surrounding area and there is no suitable habitat within the impact areas.

**Table D.3** Likelihood of occurrence assessment - Flora

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Pultenaea parviflora</i>	Pultenaea parviflora	E	V	May be locally abundant, particularly within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays. May also be common in transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland. Eucalyptus fibrosa is usually the dominant canopy species. Eucalyptus globoidea, E. longifolia, E. parramattensis, E. sclerophylla and E. sideroxylon may also be present or co-dominant, with Melaleuca decora frequently forming a secondary canopy layer.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Pultenaea pedunculata</i>	Matted Bush-pea	E	-	The Matted Bush-pea occurs in a range of habitats. NSW populations are generally among woodland vegetation but plants have also been found on road batters and coastal cliffs. It is largely confined to loamy soils in dry gullies in populations in the Windellama area. The ability of stems to creep and root from the nodes has made this species a very good coloniser of bare ground in many parts of its range. In the Cumberland Plain the species favours sites in clay or sandy-clay soils (Blacktown Soil Landscape) on Wianamatta Shale-derived soils, usually close to patches of Tertiary Alluvium (Liverpool area) or at or near the Shale-Sandstone interface (Appin). All sites have a lateritic influence with ironstone gravel (nodules) present.	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.
<i>Rhizanthella slateri</i>	Eastern Australian Underground Orchid	V	E	Habitat requirements are poorly understood and no particular vegetation type has been associated with the species, although it is known to occur in sclerophyll forest. Highly cryptic given that it grows almost completely below the soil surface, with flowers being the only part of the plant that can occur above ground. Therefore usually located only when the soil is disturbed. Flowers September to November.	Potential to occur within the impact areas	There is suitable habitat for this species present within the impact areas.

**Table D.3** Likelihood of occurrence assessment - Flora

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Rhodamnia rubescens</i>	Scrub Turpentine	CE	CE	Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. This species is characterised as highly to extremely susceptible to infection by Myrtle Rust. Myrtle Rust affects all plant parts.	Unlikely	Unsuitable habitat - impact areas are not located in rainforest/wet sclerophyll forest.
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E	V	On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest. On the central coast Magenta Lilly Pilly occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities.	Unlikely	This species is not associated with the PCTs present on the site and there is no suitable habitat within the impact areas.
<i>Tetratheca glandulosa</i>	Tetratheca glandulosa	V	-	Associated with shale-sandstone transition habitat where shale-cappings occur over sandstone, with associated soil landscapes such as Lucas Heights, Gynea, Lambert and Faulconbridge. Topographically, the plant occupies ridgetops, upper-slopes and to a lesser extent mid-slope sandstone benches. Soils are generally shallow, consisting of a yellow, clayey/sandy loam. Stony lateritic fragments are also common in the soil profile on many of these ridgetops. Vegetation structure varies from heaths and scrub to woodlands/open woodlands, and open forest.	<b>Potential to occur within the impact areas</b>	There is suitable habitat for this species present within the impact areas.
<i>Thelymitra kangaloonica</i>	Kangaloon Sun Orchid	CE	CE	It is found in swamps in sedgelands over grey silty grey loam soils. It is thought to be a short-lived perennial, flowering in late October and early November.	Unlikely	Unsuitable habitat - species is found in swamps in sedgeland. These are not present within the impact areas. The species is not associated with the PCTs mapped on the site.
<i>Thesium australe</i>	Austral Toadflax, Toadflax	V	V	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass ( <i>Themeda australis</i> ). A root parasite that takes water and some nutrient from other plants, especially Kangaroo Grass.	Unlikely	This species is not associated with the PCTs present on the site and there is no suitable habitat within the impact areas.

**Table D.3** Likelihood of occurrence assessment - Flora

Scientific Name	Common Name	BC Act status	EPBC Act status	Habitat requirements	Likelihood of occurrence	Justification
<i>Wahlenbergia multicaulis</i> - endangered population	Tadgell's Bluebell in the local government areas of Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield	EP	-	In Western Sydney most sites are closely aligned with the Villawood Soil Series, which is a poorly drained, yellow podsollic extensively permeated with fine, concretionary ironstone (laterite). However, the sites in Hornsby LGA are on the 'Hawkesbury' soil landscape. Found in disturbed sites and grows in a variety of habitats including forest, woodland, scrub, grassland and the edges of watercourses and wetlands. Typically occurs in damp, disturbed sites (with natural or human disturbance of various forms), typically amongst other herbs rather than in the open.	Excluded	Impact areas are not in the LGAs where the population is found.
<i>Zieria involucreta</i>	Zieria involucreta	E	V	Occurs primarily on Hawkesbury sandstone. Also occurs on Narrabeen Group sandstone and on Quaternary alluvium. Found primarily in sheltered forests on mid- to lower slopes and valleys, e.g. in or adjacent to gullies which support sheltered forest, although some populations extend upslope into drier vegetation. Also known from at least two atypical ridgetop locations. The canopy typically includes <i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i> (Turpentine), <i>Angophora costata</i> (Smooth-barked Apple), <i>Eucalyptus agglomerata</i> (Blue-leaved Stringybark) and <i>Allocasuarina torulosa</i> (Forest Oak).	May occur within the site	There is suitable habitat for this species present within the site, but shrubs of this size will not be included in the impact areas.