

**Table 4-5 Photo-plate 3: Location of BAM survey plots**



## 4.3 Threatened Ecological Communities

### 4.3.1 Alignment with TECs

PCT 3320 – Cumberland Shale Plains Woodland may be associated with the following threatened ecological communities (TECs):

- Cumberland Plain Woodland in the Sydney Basin Bioregion (Critically Endangered, BC Act)
- Shale Gravel Transition Forest in the Sydney Basin Bioregion (Endangered, BC Act)
- Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (Critically Endangered, EPBC Act).

#### 4.3.1.1 Alignment under NSW BC Act

In accordance with Section 4.2 of the BAM, the identification of TECs must be considered against the NSW Threatened Species Scientific Committee (the Committee) Final Determination for the TEC.

Features	Relevance to subject site
Cumberland Plain Woodland is restricted to the Sydney Basin Bioregion	Applicable
Cumberland Plain Woodland is characterised by an upper-storey that is usually dominated by <i>Eucalyptus moluccana</i> (Grey Box) and <i>E. tereticornis</i> (Forest Red Gum), often with <i>E. crebra</i> (Grey Ironbark), <i>E. eugenioides</i> (Narrow-leaved Stringybark), <i>Corymbia maculata</i> (Spotted Gum) or other less frequently occurring eucalypts, including <i>Angophora floribunda</i> , <i>A. subvelutina</i> (Broad-leaved Apple), <i>E. amplifolia</i> (Cabbage Gum) and <i>E. fibrosa</i> (Broad-leaved Ironbark).	Applicable: <i>E. tereticornis</i> and <i>E. crebra</i> abundant
The community may have an open stratum of small trees that may include any of these eucalypts, as well as species such as <i>Acacia decurrens</i> (Black Wattle), <i>A. parramattensis</i> (Parramatta Wattle), <i>A. implexa</i> (Hickory Wattle) or <i>Exocarpos cupressiformis</i> (Native Cherry).	Applicable: open stratum of small <i>E. tereticornis</i> and <i>E. crebra</i> present. No <i>Acacia</i> species present.
Shrubs are typically scattered in the understorey but may be absent or locally dense as a result of clearing activity or changes in grazing or fire regimes. <i>Bursaria spinosa</i> (Blackthorn) is usually dominant, while other species include <i>Daviesia ulicifolia</i> (Gorse Bitter Pea), <i>Dillwynia sieberi</i> , <i>Dodonaea viscosa subsp. cuneata</i> and <i>Indigofera australis</i> (Native Indigo).	Applicable: <i>Bursaria spinosa</i> regrowth present in some areas (Vegetation Zone 3).
The ground cover is dominated by a diverse range of grasses including <i>Aristida ramosa</i> (Purple Wiregrass), <i>A. vagans</i> (Threeawn Speargrass), <i>Cymbopogon refractus</i> (Barbed Wire Grass), <i>Dichelachne micrantha</i> (Plumegrass), <i>Echinopogon caespitosus</i> (Forest Hedgehog Grass), <i>Eragrostis leptostachya</i> (Paddock Lovegrass), <i>Microlaena stipoides</i> (Weeping Grass), <i>Paspalidium distans</i> and <i>Themeda australis</i> (Kangaroo Grass), and with graminoids <i>Carex inversa</i> (Knob Sedge), <i>Cyperus gracilis</i> , <i>Lomandra filiformis subsp. filiformis</i> (Wattle Mat-rush) and <i>L. multiflorus subsp. multiflorus</i> (Many-flowered Mat-rush). The ground cover also includes a diversity of forbs such as <i>Asperula conferta</i> (Common Woodruff), <i>Brunoniella australis</i> (Blue Trumpet), <i>Desmodium varians</i> (Slender Tick Trefoil), <i>Dianella longifolia</i> (Blue Flax Lily), <i>Dichondra repens</i> (Kidney Weed), <i>Opercularia diphyllo</i> , <i>Oxalis perennans</i> and <i>Wahlenbergia gracilis</i> (Australian Bluebell), as well as scramblers, <i>Glycine spp.</i> and <i>Hardenbergia violacea</i> (Native Sarsaparilla) and the fern <i>Cheilanthes sieberi</i> (Poison Rock Fern).	Applicable: In degraded state, but native forbs <i>Dichondra repens</i> (Kidney Weed), <i>Oxalis perennans</i> , and <i>Glycine sp.</i> present. Native grasses <i>Microlaena stipoides</i> (Weeping Grass) and scramblers <i>Glycine sp.</i> present.

All patches of PCT 3320 identified within the subject site met the description of Cumberland Plain Woodland in the Sydney Basin Bioregion, a critically endangered ecological community, as set out by the Final Determination for listing under the BC Act.

#### 4.3.1.2 Alignment under Commonwealth EPBC Act

The Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest is a relatively well-studied ecological community and numerous detailed floristic studies have been undertaken on it. However, it has undergone a large degree of past and ongoing disturbance that has resulted in a large variability in the expression of this ecological community. This presents some challenges in prescribing detailed and specific key diagnostic attributes that would apply to every patch of the national ecological community. The attributes presented below are broad but draw upon the detailed floristic analysis by Tozer (2003):



Features	Relevance to subject site
Distribution is limited to the Sydney Basin Bioregion with most occurrences in the Cumberland sub-region.	Applicable.
Most occurrences are on clay soils derived from Wianamatta Group geology, with limited to rare occurrences on soils derived from Tertiary Alluvium, Holocene Alluvium, the Mittagong Formation, Aeolian Deposits and Hawkesbury Sandstone.	Applicable: Subject site is mapped as occurring on Wianamatta Group geology, with Podzolic Soils (Dd3.51) or massive Earthy Clays (Uf6.71).
<p>Upper tree layer species must be present with these features:</p> <ul style="list-style-type: none"> <li>■ The minimum projected foliage cover of canopy trees is 10% or more; and</li> <li>■ The tree canopy is typically dominated by <i>Eucalyptus moluccana</i> (Grey Box), <i>E. tereticornis</i> (Forest Red Gum) and/or <i>E. fibrosa</i> (Red Ironbark). Other canopy species may occur in association with the typical dominants and may be locally dominant at some sites.</li> </ul>	Applicable: <i>E. tereticornis</i> abundant.
A sparse lower tree layer may be present, typically with young eucalypts of upper tree canopy species and species of Acacia, Exocarpos and Melaleuca.	Applicable: Lower tree layer is sparse with young eucalypts.
<p>The understorey typically is dominated by the ground layer and shows these features:</p> <ul style="list-style-type: none"> <li>■ The ground layer typically comprises a variety of perennial native graminoids and forbs</li> <li>■ Native graminoid species that are often present include: the grasses <i>Aristida ramosa</i> (Purple Wiregrass), <i>A. vagans</i> (Threeawn Speargrass), <i>Cymbopogon refractus</i> (Barbed Wire Grass), <i>Dichelachne micrantha</i> (Plumegrass), <i>Echinopogon caespitosus</i> var. <i>caespitosus</i> (Tufted Hedgehog Grass), <i>Eragrostis leptostachya</i> (Paddock Lovegrass), <i>Microlaena stipoides</i> subsp. <i>stipoides</i> (Weeping Grass), <i>Paspalum distans</i> and <i>Themeda triandra</i> (Kangaroo Grass), and other graminoids <i>Carex inversa</i> (Knob Sedge), <i>Cyperus gracilis</i> (Slender Sedge), <i>Lomandra filiformis</i> subsp. <i>filiformis</i> (Wattle Mat-rush) and <i>L. multiflora</i> subsp. <i>multiflora</i> (Manyflowered Mat-rush);</li> <li>■ Native forb and other herb species present include: <i>Asperula conferta</i> (Common Woodruff), <i>Brunoniella australis</i> (Blue Trumpet), <i>Cheilanthes sieberi</i> (Poison Rock-Fern), <i>Desmodium varians</i> (Slender Tick-trefoil), <i>Dianella longifolia</i> (Blue Flax-Lily), <i>Dichondra repens</i> (Kidney Weed), <i>Glycine</i> spp., <i>Hardenbergia violacea</i> (Native Sarsparilla), <i>Opercularia diphylla</i> (Stinkweed), <i>Oxalis perennans</i>, <i>Pratia purpurascens</i> (Whiteroot) and <i>Wahlenbergia gracilis</i> (Australian Bluebell); and</li> </ul> <p>A shrub layer may be present, to variable extent, and is often dominated by <i>Bursaria spinosa</i> (Blackthorn) while other species include: <i>Daviesia ulicifolia</i> (Gorse Bitter Pea), <i>Dillwynia sieberi</i>, <i>Dodonaea viscosa</i> subsp. <i>cuneata</i> (Wedge-leaf Hop-bush), <i>Indigofera australis</i> (Native Indigo) and <i>Lissanthe strigosa</i> (Peach Heath).</p>	Applicable: In degraded state, but native forb <i>Dichondra repens</i> (Kidney Weed), <i>Oxalis perennans</i> and <i>Glycine</i> spp. present. Native grasses <i>Microlaena stipoides</i> subsp. <i>stipoides</i> (Weeping Grass) present. <i>Bursaria spinosa</i> (Blackthorn) present in Zone 3.

Despite the above, patches of PCT 3320 within the subject site did not meet the key diagnostic characteristics set out by the Commonwealth Listing Advice on Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (DAWE 2009) (Figure 4-3) for the following reasons:

- Perennial understory native vegetation (including vascular plant species of the ground and shrub layers) cover was <30% for each patch.

Therefore, the only TEC present within the subject site was Cumberland Plain Woodland in the Sydney Basin Bioregion, as listed under the BC Act (Figure 4-4).

TEC name	Profile ID (from TBDC)	BC Act status	EPBC Act status	Associated vegetation zones within the subject land	Area within the subject land (ha)
Cumberland Plain Woodland in the Sydney Basin Bioregion		Critically Endangered	-	Zone 1 Zone 2 Zone 3	8.92

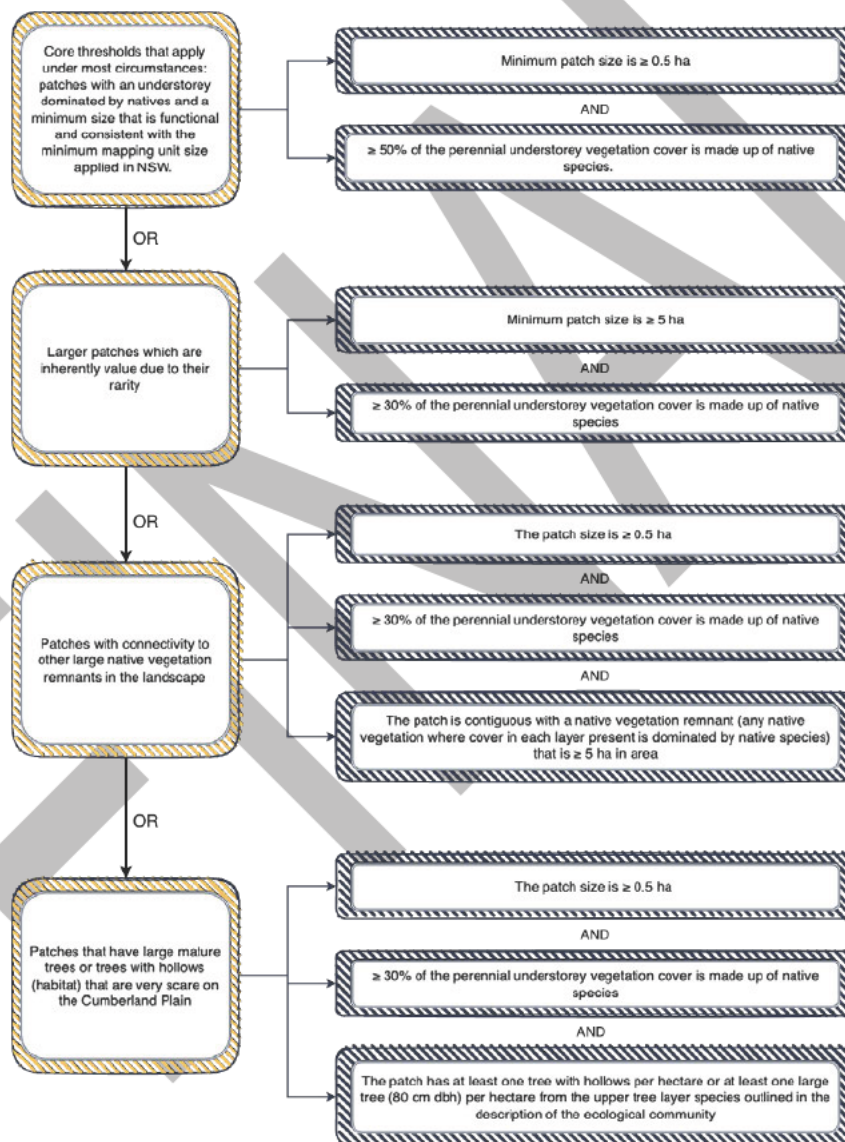


Figure 4-3 Condition thresholds for patches that meet the description for Cumberland Plain Shale Woodland CEEC





Figure 4-4 Alignment with Threatened Ecological Communities



## 4.4 Vegetation Zones

A total of five (5) vegetation zones were identified on the subject site based on the broad condition state of each vegetation type. A total of four (4) vegetation integrity survey plots were collected on the subject site consistent with the BAM. Descriptions of vegetation zones associated with a native PCT are provided in Table 4-9.

### 4.4.1 Zone 1 PCT 3320

Areas mapped as Zone 1 PCT 3320 generally contained the native canopy tree species *Eucalyptus tereticornis* (Forest Red Gum), and *E. crebra* (Narrow-leaved Ironbark). No other native canopy tree species were present. This zone lacked a visible native midstratum. Native groundcover consisted of *Dichondra repens* (Kidney Weed), *Commelina cyanea* (Scurvy Weed), *Einadia nutans* (Climbing Saltbush), *Microlaena stipoides* (Weeping Grass), *Oxalis* sp. (Wood Sorrel), and *Glycine microphylla* (Small-leaf Glycine). No other native groundcover was observed.

Canopy species may provide occasional foraging or breeding habitat for highly mobile threatened birds. One hollow-bearing tree (100 – 200 mm) is present within this zone, as well as nine dead stags. Three stick nests were observed.

This zone was in a degraded state and possessed a large number of introduced species and weeds, including several ‘high-threat weed’ species. Non-native species present include *Cynodon dactylon* (Bermuda Grass), *Paspalum dilatatum* (Dallis Grass), *Chloris gayana* (Rhodes Grass), *Lantana camara* (Lantana), *Bidens pilosa* (Cobbler’s Pegs), *Senecio madagascariensis* (Fireweed), *Solanum sisymbriifolium* (Sticky Nightshade), *Dactylis glomerata* (Cock’s-foot), *Rumex Crispus* (Curly Dock), *Commelina diffusa* (Climbing Dayflower), *Commelina cyanea* (Scurvy Weed), *Plantago lanceolata* (Ribwort Plantain), *Tagetes minuta* (Southern Cone Marigold), *Atriplex prostrata* (Fat Hen), *Sida rhombifolia* (Arrow-leaf Sida), *Solanum linnaeanum* (Devil’s Apple), *Malva parviflora* (Cheeseweed), *Verbena bonariensis* (Purpletop), *Stellaria media* (Chickweed), *Trifolium repens* (White Clover), *Modiola caroliniana* (Carolina Bristlemallow), *Juncus effusus* (Common Rush), and *Oxalis corniculata* (Creeping Woodsorrel).

This vegetation zone is considered to be in poor condition. There is little variation within this zone, which consists of stands of native canopy species with a mix of native and exotic groundcover. The zone has been disturbed by extensive grazing and apparent regular clearing of Lantana growth.

Table 4-6 Photo-plate 4: Vegetation Zone 1







#### 4.4.2 Zone 2 PCT 3320

Areas mapped as Zone 2 PCT 3320 were dominated by *E. crebra* (Narrow-leaved Ironbark). No other native canopy tree species were present. All zones lacked a defined native midstratum. Native groundcover consisted of *Dichondra repens* (Kidney Weed), *Austrostipa* sp. (Speargrass), *Desmodium varians*, *Glycine tabacina* (Variable Glycine), and *Microlaena stipoides* (Weeping Grass).

Canopy species may provide occasional foraging or breeding habitat for highly-mobile threatened birds. One hollow-bearing tree (50 – 100 mm) is present within this zone, as well as eleven dead stags.

In all instances, these areas were in a degraded state and possessed a large number of introduced species and weeds, including several 'high-threat weed' species. Species present include: *Sporobolus indicus* (Parramatta Grass), *Ehrharta erecta* (Panic Veldtgrass), *Stenotaphrum secundatum* (Buffalo Grass), *Cenchrus clandestinus* (Kikuyu Grass), *Cynodon dactylon* (Bermuda Grass), *Chloris gayana* (Rhodes Grass), *Eleusine indica* (Wiregrass), *Paspalum dilatatum* (Dallis Grass), *Phleum pratense* (Common Cat's Tail), *Lantana camara* (Lantana), *Sida rhombifolia* (Arrow-leaf Sida), *Cyperus eragrostis* (Tall Flatsedge), *Plantago lanceolata* (Ribwort Plantain), *Oxalis corniculata* (Creeping Woodsorrel), *Senecio madagascariensis* (Fireweed), *Verbena bonariensis* (Purpletop), *Axonopus fissifolius* (Carpet Grass), *Trifolium dubium* (Lesser Trefoil), *Setaria parviflora* (Marsh Bristlegrass).

This vegetation zone is considered to be in poor condition. There is little variation within this zone, which all consists of stands of native canopy species with a mix of native and exotic groundcover. The zone has been disturbed by extensive grazing.



Table 4-7 Photo-plate 5: Vegetation Zone 2



#### 4.4.3 Zone 3 PCT 3320

Areas mapped as Zone 3 PCT 3320 were dominated by *E. crebra* and *E. tereticornis*. Regrowth *E. crebra* and *E. tereticornis* are present throughout the zone in very low quantities. No other native canopy tree species were present. All areas of this zone lacked a defined native midstratum but regrowth *Bursaria spinosa* (Sweet Bursaria) is present. Native groundcover consisted of *Dichondra repens* (Kidney Weed), *Commelina cyanea* (Scurvy Weed), *Oplismenus hirtellus* (Basket Grass), *Oxalis* sp. (Wood Sorrel) and *Glycine tabacina* (Variable Glycine).

Canopy species may provide occasional foraging or breeding habitat for highly-mobile threatened birds. No hollow-bearing trees or stick nests are present within this zone. Five dead stags are present.

In all instances, these areas were in a degraded state and possessed a large number of introduced species and weeds, including several 'high-threat weed' species. Species present include *Lantana camara* (Lantana), *Cynodon dactylon* (Bermuda Grass), *Paspalum dilatatum* (Dallis Grass), *Imperata cylindrica* (Cogon Grass), *Dactylis glomerata* (Cock's-foot), *Plantago lanceolata* (Ribwort Plantain), *Sida rhombifolia* (Arrow-leaf Sida), *Commelina cyanea* (Scurvy Weed), *Oxalis corniculata* (Creeping Woodsorrel), *Oeosporangium* sp., and *Senecio madagascariensis* (Fireweed).



This vegetation zone is considered to be in degraded condition. There is little variation within this zone, which all consists of stands of native canopy species with a mix of native and exotic groundcover. The zone has been disturbed by heavy mowing to remove Lantana.

Table 4-8 Photo-plate 6: Vegetation Zone 3



#### 4.4.4 Zone 4 Planted native and exotic cover

Areas of planted vegetation occur over approximately 1.28 ha. This area did not correspond to any native PCTs and has been mapped as 'Planted Native and Exotic Cover' in Figure 4-5. Areas mapped as Planted Native and Exotic Cover consisted of *Jacaranda mimosifolia* (Blue Jacaranda), *E. tereticornis*, *E. robusta* (Swamp Mahogany), *Corymbia citriodora* (Lemon Scented Gum), *Corymbia maculata* (Spotted Gum), *Callitris columellaris* (White Cyprus Pine) and *Ligustrum lucidum* (Broad-leaved Privet) planted within a grove along a driveway and surrounding the existing dwelling house.

Canopy species may provide occasional foraging or breeding habitat for highly-mobile threatened birds. No hollow-bearing trees or stick nests are present within this zone. Five dead stags are present.

#### 4.4.5 Zone 5 Exotic

Areas mapped as 'Exotic Grassland' occur over an area of approximately 23.4 ha and were dominated by exotic pasture species *Cynodon dactylon* (Bermuda Grass), *Paspalum dilatatum* (Dallis Grass), *Chloris gayana* (Rhodes Grass), *Lantana camara* (Lantana), *Bidens pilosa* (Cobbler's Pegs), *Senecio madagascariensis*

(Fireweed), *Solanum sisymbriifolium* (Sticky Nightshade), *Dactylis glomerata* (Cock's-foot), *Rumex Crispus* (Curly Dock), *Plantago lanceolata* (Ribwort Plantain), *Verbena bonariensis* (Purpletop), *Sida rhombifolia* (Arrow-leaf Sida), *Trifolium repens* (White Clover), and *Juncus effusus* (Common Rush).

This vegetation did not meet the description of any PCTs or threatened ecological communities.







Figure 4-5 Vegetation Zones

## 4.5 Vegetation Integrity (Vegetation Condition)

### 4.5.1 Vegetation integrity survey plots

**Table 4-9 Vegetation zones and patch sizes**

Vegetation zone ID	PCT ID number and name	Condition / other defining feature	Area (ha)	Patch size class (select multiple if areas of native vegetation are discontinuous)	No. vegetation integrity plots required	No. vegetation integrity plots completed	No. vegetation integrity plots used in assessment	Plot IDs of vegetation integrity plots used in assessment
Zone 1: PCT 3320 Poor	3320 - Cumberland Shale Plains Woodland	Poor condition – Minimal understorey and weedy groundcover	4.39	<input type="checkbox"/> <5 ha <input type="checkbox"/> 5–24 ha <input type="checkbox"/> 25–100 ha <input checked="" type="checkbox"/> >100 ha	1	2	2	BAM Plots 1 & 2
Zone 2: PCT 3320 Poor	3320 - Cumberland Shale Plains Woodland	Poor condition – Minimal understorey and weedy groundcover	2.39	<input type="checkbox"/> <5 ha <input type="checkbox"/> 5–24 ha <input type="checkbox"/> 25–100 ha <input checked="" type="checkbox"/> >100 ha	1	1	1	BAM Plot 3
Zone 3: PCT 3320 degraded	3320 - Cumberland Shale Plains Woodland	Degraded condition – Minimal understorey and weedy groundcover	2.14	<input type="checkbox"/> <5 ha <input type="checkbox"/> 5–24 ha <input type="checkbox"/> 25–100 ha <input checked="" type="checkbox"/> >100 ha	1	1	1	BAM Plot 4
Planted native and exotic cover	N/A	Planted native and exotic cover	1.28	N/A	0	0	0	
Exotic	N/A	Exotic	23.20	N/A	0	0	0	



## 4.5.2 Scores

**Table 4-10 Vegetation integrity scores**

Vegetation zone ID	Composition condition score	Structure condition score	Function condition score (where relevant)	Vegetation integrity score	Hollow bearing trees present?
Zone 1: PCT 3320 Poor	8.9	22.0	35.6	19.1	No
Zone 2: PCT 3320 Poor	4.9	19.2	29.5	14.1	No
Zone 3: PCT 3320 degraded	8.4	31.8	43.8	22.7	No
Planted native and exotic cover	-	-	-	-	No
Exotic	-	-	-	-	No

## 5 HABITAT SUITABILITY FOR THREATENED SPECIES

### 5.1 Identification of Threatened Species for Assessment

#### 5.1.1 Ecosystem credit species

Ecosystem credit species predicted to occur within the subject site are generated by the BAM-C following the input of vegetation integrity data and the PCTs identified within Section 4. Ecosystem credit species predicted to occur at the subject site, their associated habitat constraints, geographic limitations and sensitivity to gain class are included in Table 5-1. The relevant justification for the exclusion of ecosystem credit species is also included in Table 5-1.

#### 5.1.2 Species credit species

Species credit species are threatened species for which vegetation surrogates and/or landscape features cannot reliably predict the likelihood of their occurrence or components of their habitat. These species are identified in the TBDC. A targeted survey or an expert report is required to confirm the presence of these species on the subject land. Alternatively, for a development, activity, clearing or biodiversity certification proposal only, the proponent may elect to assume the species is present.

Species credit species that require further assessment on the subject site (i.e. candidate species), their associated habitat constraints, geographic limitations and sensitivity to gain class are included in Table 5-2.

#### 5.1.3 Dual credit species

Dual credit species are threatened species that the TBDC identifies as both ecosystem credits and species credit species. Dual credit species are generally highly mobile species that rely on particular habitat components for breeding or require particular areas in the landscape important for their survival. For dual credit species, part of the habitat is assessed as a species credit. The remaining habitat components for the species are assessed as an ecosystem credit (e.g. foraging habitat).



## 5.2 Threatened Flora Survey Methods

### 5.2.1 Field surveys

Targeted flora surveys were conducted for the following species:

- *Pimelea spicata* (Spiked Rice Flower)
- *Grevillea juniperina subsp. Juniperina* (Juniper-leaved Grevillea)
- *Micromyrtus minutiflora*
- *Persoonia nutans* (Nodding Geebung)

Targeted flora surveys consisted of transects within areas of suitable habitat within the subject site (Figure 5-1). Transects were undertaken on foot, with a minimum of 2 x 100 m traverses per 2 - 50 ha of stratification unit.

## 5.3 Threatened Fauna Survey Methods

### 5.3.1 Field surveys

The location of field survey efforts is presented in Figure 5-2.

#### 5.3.1.1 Diurnal birds

Passive recording was undertaken through the deployment of three acoustic recorders (Wildlife Acoustics Song Meter Mini 2) from Tuesday 23<sup>rd</sup> till Tuesday 30<sup>th</sup> April 2024. The acoustic recorders were set to record for four hours around sunrise and sunset each day over the survey period.

Acoustic recordings were subsequently analysed and classified using cluster analysis in Kaleidoscope Pro Analysis Software.

This was supplemented with two (2) diurnal bird point count surveys. A minimum of 30 minutes of survey was undertaken at each survey point. Survey points were selected to give an unobstructed view over a section of the subject site, as well as to ensure even spread and representation across the site and its vegetation communities.

#### 5.3.1.2 Nocturnal birds

Passive recording was undertaken through the deployment of three acoustic recorders from Tuesday 23<sup>rd</sup> to Tuesday 30<sup>th</sup> April 2024.

This survey was supplemented with two spotlighting surveys, conducted on Monday 22<sup>nd</sup> April and Friday 10<sup>th</sup> May.

#### 5.3.1.3 Bats

Passive recording was undertaken through the deployment of two ultrasonic recorders (Wildlife Acoustics Song Meter Mini Bat 2) from Tuesday 23<sup>rd</sup> to Tuesday 30<sup>th</sup> April 2024. The acoustic recorders were set to trigger recording one hour before sunset and cease recording one hour after sunrise each day over the survey period.

This was supplemented with two spotlighting surveys conducted on Monday 22<sup>nd</sup> April and Friday 10<sup>th</sup> May.

#### 5.3.1.4 Arboreal and terrestrial mammals

Targeted surveys for Koala were conducted using the Spot Assessment Technique (SAT) as described by Phillips & Callaghan (2008) and the Biodiversity Assessment Method Survey Guide (DPE 2022). In the field the technique is applied as follows:

- Locate and mark a centre tree that meets one or more of the following selection criteria:
  - a tree of any species beneath which one or more Koala faecal pellets have been observed and/or
  - a tree in which a Koala has been observed and/or
  - any other tree known or considered to be potentially important for Koala, or of interest for other assessment purposes
- Identify and uniquely mark the 29 nearest trees to the centre tree,
- Undertake a search for Koala faecal pellets beneath each of the 30 marked trees based on an inspection of the undisturbed ground surface within a distance of 100 centimetres around the base of each tree, followed (if no faecal pellets are initially detected) by a more thorough inspection involving disturbance of the leaf litter and ground cover within the prescribed search area.

The SAT survey was supplemented with spotlighting surveys repeated on Monday 22<sup>nd</sup> April and Friday 10<sup>th</sup> May. Three 200 m transects were surveyed. Spotlighting surveys were undertaken on foot, moving at approximately 10 m/min, using a 1000-lumen handheld torch. Remote acoustic recording was also conducted using three acoustic recorders from Tuesday 23<sup>rd</sup> to Tuesday 30<sup>th</sup> April 2024.

#### 5.3.1.5 Cumberland Plain Land Snail

Given the presence of potentially suitable habitat for Cumberland Plain Land Snail (*Meridolum corneovirens*), target surveys for snails or shells were undertaken within three (3) search areas within the subject site.

The base of trees, logs, stumps, artificial refuse and rocks were turned over and rotten sections of logs were peeled away. Dense areas of leaf litter were also scraped using a trowel. Surveys were conducted for 30 minutes per search area, within a buffer area of 30 m.

### 5.4 Weather Conditions

The BAM assessment and targeted species surveys were conducted over two weeks in April and May. The weather conditions over this period ranged from warm and sunny, to cold with light rain.

Survey undertaken (e.g., method / targeted species)	Date	Time	Temperature (min. & max.)	Wind (light, moder...)	Rainfall (mm)
BAM floristics Habitat assessment	22/04/2024	8 am – 5:30 pm	10.4 – 23.8 °C	Calm	0
BAM floristics Habitat assessment	23/04/2024	8 am – 5:30 pm	9.6 – 26 °C	Light	0
BAM floristics Cumberland Plain Land Snail	30/04/2024	8 am – 5:30 pm	13.8 – 19.2 °C	Moderate	0



Koala Survey (Spotlighting & SAT)	22/04/2024	12 pm – 8:30 pm	10.4 – 23.8 °C	Calm	0
Koala Survey (Spotlighting & SAT)	10/05/2024	12 pm – 8:30 pm	13.7 – 20.9 °C	Calm	3.2
Acoustic Survey (Diurnal Birds & Koala)	23/04/2024 to 30/04/2023	4:30 am – 8:30 am 3:30 pm – 7:30 pm	7.2 – 27.3 °C	Various	0
Acoustic Survey (Bats)	23/04/2024 to 30/04/2023	4:30 pm – 7:30 am	7.2 – 27.3 °C	Various	0

Date	Preceding Rainfall (mm)			
	7 Days	14 Days	21 Days	28 Days
22/04/2024	6.8 mm	22.6 mm	221 mm	221mm

## 5.5 Limitations

As many fauna species are cryptic and/or nocturnal and/or wide-ranging and mobile, they are therefore unlikely to be detected even during seasonal surveys. The fauna assessment is therefore largely an assessment of the potential of the subject site as habitat for various fauna species. Due to the relatively large number of trees on site, there is a chance that some fauna habitat was missed.

The flora survey was completed over two weeks in April and May and does not assess any seasonal variation in species composition. The surveys conducted an appraisal of the vascular flora species evident above ground. No study has been undertaken in relation to those parts of the vascular plants below ground level; of the soil-stored seed bank or other forms of dormant propagules.

Sufficient survey and assessment effort was made to make professional judgements of the likelihood of presence of threatened species during the assessed time of day and year. Whilst all reasonable attempts have been made to discern the vascular flora present, there is no assurance that other threatened species will not be encountered in the proposed development area.

Except for species definitely recorded from the site, or for which targeted surveys have been conducted, there is no certainty as to the presence or absence of the species discussed. Therefore, it is important to adopt the precautionary principle such that it is assumed that any threatened species is likely to occur at the site if suitable habitat exists.

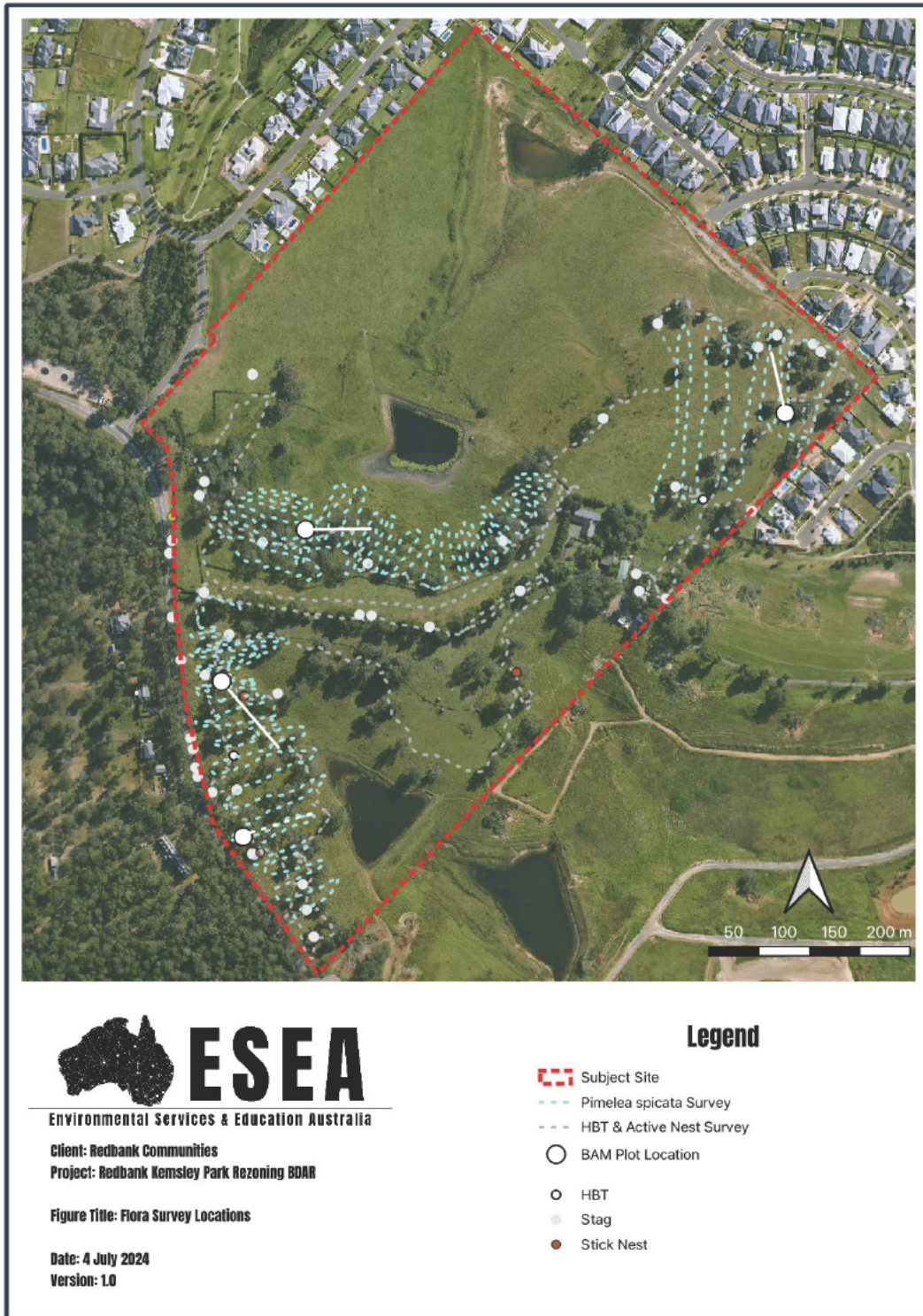


Figure 5-1 Flora Survey Tracks





Figure 5-2 Field Survey Locations

**Table 5-1 Predicted ecosystem credit species**

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Regent Honeyeater	<i>Anthochaera phrygia</i>	Critically Endangered	Critically Endangered	Yes	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High
Dusky Woodswallow	<i>Artamus cyanopterus cyanopterus</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	Moderate
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	Vulnerable	Endangered	Yes	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	Moderate
South-eastern Glossy Black-Cockatoo	<i>Calyptorhynchus lathami lathami</i>	Vulnerable	Vulnerable	Yes	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Habitat constraints – No Allocasuarina and casuarina species present within the subject site		
Speckled Warbler	<i>Chthonicola sagittata</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High
Spotted Harrier	<i>Circus assimilis</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	Moderate



Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Brown Treecreeper (eastern subspecies)	<i>Climacteris picumnus victoriae</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High
Varied Sittella	<i>Daphoenositta chrysoptera</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	Moderate
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	Vulnerable	Endangered	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	Endangered	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	Moderate
Black Falcon	<i>Falco subniger</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	Moderate
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Little Lorikeet	<i>Glossopsitta pusilla</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	Vulnerable	Not Listed	Yes	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High
Little Eagle	<i>Hieraaetus morphnoides</i>	Vulnerable	Not Listed	Yes	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	Moderate
White-throated Needletail	<i>Hirundapus caudacutus</i>	Not Listed	Vulnerable	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High
Swift Parrot	<i>Lathamus discolor</i>	Endangered	Critically Endangered	Yes	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	Moderate
Square-tailed Kite	<i>Lophoictinia isura</i>	Vulnerable	Not Listed	Yes	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	Moderate



Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Black-chinned Honeyeater (eastern subspecies)	<i>Melithreptus gularis gularis</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	Moderate
Eastern Coastal Free-tailed Bat	<i>Micronomus norfolkensis</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input checked="" type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High
Little Bent-winged Bat	<i>Miniopterus australis</i>	Vulnerable	Not Listed	Yes	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	Vulnerable	Not Listed	Yes	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High
Turquoise Parrot	<i>Neophema pulchella</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High
Barking Owl	<i>Ninox connivens</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Eastern Osprey	<i>Pandion cristatus</i>	Vulnerable	Not Listed	Yes	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Habitat constraint – Feeding habitat is not present within the subject site. Favour coastal areas, especially the mouths of large rivers, lagoons and lakes		
Scarlet Robin	<i>Petroica boodang</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	Moderate
Flame Robin	<i>Petroica phoenicea</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	Moderate
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Vulnerable	Vulnerable	Yes	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Diamond Firetail	<i>Stagonopleura guttata</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	Moderate
Rosenberg's Goanna	<i>Varanus rosenbergi</i>	Vulnerable	Not Listed	No	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes		Vegetation zones 1, 2 and 3	High

### 5.5.1.1 Species Credit Species

Table 5-2 lists all predicted species credit species (e.g. automatically populated in BAM-C, recently listed under the BC Act and not yet added to the TBDC). It identifies and justifies species added to the BAM-C list or removed from the list.

Table 5-2 Candidate species credit species

Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
Downy Wattle	<i>Acacia pubescens</i>	Vulnerable	Vulnerable	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Not identified in subject site. The development site is substantially degraded and does not possess habitat for the species.	N/A
Regent Honeyeater (breeding)	<i>Anthochaera phrygia</i>	Critically Endangered	Critically Endangered	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	The development site is not included in the DPIE BAM – Regent Honeyeater Important Areas Map.	N/A



Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
Bush Stone-curlew	<i>Burhinus grallarius</i>	Endangered	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	The development site is substantially degraded. Grasslands present within the development site are subject to frequent mowing and lack fallen timber.	N/A
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	Vulnerable	Endangered	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	The development site is substantially degraded such that old growth forest attributes, which the species favours for nesting, are absent.	N/A
South-eastern Glossy Black-Cockatoo	<i>Calyptorhynchus lathami lathami</i>	Vulnerable	Vulnerable	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	The development site is substantially degraded such that old growth forest attributes, which the species favours for nesting, are absent.	N/A
Eastern Pygmy Possum	<i>Cercartetus nanus</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	The development site is substantially degraded such that suitable habitat features for this species (i.e., a dense midstorey) are not present. Previous surveys in the locality for arboreal mammals returned no indication of this species' presence.	N/A
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Vulnerable	Vulnerable	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	BAM habitat constraint. No cliffs, caves, overhangs, escarpments, outcrops or crevices in proximity (2km) of the subject site.	N/A

Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
	<i>Deyeuxia appressa</i>	Endangered	Endangered	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	The development site is substantially degraded by historic grazing by cattle, and regular mowing to remove Lantana.  Highly restricted NSW endemic known only from two pre-1942 records in the Sydney area. Was first collected in 1930 at Herne Bay, Saltpan Creek, off the Georges River, south of Bankstown. Was then collected in 1941 from Killara, near Hornsby. Has not been collected since and may now be extinct in the wild due to the level of habitat loss and development that has occurred within these areas.	N/A
	<i>Dillwynia tenuifolia</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Lack of suitable habitat. This species may be locally abundant 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. The subject site does not possess these habitat features.	N/A

Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
Camden White Gum	<i>Eucalyptus benthamii</i>	Critically Endangered	Vulnerable	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Not observed during site assessments.	N/A
Slaty Red Gum	<i>Eucalyptus glaucina</i>	Vulnerable	Vulnerable	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Not observed during site assessments.	N/A
Juniper-leaved Grevillea	<i>Grevillea juniperina subsp. juniperina</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Targeted surveys conducted. Species was not observed during site assessments. The development site is substantially degraded.	N/A
White-bellied Sea-Eagle (Breeding)	<i>Haliaeetus leucogaster</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Breeding habitat absent. i.e., no large emergent trees containing stick nests.	N/A
	<i>Hibbertia puberula</i>	Endangered	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Habitat absent: i.e., the species occurs on sandy soil often associated with sandstone, or on clay.	N/A
Little Eagle (Breeding)	<i>Hieraaetus morphnoides</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Breeding habitat absent. i.e., Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.	N/A
Swift Parrot (Breeding)	<i>Lathamus discolor</i>	Endangered	Critically Endangered	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	BAM constraint i.e. subject site is not located on Important Areas Map for the species.	N/A



Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
Green and Golden Bell Frog	<i>Litoria aurea</i>	Endangered	Vulnerable	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes ( <i>Typha spp.</i> ) or spikerushes ( <i>Eleocharis spp.</i> ). 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. Some sites, particularly in the Greater Sydney region, occur in highly disturbed areas.	Exotic
Square-tailed Kite (Breeding)	<i>Lophoictinia isura</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes	The Square-tailed Kite will forage around suburban trees and shrubs, and nest in urban bushland. The species builds a large stick platform in a living tree, in open forest or woodland or near edges or openings in forest. Eucalypt-dominated open forests and woodlands, and inland riparian woodland are preferred nesting habitat.	Vegetation zones 1 and 2
Marsdenia viridiflora R. Br. subsp. viridiflora population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> - endangered population	Endangered	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	BAM geographic constraint. Subject site is not located within any of the relevant LGAs.	N/A

Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
Cumberland Plain Land Snail	<i>Meridolum comeovirens</i>	Endangered	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Not found during targeted surveys.	N/A
	<i>Micromyrtus minutiflora</i>	Endangered	Vulnerable	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Not observed during site assessments. The development site is substantially degraded.	N/A
Little Bent-winged Bat (Breeding)	<i>Miniopterus australis</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	BAM habitat constraint - No caves, tunnels, mines, culverts or other structures present within the subject site that could be used for breeding.	N/A
Large Bent-winged Bat (Breeding)	<i>Miniopterus orianae oceanensis</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	BAM habitat constraint - No caves, tunnels, mines, culverts or other structures present within the subject site that could be used for breeding.	N/A
Southern Myotis	<i>Myotis macropus</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes	Recorded as occurring within subject site (ESEA 2024), and adjacent sites (EcoLogical 2022).	Vegetation zones 1, 2 and 3
Barking Owl	<i>Ninox connivens</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	The development site does not contain suitable hollow-bearing trees.	N/A

Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
Powerful Owl	<i>Ninox strenua</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	The development site does not contain suitable hollow-bearing trees. Powerful Owls nest in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old.	N/A
Eastern Osprey (Breeding)	<i>Pandion cristatus</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Targeted diurnal bird surveys conducted + active nest surveys. The species was not observed during site assessments.	N/A
Nodding Geebung	<i>Persoonia nutans</i>	Endangered	Endangered	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Targeted surveys conducted. Species was not observed during site assessments. The development site is substantially degraded.	N/A



Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
Southern Greater Glider	<i>Petauroides volans</i>	Endangered	Endangered	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	<p>The development site is substantially degraded and does not contain suitable habitat. The species shelters in tree hollows, with a particular selection for large hollows in large, old trees.</p> <p>The density of hollow-bearing trees within the subject site is less than required by the species – In the Grafton/Casino FMA, the Greater Glider was absent from surveyed sites with fewer than six tree hollows per hectare. In southern Queensland, Greater Gliders require at least 2-4 live den trees for every 2 ha of suitable forest habitat.</p>	N/A
Squirrel Glider	<i>Petaurus norfolcensis</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes	<i>Petaurus sp.</i> opportunistically observed by Ecological Australia (2022) while undertaking vegetation plots.	Vegetation zones 1, 2 and 3
Koala	<i>Phascolarctos cinereus</i>	Endangered	Endangered	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Not observed during targeted species surveys.	N/A
	<i>Pimelea curviflora var. curviflora</i>	Vulnerable	Vulnerable	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	The development site is substantially degraded and does not contain potential habitat (Confined to coastal areas around Sydney on sandstone).	N/A

Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
Spiked Rice Flower	<i>Pimelea spicata</i>	Endangered	Endangered	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	Targeted surveys conducted. The species was not observed during assessments.	N/A
Brown Pomaderris	<i>Pomaderris brunnea</i>	Endangered	Vulnerable	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	The development site is substantially degraded and does not contain suitable habitat for the species i.e. ( <i>E. amplifolia</i> , <i>E. elata</i> , <i>E. piperita</i> or <i>E. punctata</i> growing in association with <i>Allocasuarina</i> spp. and <i>Bursaria spinosa</i> ).	N/A
<i>P. prunifolia</i> in the Parramatta, Auburn, Strathfield and Bankstown Local Government Areas	<i>Pomaderris prunifolia</i> - endangered population	Endangered	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	BAM geographic constraint. The development site is not located within any of the relevant LGAs.	N/A
Grey-headed Flying Fox (Breeding)	<i>Pteropus poliocephalus</i>	Vulnerable	Vulnerable	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	BAM habitat constraint. The development site does not contain breeding camps.	N/A
Sydney Plains Greenhood	<i>Pterostylis saxicola</i>	Endangered	Endangered	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	The development site is substantially degraded and does not contain habitat for the species (i.e., sandstone rock shelves above cliff lines). The subject site is not within one of the known localities for the species (Georges River National Park (near Yeramba Lagoon), Ingleburn, Holsworthy, Peter Meadows Creek and St Marys Towers near Douglas Park).	N/A

Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
	<i>Pultenaea parviflora</i>	Endangered	Vulnerable	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	The development site is substantially degraded. It does not possess well-developed or regenerating low shrub layer, or associated dominant canopy species ( <i>E. fibrosa</i> , <i>E. globoidea</i> , <i>E. longifolia</i> , <i>E. parramattensis</i> , <i>E. sclerophylla</i> and <i>E. sideroxylon</i> ).	N/A
Matted Bush-pea	<i>Pultenaea pedunculata</i>	Endangered	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	Yes	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. On the Cumberland Plain the species is recorded from Cumberland Plain Woodlands, the shale-soil form of Shale Sandstone Transition Forests and Cooks River/Castlereagh Ironbark Forest.	Vegetation zones 1, 2 and 3
Masked Owl	<i>Tyto novaehollandiae</i>	Vulnerable	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	The development site does not contain suitable hollow-bearing trees.	N/A



Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
Tadgell's Bluebell in the local government areas of Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield	<i>Wahlenbergia multicaulis</i> - endangered population	Endangered Population	Not Listed	<input checked="" type="checkbox"/> BAM-C <input type="checkbox"/> TBDC <input type="checkbox"/> Previous survey <input type="checkbox"/> Current survey	No	BAM geographic constraint. The development site is not located within any of the relevant LGAs.	N/A



## 5.6 Threatened Species Surveys

Targeted surveys for species credit species undertaken at the subject site in accordance with relevant survey guidelines are detailed in Table 5-3. The locations of targeted surveys are shown in Figure 5-2.

A summary of surveys undertaken within the subject site and surrounding areas by ESEA (2024), Molino Stewart (2018) and Ecological Australia (2022) are presented in Table 5-4.

**Table 5-3 Targeted surveys**

Common name	Scientific name	Threatened flora species surveys			Results	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)	
		Survey method (transects or grids)	Timing of survey – within recommended period? (BAM-C / TBDC)				Effort (hours & no. people)
Microbats		Remote acoustic + spotlighting	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<u>Remote Acoustic</u> Tuesday 23 <sup>rd</sup> – Tuesday 30 <sup>th</sup> April Total recorder hours = 80 <u>Spotlighting:</u> Monday 22 <sup>nd</sup> April and Friday 10 <sup>th</sup> May Total hours = 4 No. People = 1	<u>Likely Calls:</u> Southern Myotis Eastern Coastal Free-tailed Bat Eastern False Pipistrelle Large-eared Pied Bat <u>Potential Calls:</u> Large-footed Myotis Little Forest Bat	No
Squirrel Glider	<i>Petaurus norfolcensis</i>	Spotlighting + Remote acoustic	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<u>Spotlighting:</u> Monday 22 <sup>nd</sup> April and Friday 10 <sup>th</sup> May Total hours = 4 No. People = 1 <u>Remote Acoustic:</u> Tuesday 23 <sup>rd</sup> – Tuesday 30 <sup>th</sup> April Total recorder hours = 64	None observed	No
Koala	<i>Phascolarctos cinereus</i>	SAT Assessment Technique + Spotlighting + Remote acoustic	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<u>Spotlighting:</u> Monday 22 <sup>nd</sup> April and Friday 10 <sup>th</sup> May Total hours = 4	None observed	No