

BMM GROUP PTY LTD

TELECOMMUNICATION FACILITY – LOT 200, LORD STREET, CAVERSHAM

CLEARING PERMIT SUPPORTING DOCUMENT

[redacted]

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1 INTRODUCTION

1.1 BACKGROUND

BMM Group Pty Ltd undertake work for Amplitel (a subsidiary of Telstra) in the delivery of telecommunications facilities. Amplitel propose to construct a telecommunications facility on Lot 200, Lord Street, Caversham (Lot 200 on Deposited Plan 63095) located approximately 13 km northeast of Perth, Western Australia. Details of this land are included below:

Lot on Plan:	P063095 200
Land ID Number:	3869291
Area:	6.5517 ha
Local Government:	SWAN

The underlying land is owned by the Western Australian Planning Commission and the Certificate of title is included as Appendix A.

The facility received Development Approval from the WAPC on 14 November 2024 subject to obtaining a clearing permit and fulfilling approval conditions (Appendix B).

Establishment of the facility and the associated construction works will require clearing of native vegetation. Figure 2 shows the lease area (10m x 10m area) and proposed cable corridor.

1.2 OBJECTIVE

This document is to complement the native vegetation clearing permit (NVCP) application relating for a maximum of 0.14 ha of native vegetation clearing for the proposed telecommunications facility infrastructure and associated construction works. Of this 0.14 ha, 0.068 will be revegetated following completion of construction works, with additional revegetation works proposed to ensure no net loss of vegetation.

As required by the DWER, the ten clearing principles and background information has been provided in this document relating to the site location, ownership, hydrology, vegetation, fauna and land degradation issues.

To assist in the DWER's assessment of this clearing permit application, a summary of the relevant environmental information for the Project area has been included in this document in addition to the biological survey report.

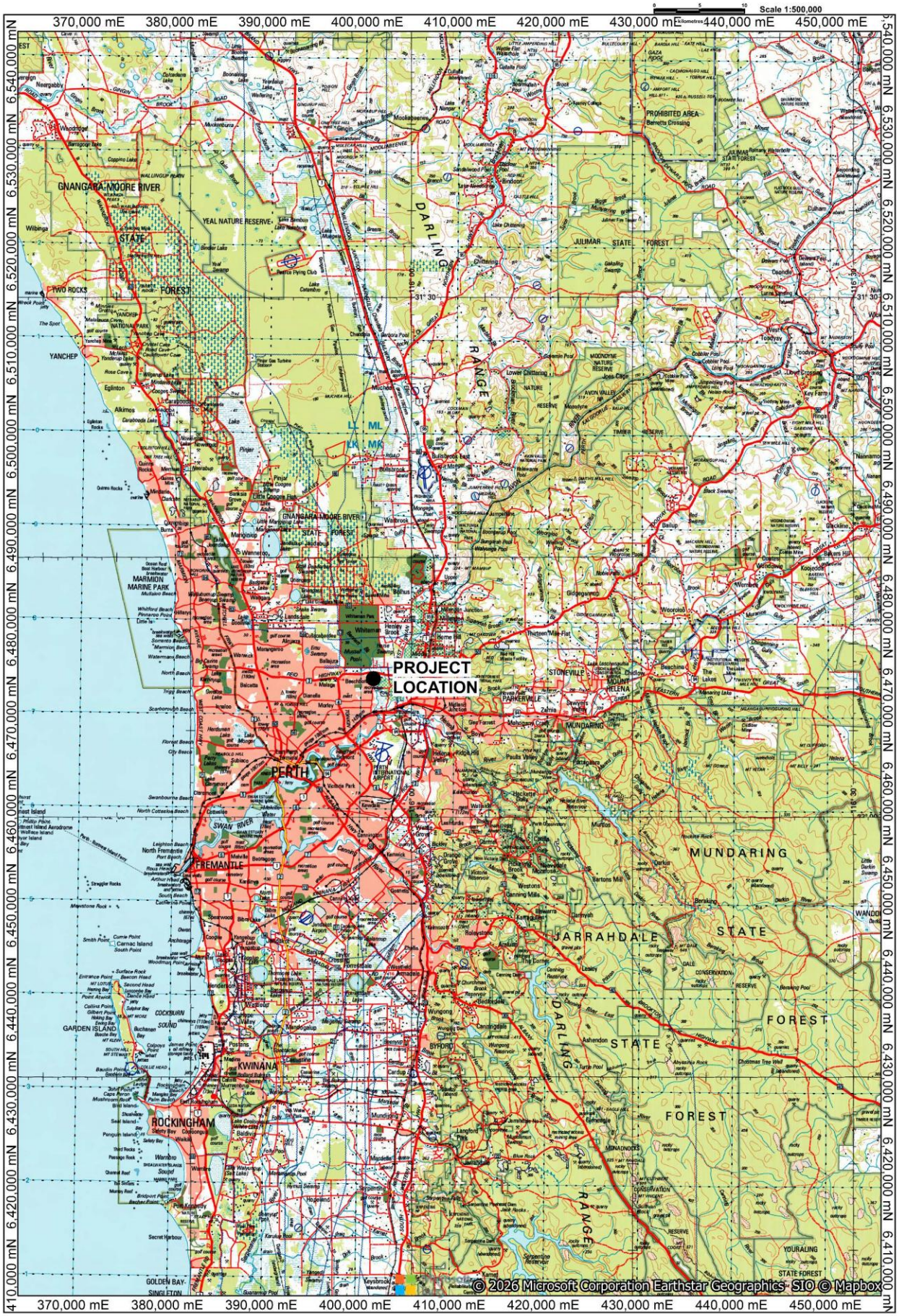


Figure 1: Location of Project

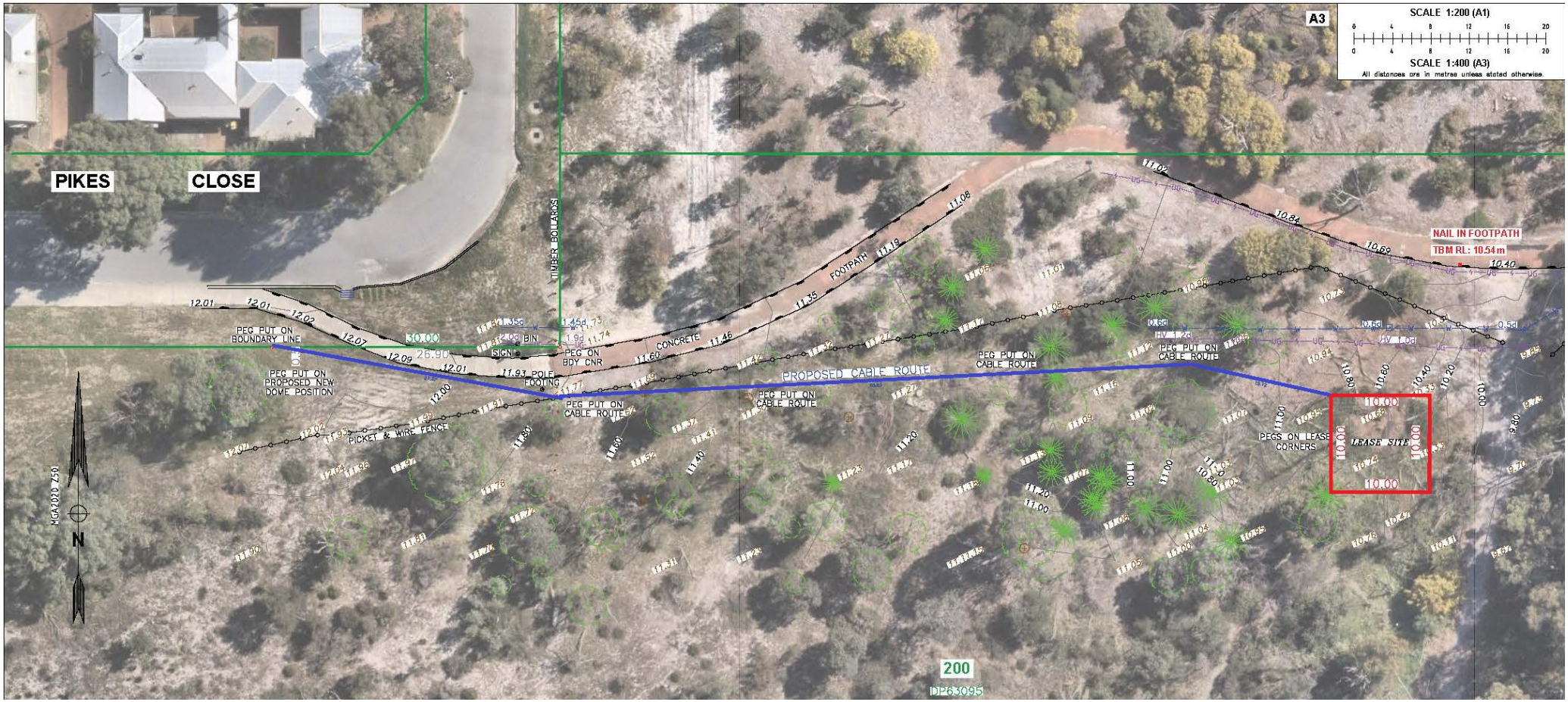


Figure 2: Telecommunication facility lease area (red) and proposed cable route (blue line)

2 PROPOSED CLEARING

To allow for construction of the telecommunications facility, BMM is seeking approval to clear a maximum of 0.14 ha of native vegetation within an overall clearing area of 0.164 ha (Figure 3 and Figure 4).

This includes:

- Cable corridor (power and fibre conduits) – approximately 0.05 ha disturbance for installation of the cable – cable route will be rehabilitated following completion of construction.

  Allowing for bare ground cover of a minimum of 10% (considered conservative), this equates to a maximum of 0.045 ha of native vegetation clearing. The disturbed corridor will be rehabilitated at completion of construction.

- Telecommunications facility tower - 0.09 ha of disturbance which includes the 10m x 10m lease area and allowance for 10m buffer around the facility. This will remain permanently.

  Allowing for bare ground cover of 20% (considered conservative), this equates to approximately 0.072 ha of native vegetation clearing (and includes dead vegetation).

- Removal of branches/stems from trees and isolated plants along the existing 400m access track to the site (Figure 3). This has been estimated at approximately 0.015 ha.

  This track has been present since at least the 1960's (based on Landgate aerial imagery). Use of this established track will minimise the requirement for additional ground disturbance and avoid further fragmentation of native vegetation within the area.

The telecommunications facility location and cable route has intentionally been designed to reduce the amount of native vegetation clearing required.

Photos of the lease area and western end of the proposed cable route are included in Plate 1 and Plate 2. As evident from the aerial imagery and these photos, the vegetation is very open with a significant non-native grass component.

Plate 3 shows an example of trees that will require branches to be trimmed to allow construction vehicle access.

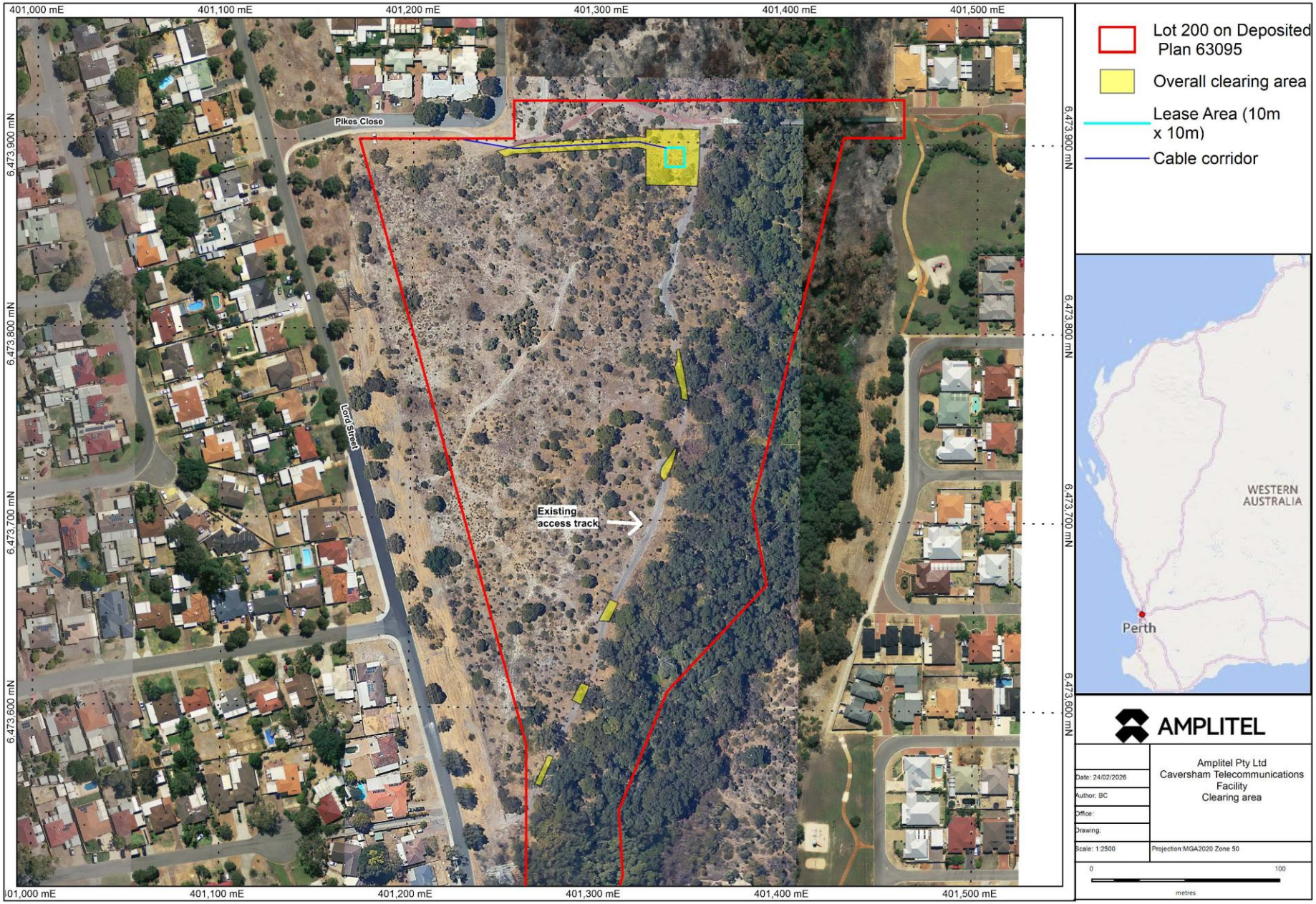


Figure 3: Proposed overall clearing area (0.16 ha) within Lot 200

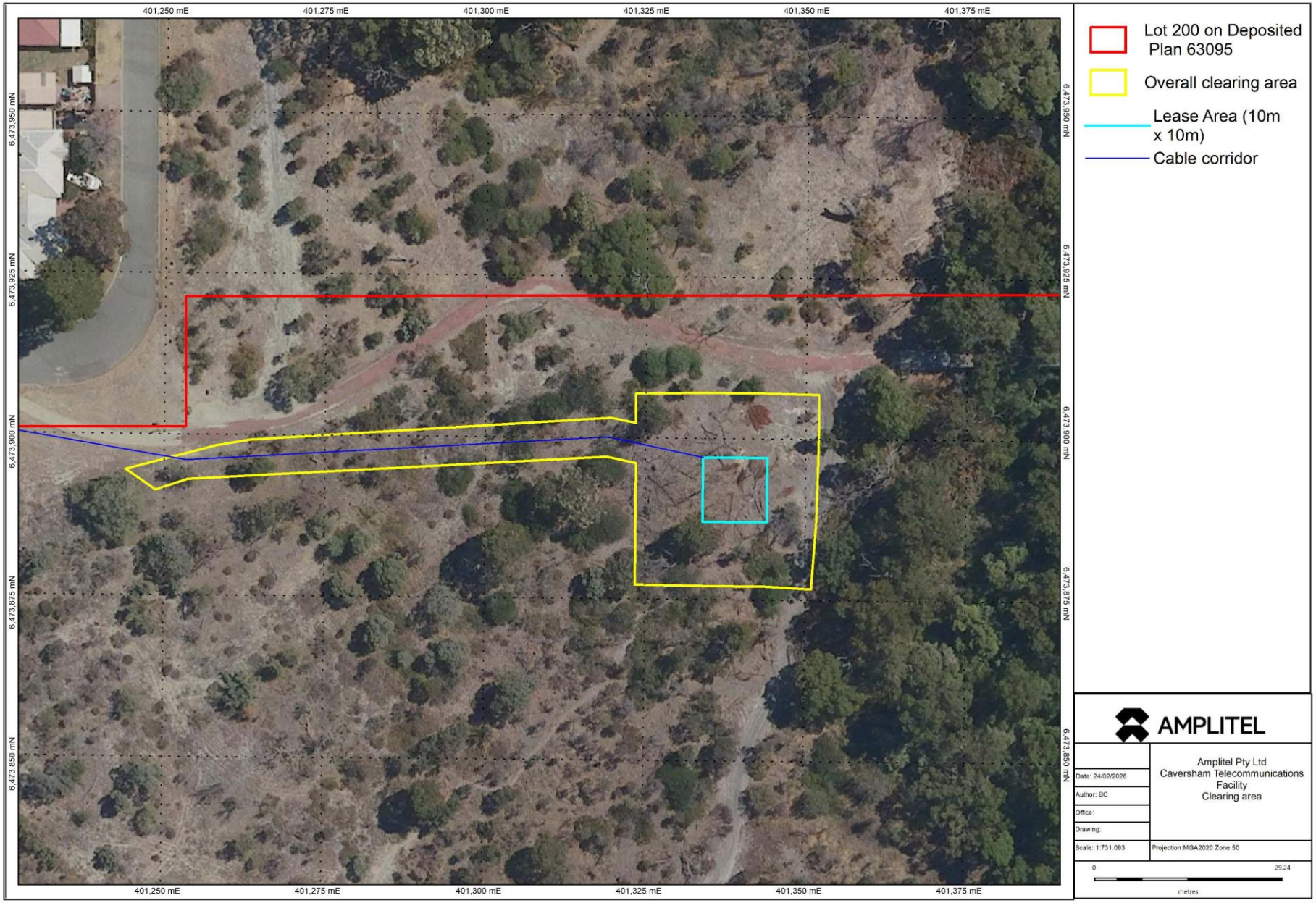


Figure 4: Proposed overall clearing area – telecommunications facility and cable route showing sparseness of native vegetation



Plate 1: Main lease area where telecommunications facility will be installed



Plate 2: Proposed cable location at western end on fenceline (looking east)



Plate 3: Example of trees to be trimmed along access track

3 EXISTING ENVIRONMENT

3.1 CLIMATE

The closest long-term Bureau of Meteorology (BOM) weather station with a complete dataset is Perth Airport Weather Station (Station 9021) which has recorded monthly rainfall and temperature since 1944.

The climate is Mediterranean, characterised by cool, wet winters and hot, dry summers. The long-term mean maximum temperature ranges from 18°C in July to 32.1°C in February (BOM, 2025).

The long-term average annual rainfall is approximately 755 mm. Rainfall is highly seasonal, with the majority occurring between May and August, when monthly totals commonly exceed 100 mm.

3.2 LANDSCAPE

3.2.1 IBRA Region

The proposed clearing area occurs within the Swan Coastal Plain Interim Biogeographic Regionalisation for Australia (IBRA) bioregion, specifically within the Perth subregion (SWA2).

The Swan Coastal Plain is a low-lying coastal plain. It is dominated by *Banksia* or Tuart on sandy soils, *Casuarina obesa* on outwash plains, and paperbark in swampy areas (Mitchell, 2002).

The Perth subregion is comprised of colluvial and aeolian sands dominated by Marri, limestone dominated by heath and/or tuart woodlands, and quaternary marine dunes dominated by Banksia and Jarrah-Banksia woodlands (Mitchell, 2002). It also includes a complex series of seasonal wetlands.

3.2.2 Landform & Soils

The Project area has a gentle slope from west to east towards Bennet Brook. The cable route and lease area are located on a broadly planar to gently undulating sandplain landform with a low topographic gradient. Ground levels decrease gradually from approximately 12 m AHD in the west to approximately 10.4–10.8 m AHD in the east, indicating a subtle east to southeast fall across the site.

The proposed clearing area is located within one land systems as described by DPIRD (2025):

- Bassendean, Jandakot Phase: Jandakot low dunes. Slopes <10% and generally more than 5m relief. Grey sand over pale yellow sands generally underlain by humic and iron podsols; *Banksia* spp. low open woodland with a dense shrub layer.

3.2.3 Acid Sulphate Soils

Mapping of Acid Sulphate Soils (ASS) risk ratings on the Swan Coastal Plain (DWER 2025a) over the proposed clearing area and surrounds is shown in Figure 5.

The proposed clearing area comprises areas of :

- High to Moderate ASS risk - Natcode 1g (p3) - associated with low-lying Swan Coastal Plain landforms (e.g. wetlands, palusplains, floodplains). ASS can occur below shallow depths (~0.7 to 3 m below ground level).
- Moderate to Low ASS risk - Natcode 2j (p4) - associated with better-drained or slightly elevated landforms. ASS, if present, is likely to occur at depths greater than 3 m below ground level.

Although the southeastern part of the is mapped in the high-moderate ASS risk area it is elevated above Bennett Brook.

3.3 SURFACE WATER

3.3.1 Bennett Brook

There are no drainage lines or evidence of surface water flows in the proposed clearing area due to the presence of highly permeable Bassendean sands, which promote rapid infiltration of rainfall i.e. minimal surface runoff. In these environments, hydrological processes are dominated by vertical recharge to the superficial aquifer rather than lateral surface flow (Kern 1997).

The site is located within and proximate to the Bennett Brook catchment, a key tributary system of the Swan River which covers an area of 217 km^2 , half of which is covered by the Gnangara pine plantation and Whiteman Park to the north (SRT, 2011).

Bennett Brook is located between 350-500m east (downstream) of the proposed clearing area (Figure 6). Bennett Brook was once a natural creek system which has been modified as a result of urban development. The brook is fed primarily from groundwater seepage from the Gnangara mound and flows south and discharges into the Swan River at Success Hill in Bassendean.

3.3.2 Geomorphic wetlands

The Geomorphic Wetlands of the Swan Coastal Plain are classified into three categories (DBCA, 2025):

- Conservation - wetlands that support a high level of attributes and functions
- Resource Enhancement - wetlands that may have been partially modified but still support substantial ecological attributes and functions. Are modified but still supports substantial ecological attributes and functions
- Multiple Use - wetlands with few remaining important attributes and functions.

A geomorphic wetland (floodplain) categorised for conservation associated with Bennett Brook is mapped immediately east of the proposed clearing area (Figure 6).

3.4 GROUNDWATER

Groundwater in the Project area forms part of the Gnangara groundwater system, which underlies much of the Swan Coastal Plain.

Groundwater across the Swan Coastal Plain (including the Caversham area) is typically shallow, often and is hydraulically connected to wetlands, surface water features and drainage systems such as Bennett Brook, forming part of the groundwater-dependent Gnangara system (DoW 2011; DWER 2022; Froend et al. 2018).

Indicative Gnangara Jandakot water table elevation contours (DWER-100) and depth to groundwater (DWER-096) from 2019 are presented in Figure 7 . Groundwater flow is to the southeast across Lot 200. Groundwater levels derived from DWER regional datasets are based on interpolated modelling of monitoring bore data at a nominal 10 m grid resolution so are considered indicative only.

CLA dug a soil pit to a depth of 0.8-0.9m on the eastern side of the lease area and did not intercept the water table.

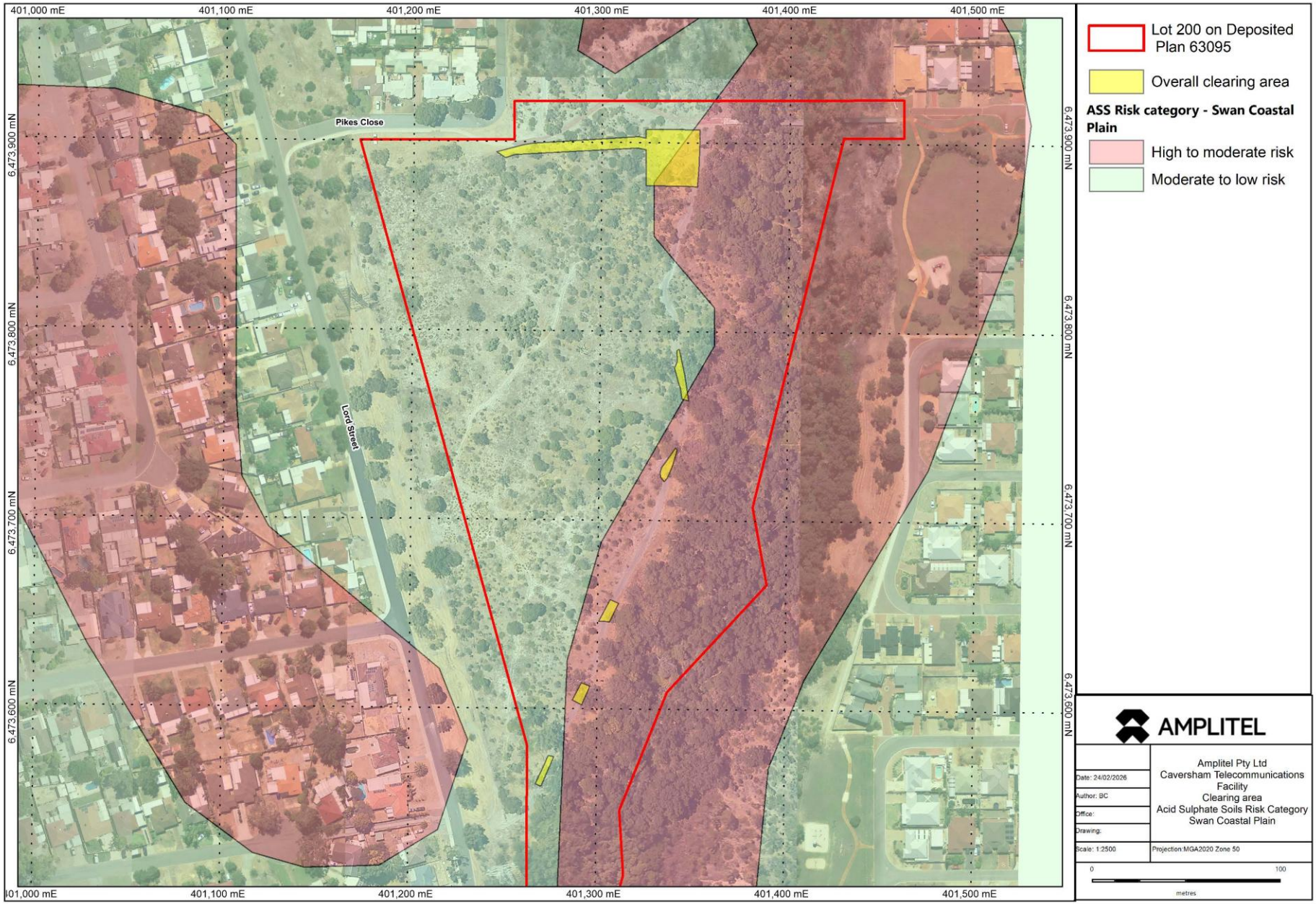


Figure 5: Acid Sulphate Soils Risk ratings in the proposed clearing area and surrounds

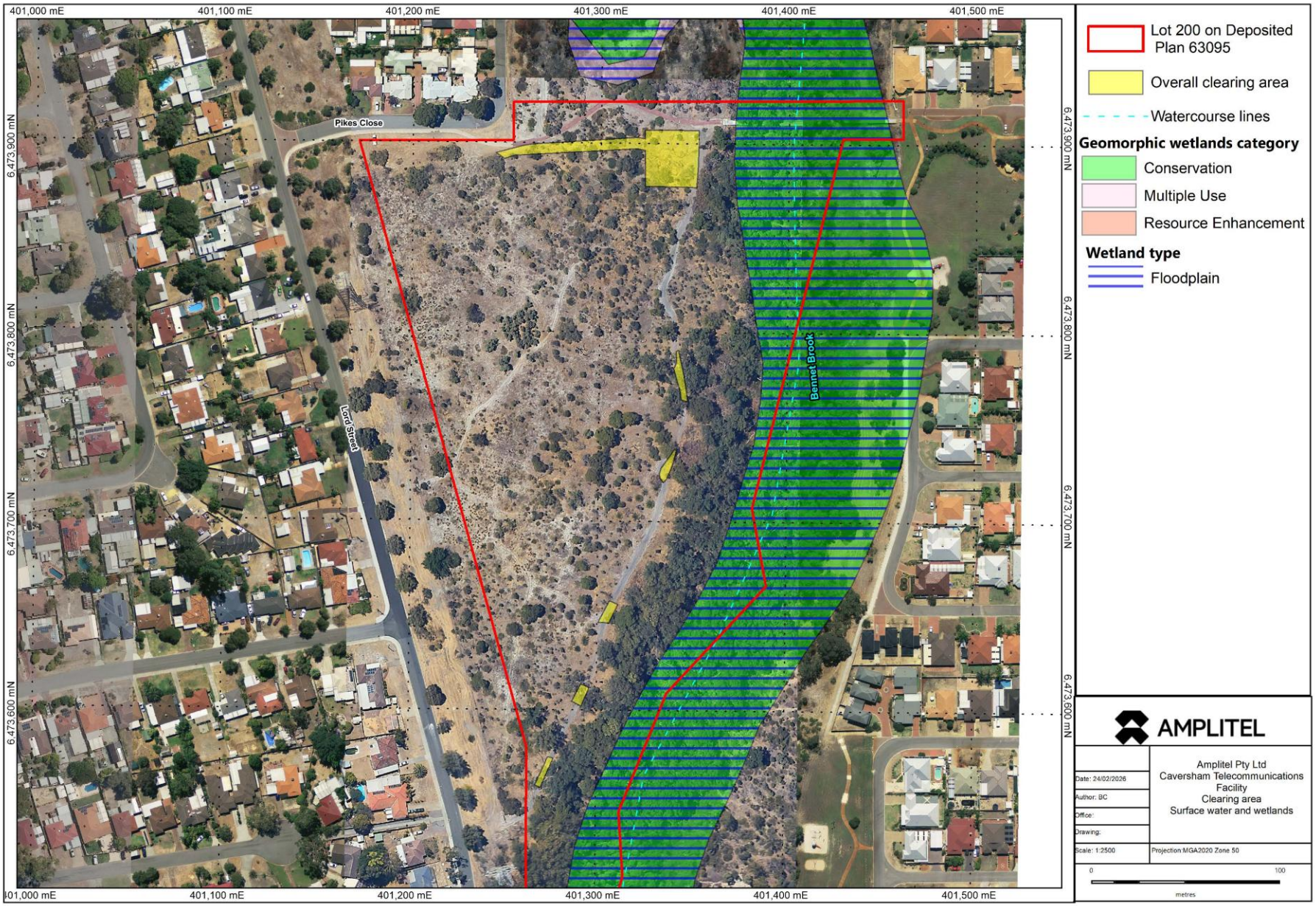


Figure 6: Surface water lines and geomorphic wetland in proximity to clearing area

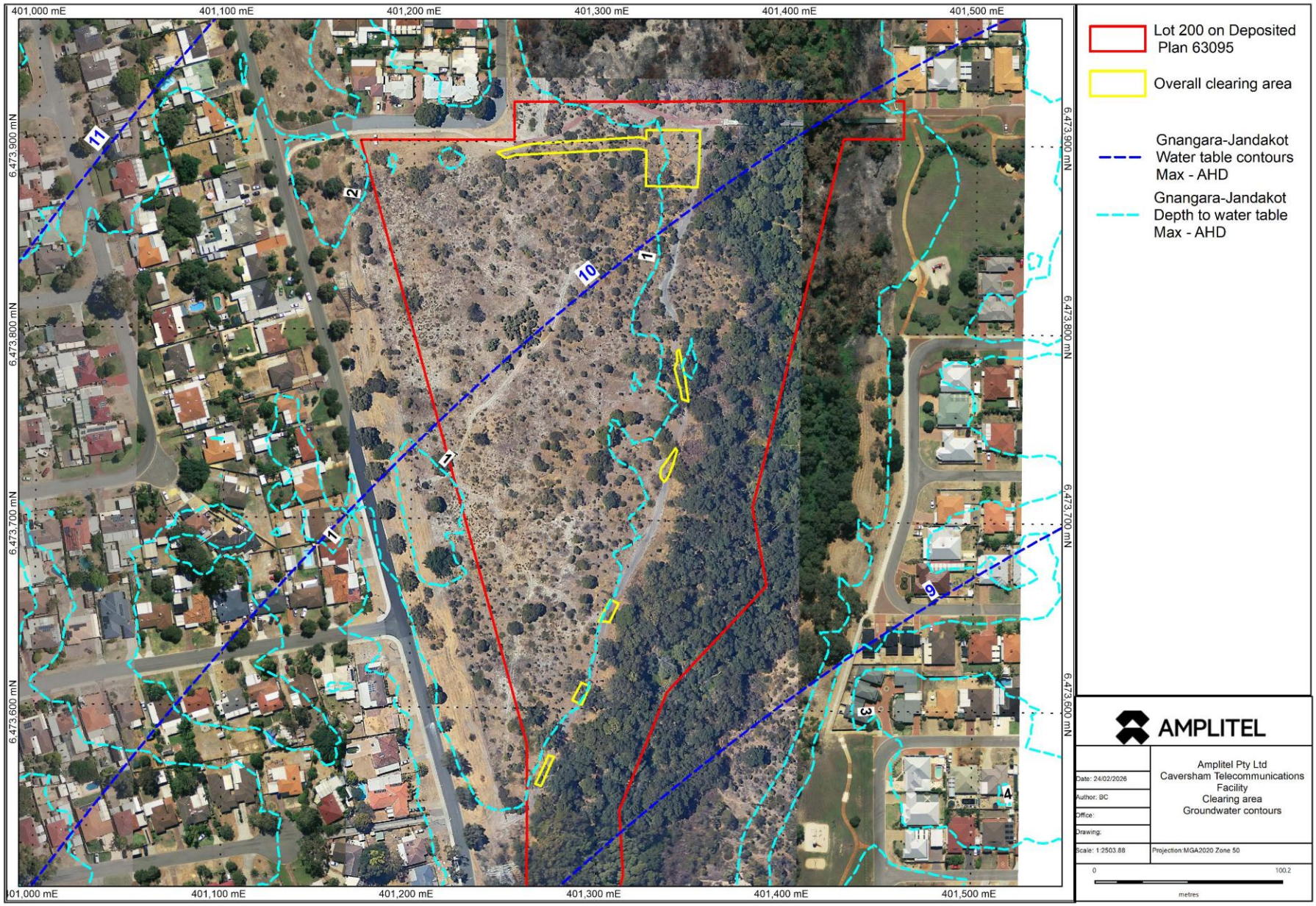


Figure 7: Indicative groundwater contours and depth to water table – Gnangara-Jandakot

3.5 VEGETATION AND FLORA

3.5.1 Vegetation

The Pre-European vegetation association descriptions and their remaining extent, as specified in the 2018 Statewide Vegetation Statistics (DBCA, 2019).

One broad vegetation association is mapped within the clearing area and is described as 'Bassendean 1018: Mosaic of jarrah-marri medium forest; banksia low woodland; teatree forest; *Casuarina obesa* woodland' (DBCA 2019).

Bassendean 1018 vegetation association is poorly represented at a local, regional, and state level with less than 30% of its pre-European extent remaining, with 14.95 % remaining at a State level (Anders 2026).

The remnant vegetation extent in the Project area, based on 'Native Vegetation Extent - Swan Coastal Plain and Perth Peel region' (DWER 2024) is provided in Figure 8. This areas shows the remnant native vegetation relative to pre-European (pre-1750) extent across Swan Coastal Plain and Perth–Peel Region Scheme areas. The remnant native vegetation is restricted to the denser vegetation surrounding Bennett Brook which is not proposed to be cleared. This remnant vegetation extent also correlates with the 'Banksia woodlands of the Swan Coastal Plain' Ecological Community.

A vegetation and flora survey was undertaken over the clearing area by Anders (2026) in November 2025. A copy of the report is attached as Appendix C.

Anders (2026) mapped one vegetation group based on statistical analysis through multivariate cluster analysis of the quadrats, *Banksia menziesii* woodland described as Low open woodland of *Allocasuarina fraseriana* and *Banksia menziesii* over low sparse shrubland of *Dampiera linearis*, *Eremaea pauciflora*, and *Hibbertia hypericoides* over open grassland of *Bromus diandrus, Ehrharta calycina*, and *Pentameris airoides*.

The vegetation condition of the *Banksia menziesii* woodland ranged from Good – Degraded (Anders 2026) (Figure 9). The location of the telecommunications facility was chosen to use the 'Degraded' (refer to Plate 1 and Plate 2)area as much as possible.

3.5.2 Conservation Significant Ecological Communities

Given the presence of *Banksia* woodlands within the survey area, an assessment of the occurrence of *Banksia* Woodlands of the Swan Coastal Plain Threatened Ecological Community (Banksia TEC) was undertaken by Anders (2026) using the key diagnostic criteria specified in the Approved Conservation Advice for the Banksia TEC (DotEE, 2016).

To assess the presence of the *Banksia* TEC within the survey area, both statistical analyses and evaluations of key diagnostic criteria were conducted by Anders (2026). The 0.94-hectare patch of Banksia woodland did not satisfy the required condition threshold and minimum patch size criteria. Additionally, comparison of the floristic data with the Keighery (2012) dataset demonstrated that the quadrats did not correspond to the Banksia TEC floristic community types.

3.5.3 Flora

The Anders (2026) survey identified 42 flora species, including subspecies and varieties, from 23 families and 38 genera. Of these, 33 were native and 9 were introduced species. Species richness varied minimally across quadrats, ranging from 22 to 26 species per quadrat.

No flora species recorded within the survey area were classified as Threatened under the BC Act or as Threatened under the EPBC Act. Additionally, no Priority flora species were recorded

3.5.4 Introduced species

Weed cover is high adjacent to the Bennett Brook Footbridge path and along the Pikes Close road verge, predominantly due to previous clearing (Anders 2026).

A total of nine introduced (weed) species were recorded by Anders (2026):

- *Arctotheca calendula* (Cape Weed, Asteraceae)
- *Bromus diandrus* (Great Brome, Poaceae)
- *Ehrharta calycina* (Perennial Veldt Grass, Poaceae)
- *Gladiolus caryophyllaceus* (Wild Gladiolus)
- *Pentameris airoides* (False Hairgrass)
- *Petrorhagia dubia* (Velvet Pink)
- *Romula rosea* (Guilford Grass
- *Ursinia anthemoides*
- *Zantedeschia aethiopica* (Arum Lily).

None of these species are classified as a Weed of National Significance.

One Declared Pest, *Zantedeschia aethiopica*, listed under the *Biosecurity and Agricultural Management Act 2007* (BAM Act) was recorded at five locations by Anders (2026) (Figure 10). Four of these are located within the proposed clearing area.

3.5.5 Bush Forever Site

Bush Forever sites aim to retain the rich biodiversity of the Swan Coastal Plain by protecting representative areas of each of the unique vegetation complexes that occur across the plain within the Perth Metropolitan Region (DPLH, 2019) as identified under' State Planning Policy 2.8: Bushland Policy for the Perth Metropolitan Region' (SPP 2.8).

The proposed clearing area is located with Bush Forever Site 305 'Bennet Brook, Eden Hill to West Swan' which comprises an area of 119.9 ha. This area is represented as an ESA in Figure 7.

While the proposed clearing area is not classified as remnant vegetation (Section 3.6.1, Figure 8), however it is contiguous with remnant vegetation associated with Bennett Brook (Figure 8).

SPP 2.8 recognises that where native vegetation occurs in Bush Forever areas and within depleted vegetation complexes, there is a strong planning interest in protecting remnant bushland and avoiding further fragmentation, particularly in the Perth Metropolitan Region.

In recognition of this policy intent, the proposed clearing has been designed to:

- Avoid direct clearing of remnant native vegetation – permanent communication tower established in a degraded area of vegetation adjacent to the walking track.
- Minimise disturbance within the Bush Forever site, limiting clearing to areas of degraded or non-remnant vegetation only. Further revegetation works will be undertaken at the completion of construction activity to ensure no net loss of native vegetation in the area.
- Not further fragment the vegetation in this area to maintain functional connectivity.
- Implementation of weed hygiene and management controls to prevent introduction of weeds/dieback and further spread the existing weed population. As part of the clearing works, dedicated removal of Arum lily (declared pest) will be undertaken.
- Drainage and sediment control measures will be implemented during i.e. protect Bennett Brook vegetation corridor.

3.5.6 Dieback (*Phytophthora* sp)

A review of maps in 'Phytopthora Dieback Atlas' (DEC 2006), 'Phytophthora Dieback Occurrence – Infested Only' (DBCA-082) layer; and data compiled in the 'Dieback Information Delivery and

Management System' (DIDMS) (South Coast NRM 2026) was undertaken and no records were identified in the proposed clearing area. Bennett Brook is mapped as 'Uninterpretable'.

The vegetation mapped by Anders (2026) contains several taxa and taxonomic groups recognised as susceptible to *Phytophthora cinnamomi* (dieback), including members of the Proteaceae (*Banksia menziesii*, *Hakea prostrata*, *H. varia*), Zamiaceae (*Macrozamia riedlei*) and Casuarinaceae (*Allocasuarina fraseriana*).

Appropriate hygiene and management measures will be implemented to minimise the risk of pathogen introduction and spread during construction activities.



Figure 8: Native vegetation extent (remnant) - Swan Coastal Plain and Perth Peel region (DWER 2024)

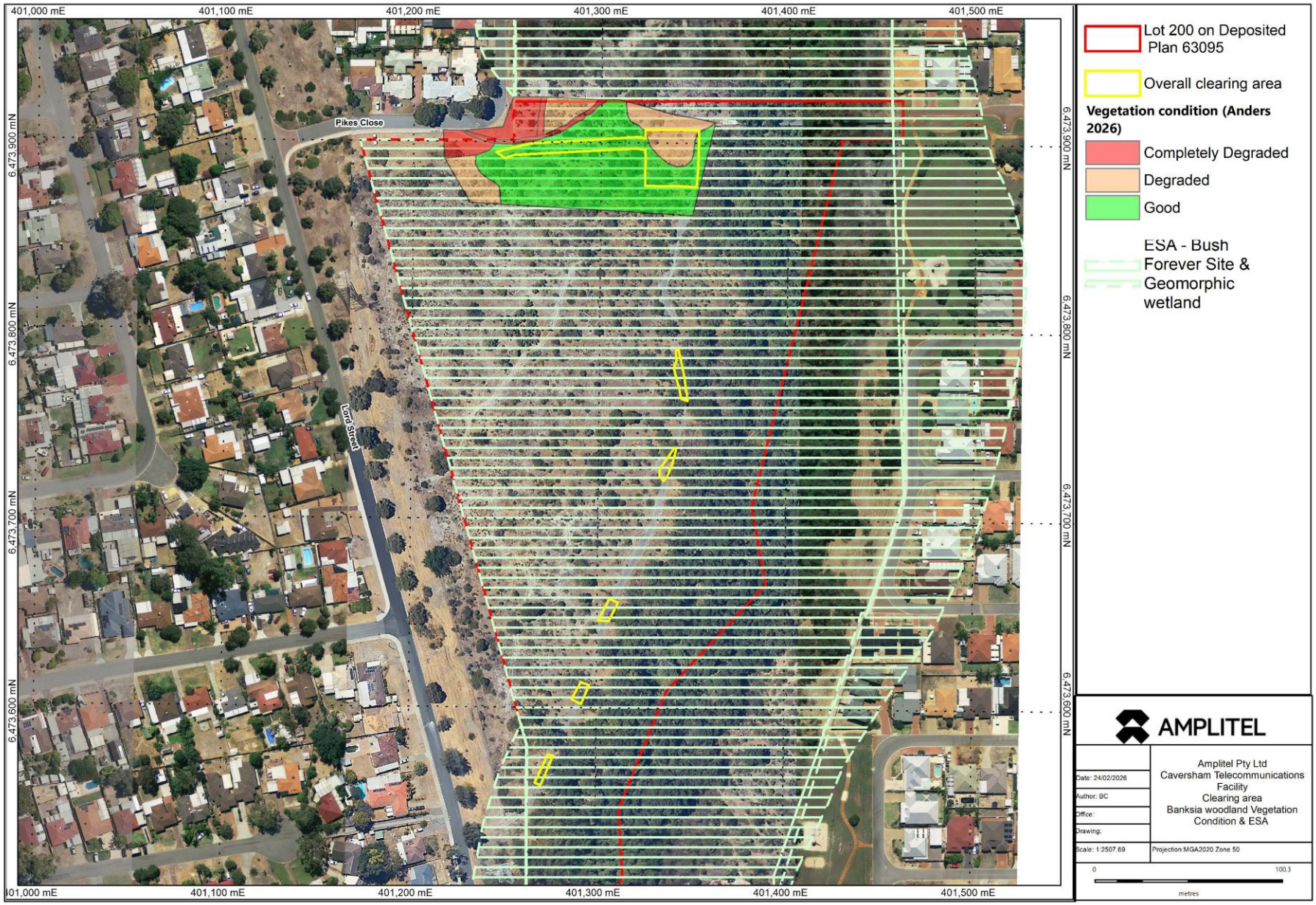
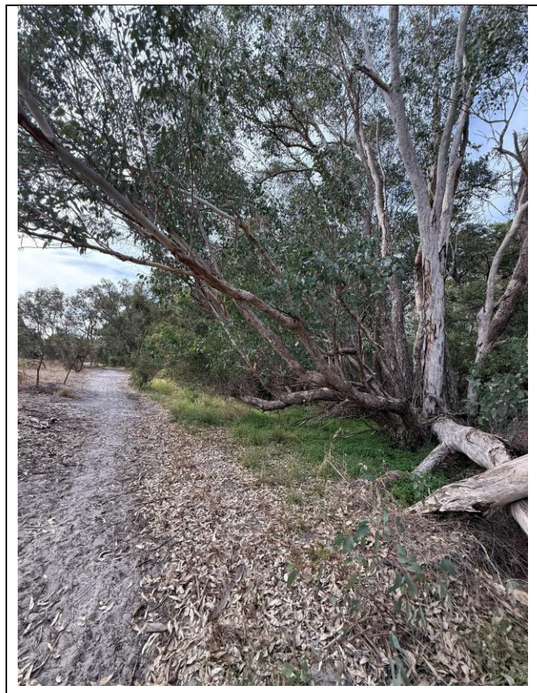


Figure 9: *Banksia* woodland vegetation condition and ESA-Bush Forever site



Figure 8: Records of Declared Weed Arum Lily relative to the proposed clearing area

Table 1: Trees to be trimmed, stems removed along site access track (refer to Figure 10)



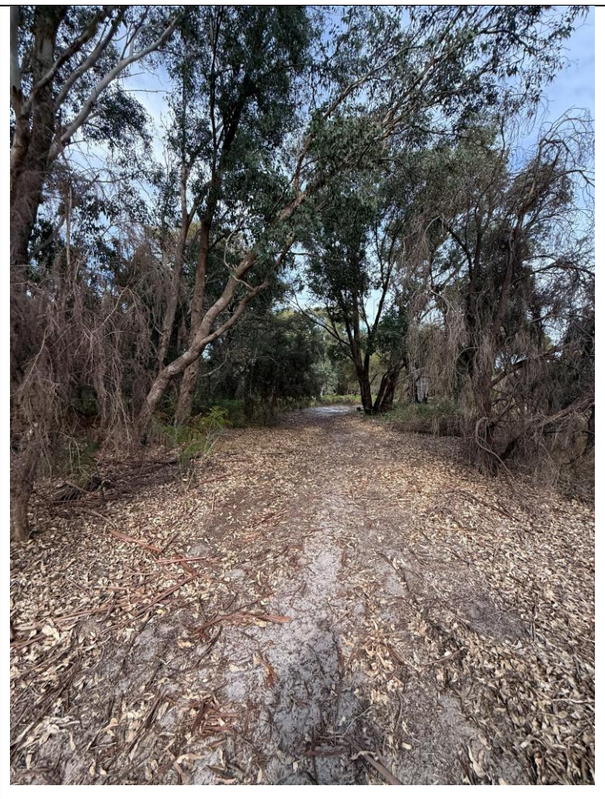
Access track area #5 – trimming required at southern end of access track. Part of tree already felled (previous disturbance)



Access track area #4 – trimming of branches required. branches appear to pushed over and have been cut from this tree.



Access track area #1 – looking north. Branches trimmed and 2 *Melaleuca seriata* plants to remove



Access track area #1 – looking south. Part of tree damaged and hanging over track



Access track area #2 – removal of Marri trees (LHS) and trimming. *Jacksona furcellata* to remove



Access track area #2 – removal of *Jacksona furcellata* to avoid Macrozamia and Eucalypt



Brances have previously been trimmed from trees along this track

3.6 FAUNA

3.6.1 Terrestrial Fauna

A search of the DBCA Threatened fauna database was undertaken to assess the potential occurrence and records of conservation significant fauna within 10km of the proposed clearing area (DBCA 2025c). Records within the last 40 years are presented in Table 2 and Figure 10.

Two conservation significant fauna species have been recorded in proximity to the proposed clearing area:

- *Isoodon fusciventer* (Quenda, southwestern brown bandicoot) – trapped in several locations on Lot 200.
- *Hydromys chrysogaster* (Water rat) – recorded in Bennett Brook.

There are numerous records of Black Cockatoos from DBCA records and this is addressed in Sect 3.6.2.

Advice was sought from Dr Ron Firth, Western Ecological in relation to the impacts of the proposed clearing on native fauna. Dr Firth was provided with the DBCA Threatened fauna records, vegetation report, aerial imagery and site photos taken by Anders (2026) and by Clark Lindbeck & Associates during their November 2025 site inspection.

The following advice was received in relation to native fauna at the site (*pers.comm.* Dr Ron Firth):

- Quenda - potential denning/nesting sites are usually in thick vegetation under grass or thick shrubs. Quenda records are near Bennett Brook where all the thicker vegetation is (the area is quite disturbed).
- Black Cockatoo - from the photos in the report it looks like there are no large trees that would be considered potential Black Cockatoo breeding trees. Consideration of the location of Black Cockatoo roost sites from DBCA records to the survey area should be undertaken. As all construction activity would occur during the day there would not any disturbance to the night roost expected.

3.6.2 Black Cockatoos

There are numerous records of Black Cockatoos (Baudin's, Carnaby's and Forest Red-Tailed) within 10km of the proposed clearing area (DBCA 2025c) and confirmed breeding habitat on the Swan Coastal Plain has been mapped 5.9 km west of Lot 200.

The potential for the trees to be cleared to provide Carnaby's Black Cockatoo breeding habitat was considered. Based on a review of the trees to be cleared, none are considered to be breeding trees (i.e. DBH >500mm). Some are considered unlikely to form hollows suitable for nesting in the main trunk in the near future as many of the main trunks split at ground level into multiple trunks or forms that make them unsuitable for nesting, or split into multiple trunks or branches at 2-5m (Table 2).

The Project Area contains some foraging habitat for black cockatoos in the form of *Banksia* woodland, including primary food species (*Banksia menziesii),* secondary food species (*Hakea* spp.) and Marri (*Corymbia calophylla*). The clearing of 0.14 ha of foraging habitat will not reduce the availability of foraging habitat on Lot 200, with only 0.072 ha remaining permanently cleared. Revegetation will occur on the remaining areas to ensure no net loss of vegetation and this will include preferred Black Cockatoo foraging species.

The native vegetation to be cleared is not considered 'high quality foraging habitat' consistent with that described in DAWE's 'Black cockatoos and development in South-West Western Australia'.

In terms of roosting sites, while none are known to occur in Lot 200, the proposed clearing area is located within 6km of roosting sites including:

- Carnaby's Cockatoo
    - Confirmed roost site located 4.8 km north-northwest of the proposed clearing area (DBCA 2025d).
    - 2.1km south of an unconfirmed roost site (Whiteman Park).
- Forest Red-tailed Cockatoo
    - 5 confirmed roost sites within 2.5 -5.5km of the proposed clearing area (DBCA 2025c).

Table 2: DBCA conservation significant fauna records within 10km of proposed clearing area

Scientific Name	WA Status*[1]	EPBC Status	Preferred Habitat	Likelihood of occurrence
REPTILES				
Neelaps calonotos (black-striped snake, black-striped burrowing snake)	P3		Recent records indicate that N. calonotos is more abundant north of the Swan River (particularly in heathland habitats next to the coast, as well as large undisturbed reserves of Banksia woodland farther inland (He 2021).	Unlikely – given the proposed clearing area has been disturbed previously and the fire history, it is considered this species is unlikely to occur.
BIRDS				
Calidris ferruginea (curlew sandpiper)	CR	CR & MI	Coastal mudflats, estuaries, tidal flats and occasionally inland saline wetlands during migration.	Unlikely – proposed clearing area does not contain suitable habitat.
Zanda baudinii (Baudin's cockatoo)	EN	EN	Jarrah-Marri forest and woodland, especially Marri-rich areas with large trees for foraging, roosting and breeding.	Possible - site contains potential foraging habitat. No suitable breeding habitat identified.
Zanda latirostris (Carnaby's cockatoo)	EN	EN	Banksia woodland, pine plantations, eucalypt woodland and urban bushland with Banksia and Marri feeding resources, plus nearby roost trees.	Possible - site contains potential foraging habitat. No suitable breeding habitat identified.
Calyptorhynchus banksii naso (forest red-tailed black cockatoo)	VU	VU	Jarrah-Marri forest and woodland; increasingly also urban and peri-urban areas with Marri and roost trees.	Possible - site contains potential foraging habitat. No suitable breeding habitat identified.
Falco peregrinus (peregrine falcon)	OS		Cliffs, escarpments, tall trees and urban structures near open foraging areas with abundant bird prey.	Possible - Bennett Brook area adjacent contains large trees site contains potential foraging habitat May forage over or perch near the site; suitable open foraging airspace and tall structures/trees occur in the broader urban landscape.
Oxyura australis (blue-billed duck)	P4		Deep freshwater wetlands and lakes with dense emergent vegetation such as reeds and sedges.	Unlikely – proposed clearing area does not contain suitable habitat.
Apus pacificus (fork-tailed swift)	MI	MI	Highly aerial migrant over open country, woodland, wetlands and urban areas; forages in flight.	Species pass overhead anywhere over the site; habitat is not dependent on ground vegetation.
Pandion haliaetus (osprey)	MI	MI	Large permanent waterbodies, estuaries, rivers, lakes and coastal waters with nearby perches or nest structures.	Bennett Brook may provide foraging context, but proposed clearing area is not waterbird habitat.
Plegadis falcinellus (glossy ibis)	MI	MI	Freshwater marshes, floodplains, shallow wetlands and wet pastures with emergent vegetation.	Unlikely – proposed clearing area does not contain suitable habitat.
Thalasseus bergii (crested tern)	MI	MI	Coastal marine waters, estuaries, beaches, sandbars and islands.	Unlikely – proposed clearing area does not contain suitable habitat.

Scientific Name	WA Status*[1]	EPBC Status	Preferred Habitat	Likelihood of occurrence
Tringa nebularia (common greenshank)	MI	MI	Shallow wetlands, estuaries, mudflats and the margins of lakes and rivers.	Bennett Brook may provide habitat but the proposed clearing area does not.
MAMMALS				
Bettongia penicillata ogilbyi (woylie, brush-tailed bettong)	CR	EN	Open woodland and shrubland with dense understorey, litter and fungal resources; generally in larger intact remnants or managed translocation sites.	Unlikely – clearing area does not represent suitable known habitat and unlikely to support this species.
Dasyurus geoffroii (Chuditch)	VU	VU	Forest, woodland, riparian corridors and rocky/log-rich habitat with den sites and abundant prey.	Unlikely – clearing area does not represent suitable known habitat and unlikely to support this species.
Hydromys chrysogaster (Water rat)	P4		Rivers, creeks, wetlands, estuaries and permanent waterbodies with fringing vegetation.	Unlikely - Potential habitat may occur in nearby Bennett Brook / drainage lines, but not in the proposed clearing area.
Notamacropus eugenii derbianus (Tammar wallaby)	P4		Dense shrubland, coastal heath and woodland with sheltering understorey, often in managed reserves.	Unlikely – clearing area does not represent suitable known habitat and unlikely to support this species.
Notamacropus irma (western brush wallaby)	P4		Open forest, woodland and shrubland with grassy understorey and nearby dense cover.	Unlikely – clearing area does not represent suitable known habitat and unlikely to support this species.
Isoodon fusciventer (quenda, southwestern brown bandicoot)	P4		Dense understorey in woodland, heath, wetlands, riparian vegetation and urban bushland remnants.	Recorded on Lot 200 – species likely to occur in the thicker vegetation near Bennett Brook. Walkover the site by CLA in the proposed clearing area did not identify any obvious denning/nesting sites – limited vegetation cover.
Phascogale tapoatafa wambenger (south-western brush-tailed phascogale)	CD		Mature eucalypt woodland and forest with abundant tree hollows, coarse woody debris and connected canopy.	Unlikely – proposed clearing area is unlikely to provide optimal hollow-rich habitat.
INVERTEBRATES				
Idiosoma sigillatum (Swan Coastal Plain shield-backed trapdoor spider)	P3		Undisturbed sandy soils in Banksia woodland and native bushland on the Swan Coastal Plain.	Previously ubiquitous distribution throughout the Greater Perth region and species continue to be collected as remnant woodland habitats are cleared for development; where it can still be found in remnant habitats (e.g., Kings Park, Bold Park, and Shenton Park bushland) (Rix et al 2018).
Synemon gratiosa (graceful sunmoth)	P4		Known to occur in *Banksia* woodland on Spearwood and Bassendean dunes, where the host plant *Lomandra hermaphrodita* is widespread (DCCEEW SPRAT profile).	Unlikely - Banksia woodland and sandy soils are present, but *Lomandra* was not recorded in the flora survey.

* occurrence of *Westralunio carteri* (Carter's freshwater mussel) not included clearing only involves terrestrial habitat

*[1] Conservation rating descriptions included as Appendix D

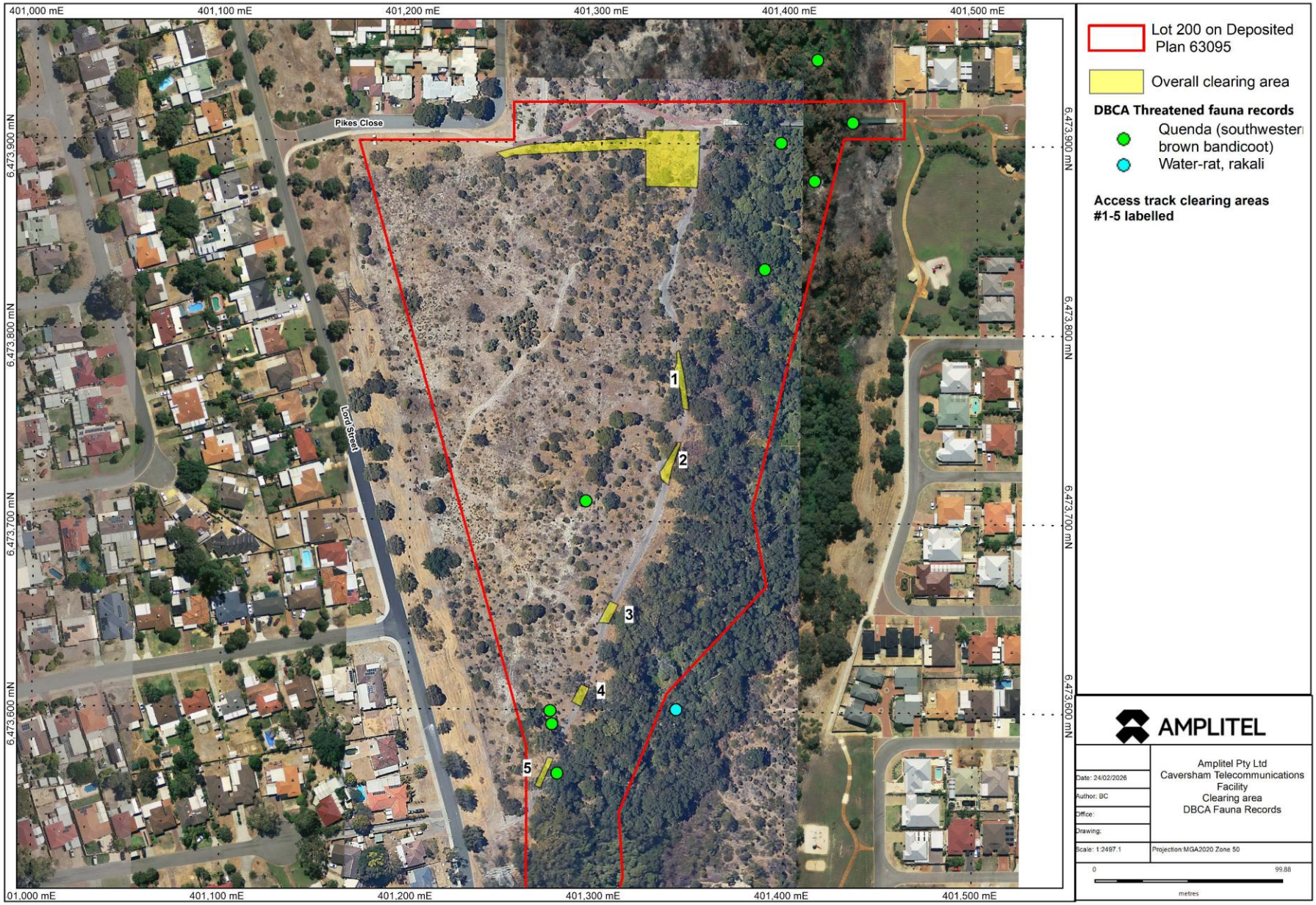


Figure 10: DBCA fauna records in proximity to proposed clearing area

3.7 LANDUSE AND DEGRADATION

Noting the proposed clearing area is located within a Bush Forever site, it has been subject to:

- Historic clearing;
- Fire
- Track formation;
- Weed invasion; and
- Edge effects from adjacent infrastructure (walking track, housing development).

The proposed telecommunications facility area was subject to a fire in 2010 and the area impacted is presented in Figure 11.

3.8 REVEGETATION

BMM has developed a draft Revegetation Plan, the aim of which is to ensure no net loss of vegetation and improve the condition of native vegetation in Lot 200.

This will be developed in conjunction with DBCA.

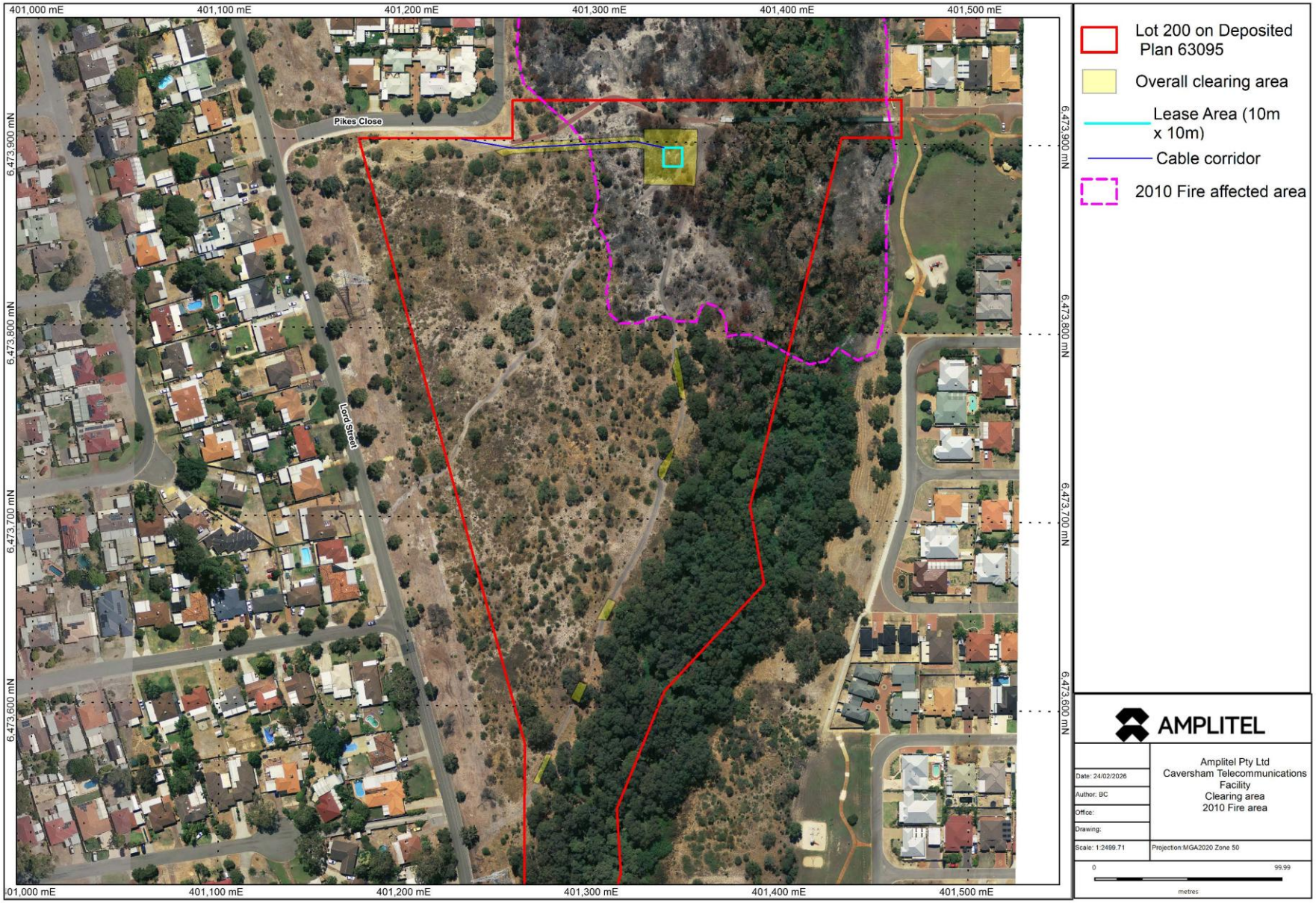


Figure 11: Extent of 2010 fire relative to the proposed clearing area

4 CLEARING PERMIT PRINCIPLES

a) Native vegetation should not be cleared if it comprises a high level of biological diversity

The application area is located within the Swan Coastal Plain IBRA bioregion, specifically the Perth subregion, and supports a single mapped vegetation type, *Banksia menziesii* woodland, over Bassendean sands.

The flora and vegetation survey recorded 42 vascular flora taxa, including 33 native species and nine weed species. No flora species recorded within the survey area were listed as Threatened under the *EPBC Act* or *BC Act*, and no Priority flora were recorded. The understorey in the proposed clearing area has been largely replaced by non-native grass species.

Anders (2026) concluded that no Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) occur within the survey area. Although a Banksia woodland patch occurs at the site, Anders (2026) determined that the *Banksia* woodland patch does not satisfy the condition threshold or minimum patch size criteria for the *Banksia Woodlands of the Swan Coastal Plain* TEC.

The proposed clearing is, however, small in scale (maximum 0.14 ha) and has been intentionally designed to avoid and minimise impacts by using an existing access alignment, directing works toward more disturbed areas, and limiting the construction footprint.

Accordingly, the proposed clearing is not considered to comprise a high level of biological diversity.

(b) Native vegetation should not be cleared if it comprises the whole, or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

The comprises *Banksia* woodland in good-completely degraded condition, with minimal understorey species where weeds are dominant.

Two conservation significant fauna species have been recorded in proximity to the proposed clearing area:

- *Isoodon fusciventer* (Quenda, southwestern brown bandicoot) – trapped in several locations on Lot 200. Potential denning/nesting sites are usually in thick vegetation under grass or thick shrubs which are not part of the proposed clearing area. Quenda records are near Bennett Brook where all the thicker vegetation is located.
- *Hydromys chrysogaster* (Water rat) – recorded in Bennett Brook. The proposed clearing area does not comprise habitat for this species.

There are numerous records of Black Cockatoos (Baudin's, Carnaby's and Forest Red-Tailed) within 10km of the proposed clearing area (DBCA 2025c) and confirmed breeding habitat on the Swan Coastal Plain has been mapped 5.9 km west of Lot 200.

The potential for the trees to be cleared to provide Carnaby's Black Cockatoo breeding habitat was considered. Based on a review of the trees to be cleared, none are considered to be breeding trees (i.e. DBH >500mm).

The Project Area contains some foraging habitat for black cockatoos in the form of *Banksia* woodland, including primary food species (*Banksia menziesii),* secondary food species (*Hakea* spp.) and Marri (*Corymbia calophylla*). The clearing of 0.14 ha of foraging habitat will not reduce the availability of foraging habitat on Lot 200, with only 0.072 ha remaining permanently cleared. Revegetation will occur on the remaining areas to ensure no net loss of vegetation and this will include preferred Black Cockatoo foraging species.

The native vegetation to be cleared is not considered 'high quality foraging habitat' consistent with that described in DAWE's 'Black cockatoos and development in South-West Western Australia'.

While there are roosting sites within 6km of the proposed clearing area, this clearing will not limit the extent of foraging habitat on Lot 200.

All other conservation-listed fauna identified in a 10 km database search have specific habitat requirements (wetlands, large intact woodlands, etc.) not present in the proposed clearing area. Mobile species (e.g. *peregrine falcon*) may transit or forage overhead, but are not dependent on the proposed clearing area.

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

No plant taxa located in the proposed clearing area are gazetted as Threatened under the EPBC Act or BC Act.

No Priority flora were recorded in the proposed clearing area.

Given the above, the proposed clearing will not be at variance to this Principle.

(d) Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of a Threatened Ecological Community (TEC).

No TEC's are listed under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* or endorsed by the Western Australian Minister for the Environment are located in the proposed clearing area.

Although the site contains a Banksia woodland patch, Anders (2026) determined that the patch does not satisfy the key diagnostic criteria for the *Banksia Woodlands of the Swan Coastal Plain* TEC because the Good condition patch is only 0.94 ha, whereas patches in Good condition must be at least 2 ha to meet the condition threshold. Further, the quadrats did not align with any TEC/PEC-related floristic community types.

Therefore, the proposed clearing is not at variance to this Principle.

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

The vegetation within the survey area occurs within Bassendean 1018 vegetation association, which Anders (2026) identified as being poorly represented at the State, regional and local scale, with less than 30% of its pre-European extent remaining and approximately 14.92% remaining at the State/bioregional level and 16.45% in the City of Swan.

SPP 2.8 recognises that where native vegetation occurs in Bush Forever areas and within depleted vegetation complexes, there is a strong planning interest in protecting remnant bushland and avoiding further fragmentation, particularly in the Perth Metropolitan Region.

While the proposed clearing area is not considered to be remnant vegetation, it is mapped within an association that has been extensively cleared and is at variance to this principle.

BMM has developed a draft Revegetation Plan, which will be finalised following consultation with DBCA to ensure there is no net loss of vegetation resulting from their proposed works.

(f) Native vegetation should not be cleared if it is growing, in, or in association with, an environment associated with a watercourse or wetlands.

Bush Forever Site 305 includes Bennett Brook which is located 350-500m east of the proposed clearing area. The proposed clearing itself does not include any riparian vegetation associated with this area..

There is, therefore, no vegetation growing in association with a water course or wetland. The proposed clearing is not at variance to this Principle.

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

The site occurs on deep Bassendean Sands, part of the Bassendean dune system which comprise leached sands which have a high risk of wind erosion and a low risk of water erosion due to high infiltration rates associated with sands (Northcote *et al.* 1960-1968).

Given the small scale of clearing required, which will be either revegetated (cable corridor) or stabilised (telecommunications tower – gravel surfacing/weed mat installation), the risk of appreciable wind erosion is low.

The proposed clearing footprint is limited and does not involve broad-scale excavation, dewatering or deep soil disturbance. While excavation depths proposed for construction works are limited to 1.4m depth and consideration of the occurrence of ASS has been considered and been factored in the CEMP.

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

The proposed clearing area is located within a Bush Forever site and adjacent to Bennett Brook which are listed as an ESA. The clearing has been designed to avoid direct clearing of remnant vegetation and to maintain the environmental values of these areas by not fragmenting the occurrence of vegetation in this area. Access for construction will utilise an existing access track, which requires some removal of tree branches and stems.

The proposed clearing footprint is limited and does not involve broad-scale excavation, dewatering or deep soil disturbance. While excavation depths proposed for construction works are limited to 1.4m depth and consideration of the occurrence of ASS has been considered and been factored in the CEMP.

Weeds are prevalent in the Bush Forever site and vehicle/equipment hygiene measures will be implemented to prevent the introduction and further spread of weed species. Weed control activities will be undertaken prior to clearing for the Arum Lily in the proposed clearing area.

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

The proposed clearing area has been mapped as Banksia woodland upstream of Bennett Brook. The clearing for telecommunications facility and cable corridor are small in scale and the 0.14 ha of native vegetation clearing will not result in broad-scale modification of landform or drainage which could impact surface or underground water. Revegetation works are proposed to ensure no net loss of vegetation.

The WAPC development approval requires that all stormwater be managed to ensure no hydrological impacts occur to Bennett Brook during construction works and this will be addressed in the Construction Environmental Management Plan.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.

The proposed clearing comprises a small area on Bassendean sands, upstream of Bennett Brook. The area is not located in a drainage line or wetland area and will not result in broad-scale modification of landform or drainage that will cause or exacerbate flooding.

As such, the proposed clearing is not considered at variance to this principle.

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Appendix A: Certificate of Title

WESTERN AUSTRALIA

TITLE NUMBER	
Volume	Folio
2753	**483**

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts
REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 200 ON DEPOSITED PLAN 63095

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

WESTERN AUSTRALIAN PLANNING COMMISSION OF 469 WELLINGTON STREET, PERTH
(AF L490698) REGISTERED 26/11/2010

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR WATER PURPOSES TO WATER CORPORATION. SEE DEPOSITED PLAN 63095.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	DP63095
PREVIOUS TITLE:	1464-620
PROPERTY STREET ADDRESS:	LOT 200 LORD ST, CAVERSHAM.
LOCAL GOVERNMENT AUTHORITY:	CITY OF SWAN
RESPONSIBLE AGENCY:	WESTERN AUSTRALIAN PLANNING COMMISSION

Appendix B: Development Approval

OFFICIAL

Western Australian Planning Commission

Our Ref : 21-50016-2
Your Ref :
Enquiries : Reyta Szabo (Ph 6551 9451)

BMM Group
Level 2/696 Bourke Street
MELBOURNE VIC 3000

Application for Approval to Commence Development plans dated 30 May 2024 received 30 May 2024.

Lot Number	:	200
Location	:	-
Plan / Diagram	:	Deposited Plan 63095
Volume/Folio	:	2753/483
Locality	:	Lot 200 Lord Street, Caversham
Owner	:	Western Australian Planning Commission 140 William Street PERTH WA 6000

Under the provisions of the *Planning and Development Act 2005* this application has been referred for determination by the Western Australian Planning Commission.

The application has now been considered by the Commission and the formal notice setting out the terms of the decision is attached.

A copy of this decision has been forwarded to the Local Government for information.

Should the applicant be aggrieved by this decision there is a right to apply for a review pursuant to the provisions of Section 252 of the *Planning and Development Act 2005*. Such an application for review must be submitted to the State Administrative Tribunal, Level 6, State Administrative Tribunal Building, 565 Hay Street, PERTH WA 6000 in accordance with Part 14 of the *Planning and Development Act 2005*. It is recommended that you contact the State Administrative Tribunal for further details (telephone 9219 3111) or go to its website: http://www.sat.justice.wa.gov.au.

140 William Street, Perth, Western Australia 6000, Locked Bag 2506 Perth, 6001
Tel: (08) 6551 8002; Fax: (08) 6551 9001; Infoline: 1800 626 477
e-mail: info@dplh.wa.gov.au; web address http://www. dplh.wa.gov.au
ABN 35 482 341 493

OFFICIAL
Western Australian Planning Commission

ADVICE TO APPLICANT

1. Regarding Condition 2, the landowner/applicant is advised that the Construction Environmental Management Plan (CEMP) should describe how the authorised works will be managed to minimise potential environmental impacts. The landowner/applicant is advised to liaise with the Department of Biodiversity, Conservation and Attractions in this regard.

2. Regarding Condition 3, the landowner/applicant is advised that no construction materials, rubbish or any deleterious matter shall be deposited within Bush Forever Site 305.

3. This approval does not authorise commencement of any building and/or demolition works. In accordance with the *Building Act 2011* and *Building Regulations 2012*, a building and/or demolition permit must be obtained prior to the commencement of any works.

4. The noise generated by activities on-site, including machinery motors or vehicles is not to exceed the levels as set out under the *Environmental Protection (Noise) Regulations 1997*.

   Noisy Construction Work outside the period 7.00 am to 7.00 pm Monday to Saturday and at any time on Sundays and Public Holidays is not permitted unless a Noise Management Plan for the construction site has been approved in writing by the Western Australian Planning Commission.

5. The land or a portion of the land subject of this approval has been identified as potentially being in an area affected by acid sulphate soils. For more information you are advised to contact the Department for Environment and Conservation on (08) 6467 5000.

Sam Boucher.

Ms Sam Boucher
Secretary
Western Australian Planning Commission
14 November 2024

140 William Street, Perth, Western Australia 6000, Locked Bag 2506 Perth, 6001
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ABN 35 482 341 493

OFFICIAL
Western Australian Planning Commission

Our Ref : 21-50016-2
Your Ref :
Enquiries : Reyta Szabo (Ph 6551 9451)

PLANNING AND DEVELOPMENT ACT 2005

City of Swan

APPROVAL TO COMMENCE DEVELOPMENT

Name and Address of Owner and Land on which Development Proposed:

Owner	:	Western Australian Planning Commission 140 William Street PERTH WA 6000
Lot Number	:	200
Location	:	-
Plan / Diagram	:	Deposited Plan 63095
Volume/Folio	:	2753/483
Locality	:	Lot 200 Lord Street, Caversham
Application Date	:	30 May 2024
Application Receipt	:	30 May 2024
Development Description	:	Telecommunications Infrastructure (Telecommunications Facility)

The application for approval to commence development in accordance with the plans submitted thereto is granted subject to the following condition(s):

1. This approval relates to the telecommunications facility, as per the attached plans date stamped 04 September 2024 by the Department of Planning, Lands and Heritage on behalf of the Western Australian Planning Commission.

2. All works are to be undertaken in accordance with a Construction Environmental Management Plan which is to be submitted to and approved by the Department of Biodiversity, Conservation and Attractions prior to commencement of works.

3. The development including construction, access, drainage, dust management processing and ongoing maintenance, is not to result in any impacts to Bush Forever or the clearing or disturbance to the regionally significant bushland within Bush Forever. This includes any hydrological impacts to Bennett Brook.

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ABN 35 482 341 493

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Western Australian Planning Commission

4. All building works to be carried out under this development approval are required to be contained within the boundaries of the subject lot.

5. All stormwater must be contained and disposed of on-site at all times, to the satisfaction of the Western Australian Planning Commission.

6. The development must be clad in a material or painted in a colour of natural or earth tones to complement the surroundings, and/or adjoining developments, in which it is located to the satisfaction of the Western Australian Planning Commission.

If the development the subject of this approval is not substantially commenced within a period of two years from the date of this letter, the approval shall lapse and be of no further effect. Where an approval has so lapsed, no development shall be carried out without the further approval of the responsible authority having first been sought and obtained.

Sam Boucher.

Ms Sam Boucher
Secretary
Western Australian Planning Commission
14 November 2024

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Appendix C: Vegetation and Flora Survey Report

Flora and Vegetation Survey

Caversham Telecommunications Facility

Prepared for BMM Group

January 2026

Anders Environmental Consulting

FLORA AND VEGETATION SURVEY: CAVERSHAM TELECOMMUNICATIONS FACILITY

Author: Catherine Krens, Lucy Keays

Date: 19th January 2026

Client: BMM Group

Version: Draft 1.0

Chain of authorship and review			
Name	**Task**	**Version**	**Date**
C. Krens, L. Keays	Draft report for client	1.0	January 2026

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EXECUTIVE SUMMARY

BMM Group is planning on developing a telecommunications facility at Lot 200 Lord Street, Caversham. This includes a communications tower approximately 100m^2 and a communications cable approximately 50m long.

A detailed flora and vegetation survey was conducted in spring, November 2025, following the methods outlined in the *EPA Technical Guide – Flora and Vegetation Surveys for Environmental Impact Assessment* (Environmental Protection Authority (EPA), 2016a). Three quadrats were sampled, and all opportunistic flora outside the quadrats were recorded, to ensure any conservation significant flora were captured.

A summary of the flora and vegetation values is provided below.

Flora values:

- No threatened flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or the *Biodiversity Conservation Act 2016* (BC Act) were identified during the survey.
- No Priority flora species were identified.
- A total of 42 vascular flora species, including subspecies and variants, were recorded. The most dominant families were Myrtaceae (5 species) and Fabaceae (4 species).
- Nine weed species were identified. No Weeds of National Significance (WoNS) were present. One Declared Pest species, *Zantedeschia aethiopica* (Arum Lily), was recorded at four locations.

Vegetation values:

- No Threatened or Priority Ecological Communities (T/PEC) listed under the EPBC Act or BC Act occur within the survey area.
- A single vegetation type was mapped within the survey area; BmEpEc: *Banksia menziesii* woodland. Statistical analysis determined the vegetation type did not align with the Banksia Woodlands of the Swan Coastal Plain TEC.
- One broad vegetation association, Bassendean 1018, was identified. This association is poorly represented at the state, regional, and local levels, with less than 30% of its pre-European extent remaining.
- Vegetation condition was rated as “Good” for all surveyed quadrats and for most of the *Banksia menziesii* woodland. Areas adjacent to the footpath and road verge were classified as “Degraded” to “Completely Degraded.”

Recommendations:

- It is recommended that infrastructure be located within areas classified as “Degraded” and “Completely Degraded” where possible.
- Clearing within the *Banksia menziesii* woodland should be minimised where possible.
- Undertake weed management in areas adjacent to infrastructure and the footpaths, to prevent the spread of weeds into the *Banksia menziesii* woodland. Weed control of Declared Pest *Zantedeschia aethiopica* is required to prevent further spread.

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DEFINITIONS

Acronym	Definition
Anders	Anders Environmental Consulting
BAM Act	*Biosecurity and Agricultural Management Act 2007*
BC Act	*Biodiversity Conservation Act 2016*
BOM	Bureau of Meteorology
Cwth	Commonwealth
DBCA	Department of Biodiversity Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPIRD	Department of Primary Industries and Regional Development
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESA	Environmentally Sensitive Area
FCT	Floristic Community Type
ha	Hectare
IBRA	Interim Biogeographic Regionalisation of Australia
km	Kilometre
m	Metre
MNES	Matter of National Environmental Significance
NVIS	National Vegetation Information System
PEC	Priority Ecological Community
TEC	Threatened Ecological Community
WoNS	Weed of National Significance

1.0 INTRODUCTION

1.1 BACKGROUND

Anders Environmental Consulting (Anders) understands that BMM Group is planning on developing a telecommunication tower located in Lot 200 Lord Street Caversham (survey area). The project involves the building of the tower as well as a centreline power cable. As a result of the proposed development a flora and vegetation survey was required to support the environmental approvals process for this project.

The survey area is approximately 0.7113 hectares and is located in Caversham within the City of Swan, approximately 13 km northeast of Perth (Figure 1).

1.2 SCOPE AND OBJECTIVE

The objective of the survey was to assess the flora and vegetation values present within the survey area. The scope of work included:

- Conducting a detailed flora and vegetation survey
- Mapping the vegetation types and condition present
- Mapping populations of conservation significant flora
- Mapping the extent of Threatened and Priority Ecological Communities within the survey area.

1.3 LEGISLATIVE CONTEXT

In Western Australia, flora and vegetation are primarily protected through a combination of state and federal legislative frameworks, including:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *Biodiversity Conservation Act 2016* (BC Act).

There are also a number of non-legislative measures to supplement statutory protection:

- Department of Biodiversity, Conservation and Attractions (DBCA) Priority flora and ecological communities lists
- Environmental Protection Authority (EPA) Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (2016a)
- Department of Water and Environmental Regulation (DWER) Native vegetation policy for Western Australia (2022).

1.3.1 EPBC ACT

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the primary Commonwealth legislation for biodiversity protection in Australia. The Act identifies all matters of national environmental significance (MNES), which include the following:

- listed threatened species and ecological communities
- migratory species protected under international agreements
- Ramsar wetlands of international importance
- the Commonwealth marine environment
- World Heritage properties
- National Heritage places
- Great Barrier Reef Marine Park
- water resources in relation to coal seam gas disturbance and large coal mining disturbance
- nuclear actions.

If a proposed action is likely to have a significant impact on a MNES, it must be referred to the Commonwealth Minister for the Environment to determine whether assessment and approval are required under the EPBC Act.

1.3.2 BC ACT

The Biodiversity Conservation Act 2016 (BC Act) in the primary legislation in Western Australia for the protection of native plants, animals, and ecosystems. Administration of the Act is the responsibility of the Department of Biodiversity, Conservation and Attractions (DBCA). The BC Act authorises the Western Australian Minister for the Environment to declare species of flora as protected if they are determined to be at risk of extinction, rare, or otherwise require special protection. Species classified as Threatened and requiring special protection due to an identifiable threat of extinction are formally listed under the BC Act.

Species that have not been fully surveyed or lack enough data to be listed under the BC Act are put on Priority Lists in categories 1, 2, or 3 by the Western Australian Minister for the Environment. Species that are well known, rare but not threatened, nearly threatened, or recently removed from the threatened list are placed in Priority 4.

The BC Act also protects Threatened Ecological Communities (TECs), which are naturally occurring biological assemblages found within specific habitat types that may be at risk from processes capable of destroying or significantly modifying these assemblages across their range. In Western Australia, vegetation communities are designated as TECs if they are endorsed by the Western Australian Minister for Environment, based on recommendations from the TEC Scientific Committee.



Figure 1 Survey area

Lot 200 Lord Street Caversham

0 10 20 m

GDA2020 - MGA Zone 50

Caversham survey area Indicative Disturbance Areas

Anders Environmental Consulting

2.0 METHODS

2.1 REQUIREMENTS FOR FLORA AND VEGETATION SURVEYS

The flora and vegetation survey was conducted in accordance with the Environmental Protection Authority (EPA) and Department of Climate Change, Energy, the Environment and Water (DCCEEW) guidelines relevant to environmental surveying and reporting in Western Australia. Key documents referenced include:

- *EPA Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016a)
- *EPA Statement of Environmental Principles, Factors and Objectives* (EPA, 2016b).

2.2 FLORA AND VEGETATION FIELD SURVEY

The field survey was conducted on 28th November 2025 during Spring. The methodology followed *EPA Technical Guide – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016a).

The survey aimed to:

- Map vegetation types and condition
- Map populations of conservation significant flora
- Map any Threatened or Priority Ecological Communities
- Record all observed flora species, and compile an inventory of species, including weeds.

Data was collected from 3 non-permanent 10 m x 10 m quadrats, mapping notes, vegetation condition assessments, opportunistic flora collections, and observations across the survey area. Quadrats were established within intact vegetation, with a minimum of three quadrats per observable vegetation type.

Each quadrat recorded:

- Site number
- GPS coordinate from the north-west corner
- Photograph from the north-west corner
- Landform
- Soil description
- Drainage
- Leaf litter, bare ground, and rock percentage covers
- Fire history
- Vegetation condition and description of disturbances
- Vegetation structure
- Species present: estimated height and estimated foliage cover.

A specimen of all recorded flora was collected for verification and identification against specimens from the Western Australian Herbarium. Taxonomists from DBCA and the Western Australian Herbarium were consulted to confirm the identification of conservation-significant species.

2.2.1 SURVEY PERSONNEL

The survey was conducted by Western Australian botanists:

- Catherine Krens – Principal Botanist (Flora Collecting Licence number FB62000188-2).

The Principal Botanist has experience conducting similar surveys within the Swan Coastal Plain in which the survey area is located.

2.2.2 SURVEY LIMITATIONS

Limitations are common in flora and vegetation surveys which may result in reduced data quality and survey effort and deviations from the EPA guidelines. An assessment of the limitations of the survey as outlined in the EPA guidelines (2016a) are addressed in Table 1.

Table 1 Limitations of the flora and vegetation survey

Limitation	Determination	Justification
Availability of contextual information at a regional and local scale	**Minor limitation**	Most contextual information was available prior to the survey. Although a DBCA database search was not conducted, all observed flora species were documented to assess the presence of conservation significant species.
Competency/experience of the team conducting the survey, including experience in the bioregion	**Not a limitation**	The surveying botanist Catherine Krens has over 18 years' experience undertaking flora and vegetation surveys within Western Australia.
Proportion of flora recorded and collected and any identification issues	**Not a limitation**	A specimen of all flora species observed within, and outside quadrats was collected for confirmation at the Western Australian Herbarium.
Effort and extent - was the survey area fully surveyed	**Not a limitation**	The survey area was traversed on foot. All vegetation types were surveyed with a minimum of three quadrats established within each vegetation type.
Access restrictions within the survey area	**Not a limitation**	There were no access issues, and the entire survey area was accessed by foot.
Survey timing, rainfall, season of survey	**Minor limitation**	The survey was conducted in November, which is within the peak flowering period of the Swan Coastal Plain bioregion (September to November). Rainfall was above the mean average in the three months leading up to the survey, which may have assisted in triggering flowering.
Disturbance that may have affected the results of survey such as fire, flood or clearing	**Minor limitation**	The survey area is located within an urban area and there is disturbance associated with this including footpaths, road verge, and tracks. Clearing was present and weed cover was high adjacent to these disturbances.

2.3 VEGETATION MAPPING

Vegetation types were classified using the National Vegetation Information System (NVIS) standard to the sub-association level (Commonwealth of Australia, 2003). Floristic composition and vegetation classification followed the EPA (2016a) guidelines for detailed surveys, providing a structured analysis of species composition within each quadrat. To assess similarities between quadrats, a multivariate comparative (cluster) analysis was conducted.

Vegetation descriptions were refined using the NVIS standard to level V (Commonwealth of Australia, 2003), which categorizes vegetation into three traditional strata: upper, mid, and ground layers. Vegetation mapping was performed using QGIS 3.8 software, integrating aerial imagery and quadrat data to delineate vegetation units.

Floristic data was analysed using PC-Ord v7.0, applying cluster analysis to group quadrats based on similarity. The Bray-Curtis distance measure determined the dissimilarity index, ranging from 0 (identical species composition) to 1 (no shared species), with lower values indicating greater similarity. The inverse of this index was used to calculate percentage similarity for each quadrat.

To determine the presence of TECs and PECs, the floristic data within the quadrats was compared to the larger Keighery dataset for the Swan Coastal Plain (Keighery B. K., 2012). The Bray-Curtis dissimilarity index was used to identify the most similar Keighery quadrats, and their associated Floristic Community Type (FCT).

The survey area occurs within the South-Western Interzone Botanical Province where vegetation condition is classified using the Keighery scale (Keighery B., 1994). Condition ratings account for vegetation structure, disturbance levels at each structural layer, and regeneration potential (EPA, 2016a). Table 2 outlines the vegetation condition ratings for the Keighery scale.

Table 2 Vegetation condition scales

Vegetation Condition	South-West Interzone Botanical Province (Keighery B., 1994)
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging, and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback, and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback, and grazing.
Completely Degraded	The structure of the vegetation is no longer intact, and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.

3.0 EXISTING ENVIRONMENT

3.1 CLIMATE

The closest long-term Bureau of Meteorology (BOM) weather station with a complete dataset is Perth Airport Weather Station (Station 9021) which has recorded monthly rainfall and temperature since 1944. The long-term mean maximum temperature ranges from 18°C in July to 32.1°C in February (BOM, 2025).

The Perth Airport Weather Station recorded 619.4 mm of rainfall in the 12 months prior to the survey (November 2024 to October 2025), which was 135 mm below the long-term average of 135 mm (BOM 2025). In the three months prior to the survey, August to October 2025, 250.8 mm of rainfall was recorded, which is 16.4 mm above the long-term average of 234.4 mm for the same period (BOM, 2025).

A comparison of the mean temperature and mean rainfall against the temperature and rainfall in the 12 months prior to the survey is provided in Figure 2.

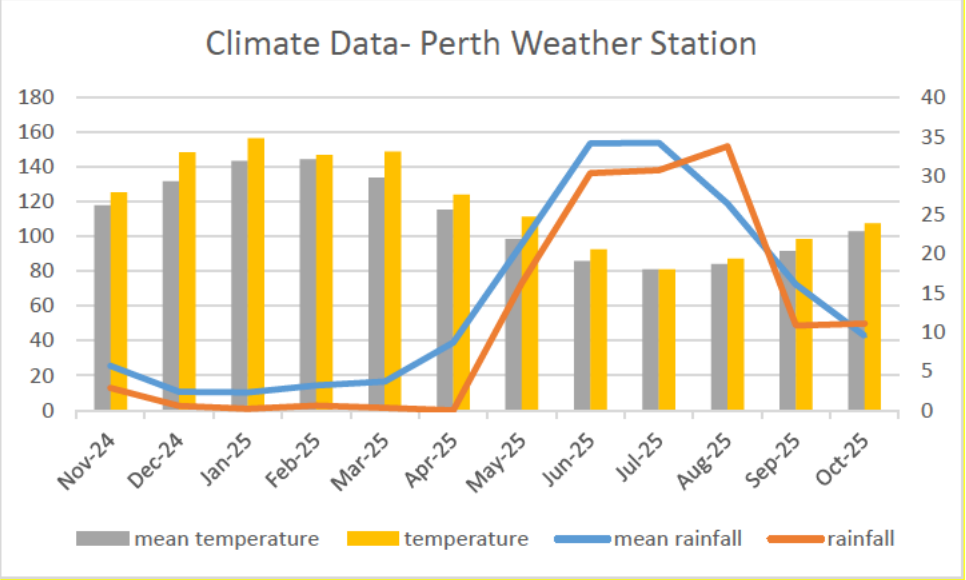


Figure 2 Climate data recorded at Perth Airport Weather Station displaying mean monthly rainfall and maximum temperatures for the 12 months preceding the survey against the mean long-term rainfall and maximum temperature (Bureau of Meteorology 2025).

3.2 IBRA BIOREGIONS

The survey area occurs within the Swan Coastal Plain Interim Biogeographic Regionalisation for Australia (IBRA) bioregion, specifically within the Perth subregion (SWA2).

The Swan Coastal Plain is a low-lying coastal plain. It is dominated by Banksia or Tuart on sandy soils, *Casuarina obesa* on outwash plains, and paperbark in swampy areas (Mitchell, 2002).

The Perth subregion is comprised of colluvial and aeolian sands dominated by Marri, limestone dominated by heath and/or tuart woodlands, and quaternary marine dunes dominated by Banksia and Jarrah-Banksia woodlands (Mitchell, 2002). It also includes a complex series of seasonal wetlands.

3.3 BROAD VEGETATION ASSOCIATION

Mapping of pre-European vegetation units within Western Australia is based on broad scale mapping -by Beard (1976) at 1:3,000,000 which showed the distribution of 75 major categories of plants at the time of European settlement. Beards mapping was re-assessed by Shepherd et al. (2002) with some larger vegetation units divided into smaller units. Together, this pre-European database contains a total of 819 vegetation types recognised within Western Australia.

One broad vegetation association is mapped within the survey area (Figure 3) and is described as:

- Bassendean 1018: Mosaic of jarrah-marri medium forest; banksia low woodland; teatree forest; *Casuarina obesa* woodland.

Bassendean 1018 vegetation association is poorly represented at a local, regional, and state level with less than 30% of its pre-European extent remaining (Table 3).

Table 3 Broad vegetation types (DPIRD, 2019)

Vegetation Association	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	Current extent managed in DBCA lands (%)
Representation across Western Australia				
Bassendean 1018	8,008.39	1,195.13	14.92	1.99
Representation across the Swan Coastal Plain Bioregion				
Bassendean 1018	8,008.39	1,195.13	14.92	1.99
Representation across the City of Swan				
Bassendean 1018	6,002.37	987.22	16.45	0.91

3.4 CONSERVATION AREAS

Environmentally Sensitive Areas (ESAs) are declared to prevent degradation of important environmental values such as Threatened flora, TECs or significant wetlands (DWER, 2021). The survey area is located within 2 km of 15 ESAs (Figure 4):

- ESA 19411 – Bush Forever site (Within the survey area)
- ESA 8182 – Conservation category wetland (Within the survey area)
- ESA 8909 – Conservation category wetland (275 m south)
- ESA 8913 – Conservation category wetland (480 m south)
- ESA 8155 – Conservation category wetland (560 m north)
- ESA 19410 – Bush Forever site (650 m north)
- ESA 8914 – Conservation category wetland (720 m south)
- ESA 8900 – Conservation category wetland (745 m north)
- ESA 8889 – Conservation category wetland (960 m north)
- ESA 19214 – Bush Forever site (1 km south)
- ESA 8890 – Conservation category wetland (1.1 km northwest)
- ESA 19344 – Bush forever site (1.25 km north)
- ESA 8887 – Conservation category wetland (1.5 km north)
- ESA 8339 – Conservation category wetland (1.75 km southeast)
- ESA 8883 – Conservation category wetland (1.9 km north).

Bush Forever sites aim to retain the rich biodiversity of the Swan Coastal Plain by protecting representative areas of each of the unique vegetation complexes that occur across the plain within the Perth Metropolitan Region (DPLH, 2019). There are eight Bush Forever sites occurring within a 5 km radius of the survey area (Figure 5):

- Site 305 – Bennett Brook, Eden Hill to West Swan (Within the survey area)
- Site 304 – Whiteman Park, Whiteman/West Swan (1.2 km north)
- Site 200 – Caversham Airbase Bushland, West Swan/Whiteman (2.6 km northeast)
- Site 480 – Victoria Road Bushland, Malaga/Beechboro (3.3 km west)
- Site 302 – Swan River and Jane Brook, Ashfield to Upper Swan (3.4 km east)
- Site 307 – Lightning Swamp and Adjacent Bushland, Noranda (4 km west)
- Site 491 – Swan River Backwater, South Guildford (4.3 km south)
- Site 311 – South Guildford Bushland, Hazelmere (4.9 km southeast).

The DBCA Legislated Lands and Waters data (DBCA, 2026) covers all lands and waters defined by legislation relevant to DBCA. Tenure categories include national parks, nature reserves, conservation parks, marine parks, marine nature reserves, marine management areas, section 5(1)(g) reserves, state forests, and timber reserves. The are six DBCA reserves occurring within 10 km of the survey area (Figure 6):

- Swan and Canning River Reserve (3 km south)
- R44583 Nature Reserve (3.2 km northwest)
- Gnangara-Moore River State Forest (7.8 km north)
- Talbot Road Bushland Nature Reserve (8.1 km east)

- Errina Road Nature Reserve (10 km northwest)
- Greenmount National Park (10 km southeast).

In Western Australia, wetland management categories indicate a wetland's relative value and guide its management and protection. The Geomorphic Wetlands of the Swan Coastal Plain are classified into three categories (DBCA, 2025):

- Conservation - wetlands that support a high level of attributes and functions
- Resource Enhancement - wetlands that may have been partially modified but still support substantial ecological attributes and functions. Are modified but still supports substantial ecological attributes and functions
- Multiple Use - wetlands with few remaining important attributes and functions.

There are 32 geomorphic wetland that occur within 2 km of the survey area (Figure 7), including eight conservation category wetlands:

- Conservation category wetlands:
    - UFI 15259 – Unknown floodplain wetland (within survey area)
    - UFI 8669 – West Bennett Brook (12 m east)
    - UFI 8670 – West Bennett Brook (1 km south)
    - UFI 8673 – West Bennett Brook (1.4 km south)
    - UFI 8676 – West Bennett Brook (1.5 km south)
    - UFI 8677 – West Bennett Brook (1.6 km south)
    - UFI 8675 – Unknown palusplain wetland (1.8 km south)
    - UFI 8684 – West Bennett Brook (1.8 km southeast)
- Resource enhancement wetlands:
    - UFI 8554 – Unknown sumpland wetland (520 m northwest)
    - UFI 15756 – Unknown palusplain wetland (1 km northwest)
    - UFI 14129 – Unknown palusplain wetland (1.1 km northeast)
    - UFI 8414 – Unknown dampland wetland (1.2 km southwest)
    - UFI 15752 – Unknown palusplain wetland (1.3 km northwest)
    - UFI 14447 – Unknown palusplain wetland (1.6 km northeast)
    - UFI 16007 – Unknown dampland wetland (1.6 km southwest)
    - UFI 14131 – Unknown palusplain wetland (1.6 km southeast)
    - UFI 16006 – Unknown dampland wetland (1.7 km southwest)
- Multiple use category wetlands:
    - UFI 8668 – Unknown floodplain wetland (9 m north)
    - UFI 14130 – Unknown sumpland wetland (295 m northeast)
    - UFI 15511 – Unknown palusplain wetland (325 m east)
    - UFI 8730 – Unknown dampland wetland (770 m northwest)
    - UFI 8555 – Unknown sumpland wetland (1.2 km west)
    - UFI 15929 – Unknown palusplain wetland (1.2 km southeast)
    - UFI 8672 – West Bennett Brook (1.2 km south)
    - UFI 8729 – Unknown floodplain wetland (1.4 km north)
    - UFI 8671 – West Bennett Brook (1.45 km southeast)
    - UFI 16005 – Unknown dampland wetland (1.5 km southwest)

- UFI 8674 – West Bennett Brook (1.5 km south)
- UFI 8727 – Unknown floodplain wetland (1.6 km north)
- UFI 16004 – Unknown dampland wetland (1.6 km southwest)
- UFI 8685 – West Bennett Brook (1.85 km south)
- UFI 8450 – Unknown dampland wetland (1.9 km west).

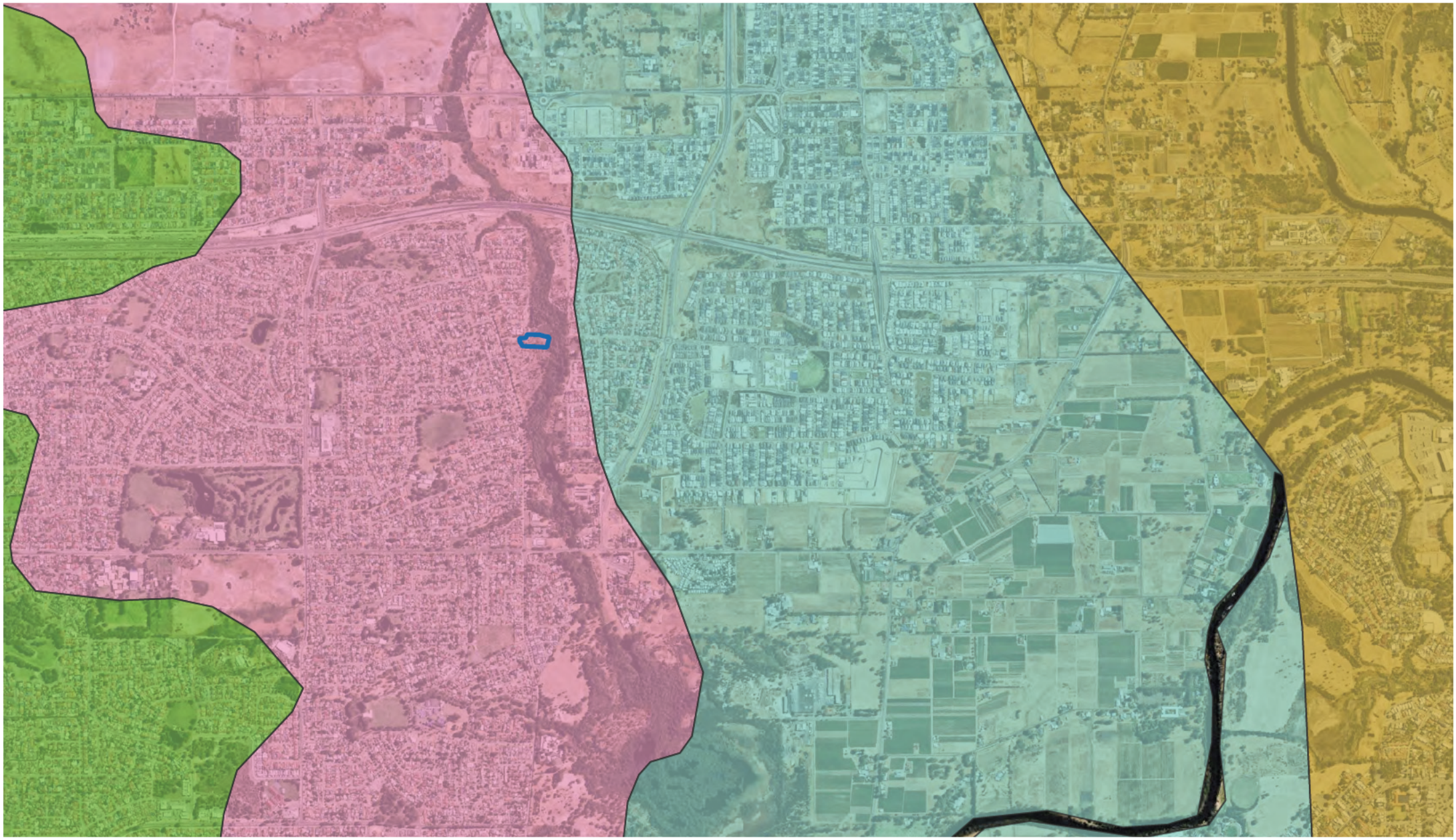


Figure 3 Pre-European Vegetation



Figure 4 Environmentally Sensitive Areas

Lot 200 Lord Street Caversham

0 250 500 m

1:15,000
GDA2020 - MGA Zone 50

Caversham survey area

ESA

Anders Environmental Consulting

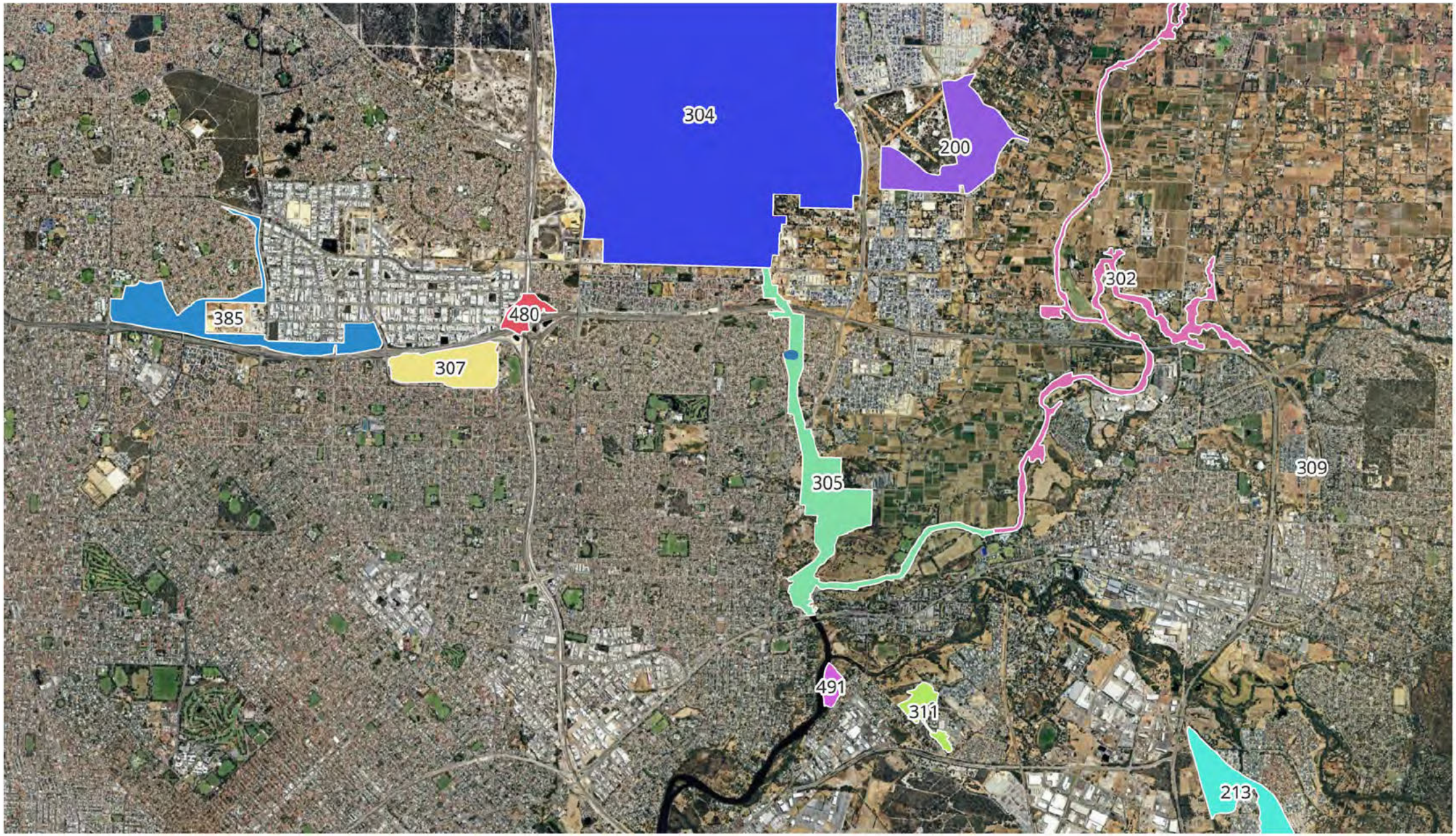


Figure 5 Bush Forever sites

Lot 200 Lord Street Caversham

0 1 2 km

1:70,000
GDA2020 - MGA Zone 50

Caversham survey area

Bush Forever sites:

200
213
302
304
305
307
309
311
385
480
491

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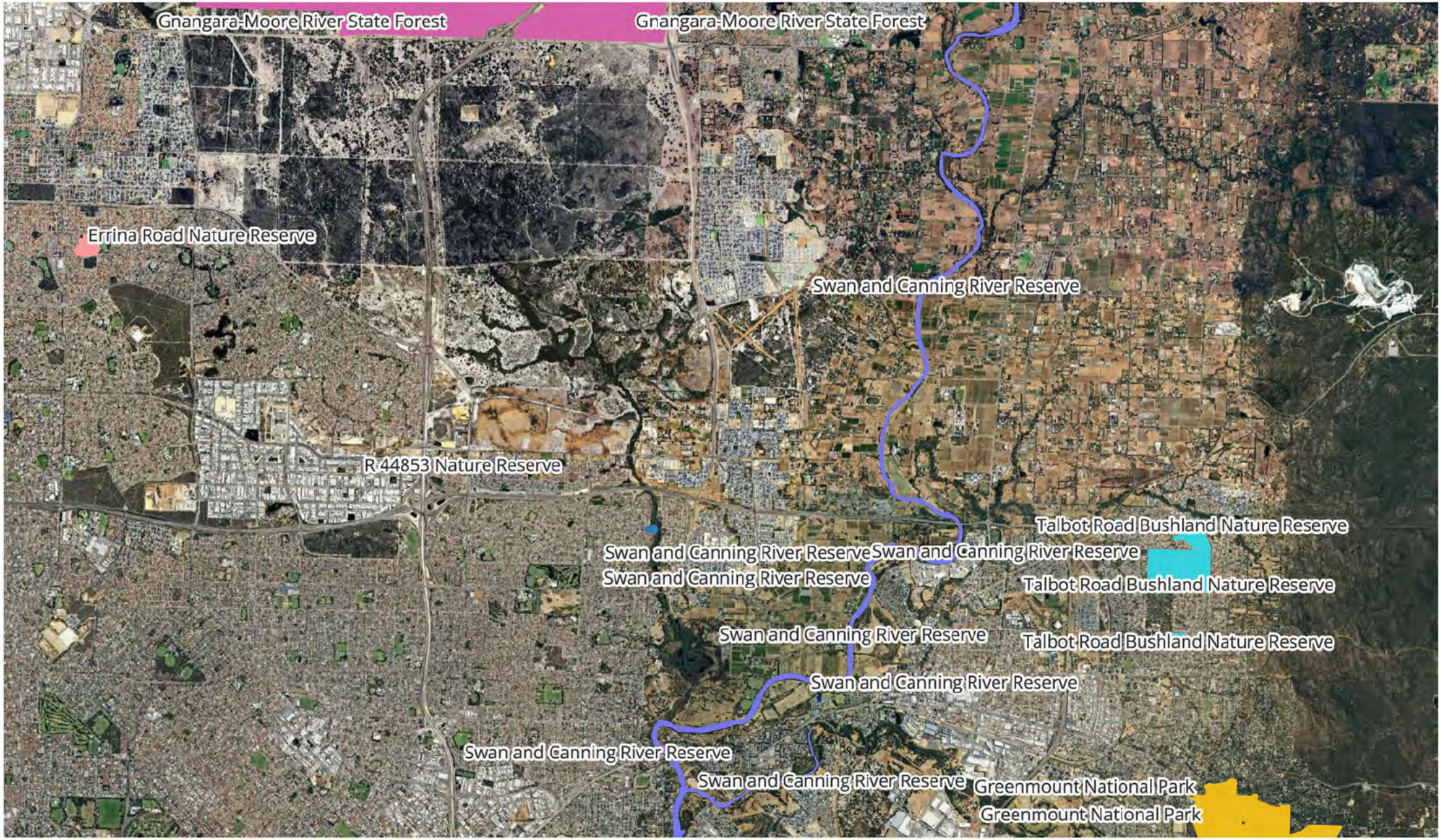


Figure 6 Conservation reserves

Lot 200 Lord Street Caversham

0 1 2 km

1:80,000
GDA2020 - MGA Zone 50

Caversham survey area

Conservation reserves:

- Errina Road Nature Reserve
- Gnangara-Moore River State Forest
- Greenmount National Park
- R 44853 Nature Reserve
- Swan and Canning River Reserve
- Talbot Road Bushland Nature Reserve

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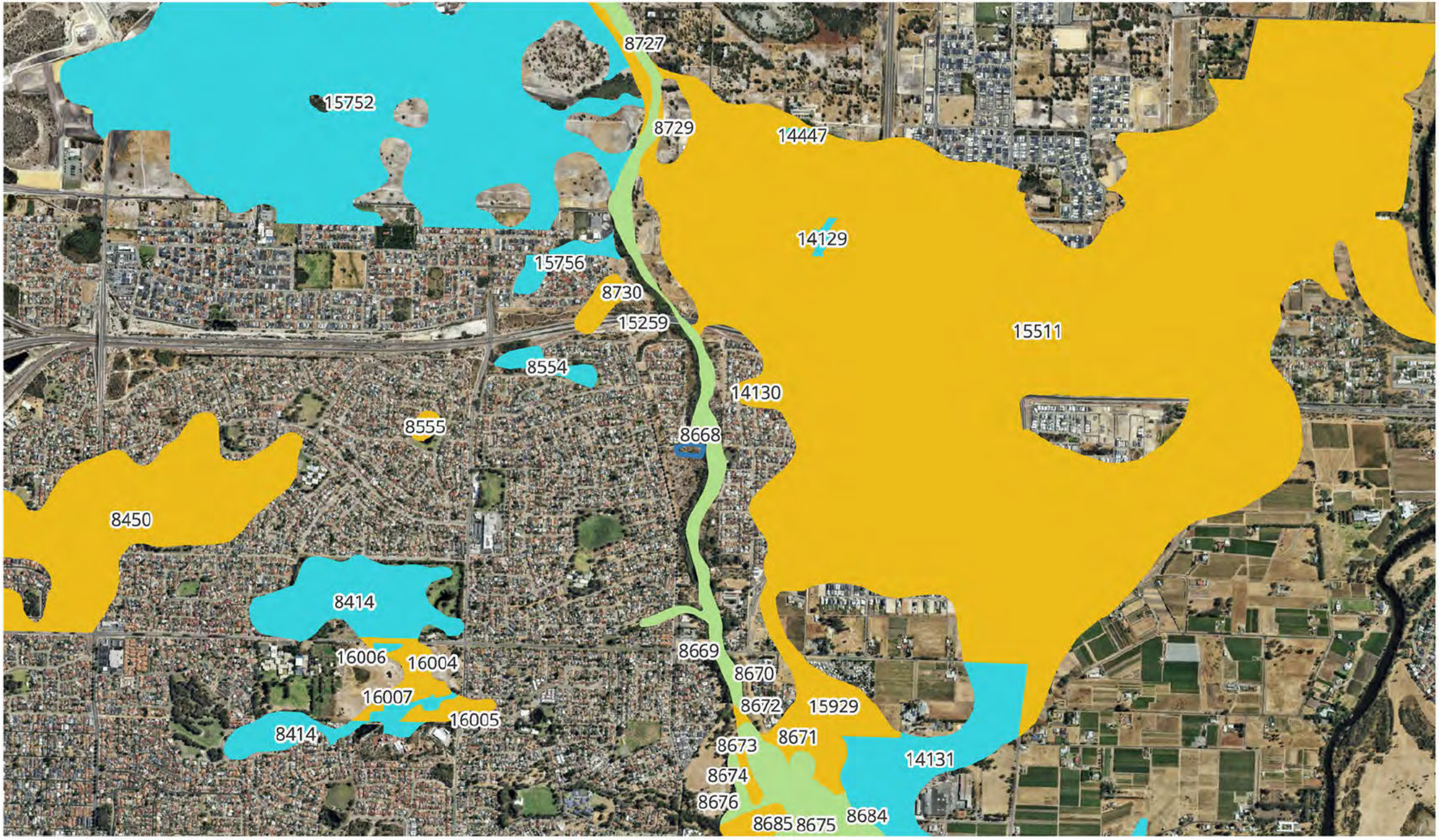


Figure 7 Geomorphic wetlands

Lot 200 Lord Street Caversham

0 500 1,000 m

1:25,000
GDA2020 - MGA Zone 50

Caversham survey area

Geomorphic wetlands categories:

- Conservation
- Resource enhancement
- Multiple use

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4.0 RESULTS

4.1 FLORA RESULTS

4.1.1 FLORA FIELD ASSESSMENT RESULTS

The survey identified 42 flora species, including subspecies and varieties, from 23 families and 38 genera. Of these, 33 were native and 9 were introduced species. Species richness varied minimally across quadrats, ranging from 22 to 26 species per quadrat. The families with the highest species representation were Myrtaceae (5 species) and Fabaceae (4 species). The most species rich genera were Acacia, Allocasuarina, Hakea, and Thysanotus, all with 2 species.

All 42 species were collected for verification and identification at the Western Herbarium. All were successfully identified to the species level. All recorded species occurred within the Swan Coastal Plain bioregion, with no species found outside their known population range. A summary of the recorded flora can be found in Table 4, with the full species list presented in Appendix A.

Table 4 Summary of recorded flora

Overview	
No. Families	23
No. Genera	38
No. Species (incl. subspecies & varieties)	42
No. Native Species (incl. subspecies & varieties)	33
No. Introduced Species	9
Threatened Flora	None
Priority Flora	None
Species of Interest	None
Speciose Families	
Myrtaceae	5
Fabaceae	4
Asteraceae	3
Haemodoraceae	3
Iridaceae	3
Poaceae	3
Proteaceae	3
Speciose Genera	
Acacia	2
Allocasuarina	2
Hakea	2
Thysanotus	2

4.1.2 CONSERVATION SIGNIFICANT FLORA

No flora species recorded within the survey area were classified as Threatened (T or X) under the BC Act or as Threatened under the EPBC Act. Additionally, no Priority flora species were recorded. The survey effort is shown in Figure 8.



Figure 8 Survey effort

Lot 200 Lord Street Caversham

4.1.3 WEEDS

A total of nine introduced (weed) species were recorded within the survey area, representing 21% of the total recorded species. These included:

- *Arctotheca calendula* (Cape Weed, Asteraceae)
- *Bromus diandrus* (Great Brome, Poaceae)
- *Ehrharta calycina* (Perennial Veldt Grass, Poaceae)
- *Gladiolus caryophyllaceus* (Wild Gladiolus, Iridaceae)
- *Pentameris airoides* (False Hairgrass, Poaceae)
- *Petrorhagia dubia* (Velvet Pink, Caryophyllaceae)
- *Romula rosea* (Guilford Grass, Iridaceae)
- *Ursinia anthemoides* (Ursinia, Asteraceae)
- *Zantedeschia aethiopica* (Arum Lily, Araceae)

None of these species are classified as a Weed of National Significance (WoNS). One Declared Pest, *Zantedeschia aethiopica,* listed under the *Biosecurity and Agricultural Management Act 2007* (BAM Act) was recorded within the survey area. Four locations were recorded (Plate 1), which are mapped in Figure 8.



Plate 1 Arum Lily recorded within the survey area

4.2 VEGETATION RESULTS

4.2.1 VEGETATION TYPES

One vegetation type was identified and mapped within the survey area based on statistical analysis through multivariate cluster analysis of the quadrats. The vegetation type occurring within the survey area is summarised in Table 5 and is mapped in Figure 9. Species occurring within the vegetation types is provided in Appendix B, statistical analysis of the quadrats is provided in Appendix C, and quadrat data is provided in Appendix D.

Table 5 Vegetation associations within the survey area

Vegetation type	Broad floristic formation	Vegetation description	Landform	Representative photo	Quadrats	Area (ha)	% within survey area
BmEpEc	*Banksia menziesii* woodland	Low open woodland of *Allocasuarina fraseriana* and *Banksia menziesii* over low sparse shrubland of *Dampiera linearis*, *Eremaea pauciflora*, and *Hibbertia hypericoides* over open grassland of *Bromus diandrus*, *Ehrharta calycina*, and *Pentameris airoides*	Plain		CV01, CV02, CV03	0.688	97
Tracks and road verge		Fire breaks, footpaths paths, tracks and road verge	Plain			0.0238	3

4.2.2 CONSERVATION SIGNIFICANT ECOLOGICAL COMMUNITIES

Given the presence of Banksia woodlands within the survey area, an assessment of the Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community (Banksia TEC) was undertaken using the key diagnostic criteria specified in the Approved Conservation Advice for the Banksia TEC (DotEE, 2016). To be classified as Banksia TEC, patches must meet the key diagnostic features summarised in Table 6. A 0.94 hectare patch of Banksia woodland in "Good" condition is located within the survey area and extends southward beyond the survey boundary (Figure 10).

Table 6 Assessment and key diagnostic characteristics for Banksia patches

Criteria	Details	Criteria met
Location	Banksia patches occur within the Swan Coastal Plain bioregion	Yes
Soils and landform	Patches occur within Bassendean Sands	Yes
Structure and composition	The patch consists of a low woodland with canopy dominated by *Banksia menziesii*. Dominant and emergent trees include *Corymbia calophylla* (Marri) and *Eucalyptus marginata* (Jarrah).	Yes
Condition threshold	Patch is 0.94 ha and in Good condition. Patches in Good condition must be a minimum of 2 ha.	No

The Keighery (2012) dataset was used to assess whether the quadrats corresponded to any floristic community types (FCTs) and their associated Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs). The Bray-Curtis distance measure facilitated comparisons of floristic data from each quadrat with the broader Keighery (2012) dataset, identifying the three most closely aligned Keighery sites and their respective FCTs.

The analysis indicated that the quadrats corresponded to five Keighery FCTs (Table 7). The similarity between the quadrats and their most closely aligned FCTs ranged from 25% to 42%. None of these FCTs are classified as PECs or TECs.

Table 7 Quadrat alignment with FCTs

Site	Keighery sites (2012) with closest affinity to survey areas sites	% Similarity (dissimilarity index)	Inferred FCT	TEC or PEC
CV01	bold12	29% (0.708333)	24	No
	YUR01	28% (0.724138)	23c	No
	WOODV-2	25% (0.753846)	28	No
CV02	Cavs11	33% (0.671233)	21a	No
	WOODV-2	32% (0.681159)	28	No
	bold17	32% (0.681818)	S15	No
CV03	bold17	42% (0.581395)	S15	No
	Cavs02	32% (0.678571)	21a	No
	bold12	31% (0.686275)	24	No

4.2.3 VEGETATION CONDITION

The vegetation condition within the survey area ranged from Completely Degraded to Good, and condition within all three quadrats was classified as Good.

A summary of the vegetation condition within the survey area is presented in Table 8 and mapped in Figure 11.

Table 8 Vegetation condition categories within the survey area

Condition scale	Area (ha)	Percentage (%)
Good	0.459	65
Degraded	0.179	25
Completely Degraded	0.073	10
Total	**0.711**	**100**



Figure 9 Vegetation types

Lot 200 Lord Street Caversham



Figure 10 Banksia patches

Lot 200 Lord Street Caversham

0 25 50 m

1:1,500
GDA2020 - MGA Zone 50

Caversham survey area

Banksia patch:

Banksia patch in Good condition

Anders Environmental Consulting



Figure 11 Condition

Lot 200 Lord Street Caversham

5.0 DISCUSSION

5.1 FLORA

No Threatened flora listed under the BC Act or the EPBC Act, and no Priority flora, were recorded. The survey was conducted in November 2025, which is the optimal period for detecting most species in the Swan Coastal Plain bioregion.

Weed cover is high adjacent to the Bennett Brook Footbridge path and along the Pikes Close road verge, predominantly due to previous clearing. Within remnant vegetation, weed cover is reduced, but regular weed management is recommended to prevent edge effects. Additional clearing will be required for the project, so ongoing weed management is necessary to manage further edge effects and weed spread into remnant vegetation. Four locations of *Zantedeschia aethiopica* (Arum Lily), a declared pest under the *BAM Act*, were identified on the eastern side of the survey area, with two near the proposed infrastructure. Targeted weed control at these locations is required to prevent further spread into remnant vegetation.

5.2 VEGETATION

The vegetation in the survey area is classified as a single vegetation type, BmEpEc (*Banksia menziesii* woodland). To assess the presence of the Banksia TEC within the survey area, both statistical analyses and evaluations of key diagnostic criteria were conducted. The 0.94-hectare patch of Banksia woodland did not satisfy the required condition threshold and minimum patch size criteria. Additionally, comparison of the floristic data with the Keighery (2012) dataset demonstrated that the quadrats did not correspond to the Banksia TEC floristic community types.

One broad vegetation association is present within the survey area. This association has experienced substantial reduction over time, with less than 30% of its pre-European extent remaining at the state (14.92%), regional (14.92%), and local (16.45%) levels. While it has not yet reached the constrained threshold of less than 10% remaining, it is approaching this limit. Some clearing within this vegetation association is required to accommodate the proposed infrastructure. Clearing should be minimised where possible and located close to the existing footpath where there is existing clearing.

The condition of the *Banksia menziesii* woodland was mainly “Good.” However, areas adjacent to the footpath and road verge were classified as “Degraded.” Implementing weed management in disturbed areas and proposed infrastructure will prevent the spread of weeds.

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APPENDIX A SPECIES LIST

Table A1 Species recorded within the survey area.

Family	Species	Form
Apiaceae	*Eryngium pinnatifidum*	Perennial
Araceae	**Zantedeschia aethiopica*	Perennial
Asparagaceae	*Thysanotus asper*	Perennial
	Thysanotus manglesianus	Perennial
Asteraceae	**Arctotheca calendula*	Annual
	Podolepis gracilis	Annual
	**Ursinia anthemoides*	Annual
Caryophyllaceae	**Petrorhagia dubia*	Annual
Casuarinaceae	*Allocasuarina fraseriana*	Perennial
	Allocasuarina humilis	Perennial
Colchicaceae	*Burchardia congesta*	Perennial
Crassulaceae	*Crassula colorata*	Annual
Cyperaceae	*Morelotia octandra*	Perennial
Dilleniaceae	*Hibbertia hypericoides*	Perennial
Fabaceae	*Acacia pulchella*	Perennial
	Acacia saligna	Perennial
	Hardenbergia comptoniana	Perennial
	Jacksonia furcellata	Perennial
Goodeniaceae	*Dampiera linearis*	Perennial
Haemodoraceae	*Anigozanthos manglesii*	Perennial
	Conostylis aculeata	Perennial
	Haemodorum spicatum	Perennial
Hemerocallidaceae	*Dianella revoluta*	Perennial
Iridaceae	**Gladiolus caryophyllaceus*	Perennial
	Patersonia occidentalis	Perennial
	**Romulea rosea*	Perennial
Loranthaceae	*Nuytsia floribunda*	Perennial
Macarthuriaceae	*Macarthuria australis*	Perennial
Myrtaceae	*Calothamnus quadrifidus*	Perennial
	Corymbia calophylla	Perennial

Family	Species	Form
Myrtaceae	*Eremaea pauciflora*	Perennial
	Eucalyptus marginata	Perennial
	Melaleuca seriata	Perennial
Orchidaceae	*Microtis media*	Perennial
Poaceae	**Bromus diandrus*	Annual
	**Ehrharta calycina*	Perennial
	**Pentameris airoides*	Annual
Proteaceae	*Banksia menziesii*	Perennial
	Hakea prostrata	Perennial
	Hakea varia	Perennial
Restionaceae	*Alexgeorgea nitens*	Perennial
Zamiaceae	*Macrozamia riedlei*	Perennial

* Denotes a weed species

APPENDIX B SPECIES WITHIN VEGETATION TYPES

Table B1 Species occurring within vegetation types

Species	VT1			Opportunistic record
	CV01	CV02	CV03	
Acacia pulchella		X		
Acacia saligna		X		
Alexgeorgea nitens	X	X		
Allocasuarina fraseriana		X		
Allocasuarina humilis	X			
Anigozanthos manglesii				X
**Arctotheca calendula*		X	X	
Banksia menziesii	X	X	X	
**Bromus diandrus*	X			
Burchardia congesta			X	
Calothamnus quadrifidus		X	X	
Conostylis aculeata	X	X	X	
Corymbia calophylla		X	X	
Crassula colorata		X		
Dampiera linearis		X		
**Ehrharta calycina*	X	X	X	
Eremaea pauciflora		X		
Eryngium pinnatifidum		X		
Eucalyptus marginata	X			
**Gladiolus caryophyllaceus*	X	X	X	
Haemodorum spicatum	X		X	
Hakea prostrata		X	X	
Hardenbergia comptoniana			X	
Hibbertia hypericoides	X	X	X	
Jacksonia furcellata	X	X	X	
Macarthuria australis	X			
Macrozamia riedlei			X	
Melaleuca seriata	X		X	
Microtis media			X	
Morelotia octandra	X			
Nuytsia floribunda	X			
Patersonia occidentalis		X	X	
**Pentameris airoides*	X	X	X	
**Petrorhagia dubia*		X	X	

Species	VT1			Opportunistic record
	CV01	CV02	CV03	
Podolepis gracilis	X			
**Romulea rosea*		X		
Thysanotus asper		X		
Thysanotus manglesianus	X		X	
**Ursinia anthemoides*	X	X	X	
**Zantedeschia aethiopica*			X	

* Denotes a weed species

APPENDIX C STATISTICAL ANALYSIS

Statistical analysis results including the distance measure (Table D1) and dendrogram (Figure C1) is provided below.

Table D1 Distance measure and similarity percentage between quadrats and determined vegetation types

Quadrat	Closest sites	Distance measure	% Similarity	Determined vegetation type
CV01	CV03	0.4634	54%	BmEpEc - *Banksia menziesii* woodland
	CV02	0.5814	42%	
CV02	CV03	0.3913	61%	BmEpEc - *Banksia menziesii* woodland
	CV01	0.5814	42%	
CV03	CV02	0.3913	61%	BmEpEc - *Banksia menziesii* woodland
	CV01	0.4634	54%	

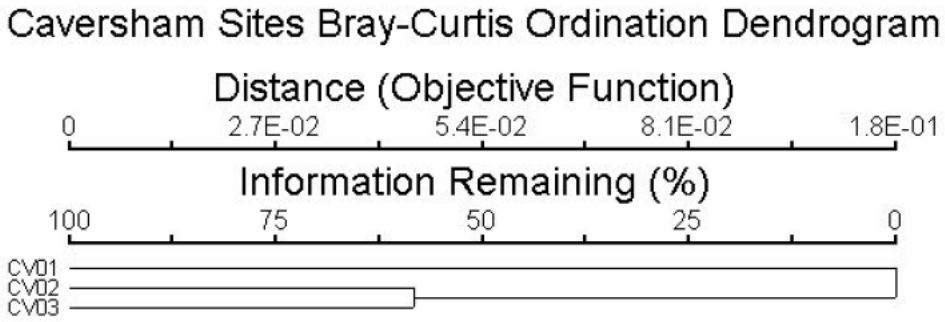


Figure C-1 Dendrogram

APPENDIX D QUADRAT DATA

Site: CV01

Date	28/11/2025	**Waypoint**	CV01
NW corner Easting	401245	**NW corner Northing**	6473883
Landform	Plain	**Slope and aspect**	NA
Rock type	None	**Rock cover**	NA
Soil type	Sand	**Soil colour**	Grey
Bare ground cover	10-20%	**Leaf litter cover**	<5%
Vegetation condition	Good		
Disturbance	Weeds	**Fire history**	5-10 years
Vegetation description	AhPaAn - Tall sparse shrubland of *Allocasuarina humilis* and *Jacksonia furcellata* over low closed grassland of *Bromus diandrus*, *Ehrharta calycina*, and *Pentameris airoides* over low open sedgeland of *Alexgeorgia nitens*		

Photo



Species	Height	Cover (%)
Alexgeorgea nitens	0.1	10
Allocasuarina humilis	2	5
Banksia menziesii	5	Associated
**Bromus diandrus*	0.2	5
Conostylis aculeata	0.4	<1
**Ehrharta calycina*	0.7	10
Eucalyptus marginata	7	Associated
**Gladiolus caryophyllaceus*	0.3	<1
Haemodorum spicatum	1	<1
Hibbertia hypericoides	0.3	<1
Jacksonia furcellata	3	3
Macarthuria australis	0.3	<1
Melaleuca seriata	1.2	1
Morelotia octandra	0.4	Associated
Nuytsia floribunda	3.5	Associated
**Pentameris airoides*	0.1	60
Podolepis gracilis	0.1	<1
Thysanotus manglesianus	0.1	<1
**Ursinia anthemoides*	0.2	1

* Denotes a weed species

Site: CV02

Date	28/11/2025	**Waypoint**	CV01
NW corner Easting	401294	**NW corner Northing**	6473885
Landform	Plain	**Slope and aspect**	NA
Rock type	None	**Rock cover**	NA
Soil type	Sand	**Soil colour**	Grey/white
Bare ground cover	10-20%	**Leaf litter cover**	5-10%
Vegetation condition	Good		
Disturbance	Weeds	**Fire history**	5-10 years
Vegetation description	BmDlEc - Low woodland of *Allocasuarina fraseriana* and *Banksia menziesii* over low sparse shrubland of *Dampiera linearis*, *Eremaea pauciflora* and *Hibbertia hypericoides* over open grassland of *Ehrharta calycina* and *Pentameris airoides*		

Photo



Species	Height	Cover (%)
Acacia pulchella	0.5	<1
Acacia saligna	1.8	Associated
Alexgeorgea nitens	0.1	5
Allocasuarina fraseriana	5	3
**Arctotheca calendula*	0.2	<1
Banksia menziesii	6	7
Calothamnus quadrifidus	2	Associated
Conostylis aculeata	0.3	<1
Corymbia calophylla	7	Associated
Crassula colorata	0.05	<1
Dampiera linearis	0.2	5
**Ehrharta calycina*	1	10
Eremaea pauciflora	0.7	1
Eryngium pinnatifidum	0.2	<1
**Gladiolus caryophyllaceus*	0.3	<1
Hakea prostrata	1	Associated
Hibbertia hypericoides	0.5	2
Jacksonia furcellata	2	Associated
Patersonia occidentalis	0.3	Associated
**Pentameris airoides*	0.1	1
**Petrorhagia dubia*	0.2	<1
**Romulea rosea*	0.2	<1
Thysanotus asper	0.2	<1
**Ursinia anthemoides*	0.1	3

* Denotes a weed species

Site: CV03

Date	28/11/2025	**Waypoint**	CV01
NW corner Easting	401330	**NW corner Northing**	6473875
Landform	Plain	**Slope and aspect**	NA
Rock type	None	**Rock cover**	NA
Soil type	Sand	**Soil colour**	Grey/white
Bare ground cover	5-10%	**Leaf litter cover**	10-20%
Vegetation condition	Good		
Disturbance	Weeds, track	**Fire history**	5-10 years
Vegetation description	BmJfEc - Low open woodland of *Banksia menziesii* over tall open shrubland of *Hakea prostrata* and *Jacksonia furcellata* over sparse grassland of *Ehrharta calycina* and *Pentameris airoides*		

Photo



Species	Stratum	Cover (%)
**Arctotheca calendula*	0.3	<1
Banksia menziesii	6	5
Burchardia congesta	0.2	<1
Calothamnus quadrifidus	1.8	2
Conostylis aculeata	0.3	<1
Corymbia calophylla	8	Ass
**Ehrharta calycina*	1	7
**Gladiolus caryophyllaceus*	0.3	<1
Haemodorum spicatum	1	<1
Hakea prostrata	4	5
Hardenbergia comptoniana	0.3	Ass
Hibbertia hypericoides	0.3	<1
Jacksonia furcellata	5	7
Macrozamia riedlei	1.2	<1
Melaleuca seriata	0.8	1
Microtis media	0.3	<1
Patersonia occidentalis	0.3	<1
**Pentameris airoides*	0.1	1
**Petrorhagia dubia*	0.2	<1
Thysanotus manglesianus	0.2	<1
**Ursinia anthemoides*	0.1	3
**Zantedeschia aethiopica*	0.3	<1

*Denotes a weed species

Appendix D: WA Conservation Category Definitions

GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

Biodiversity and **Conservation Science**

CONSERVATION CATEGORY DEFINITIONS

For Western Australian Fauna and Flora

Threatened, Extinct and Specially Protected fauna or flora[1] are species[2] which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such.

Categories of Threatened, Extinct and Specially Protected fauna and flora are:

T Threatened species

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is the species of fauna that are listed as critically endangered, endangered or vulnerable threatened species.

Threatened flora is the species of flora that are listed as critically endangered, endangered or vulnerable threatened species.

The assessment of the conservation status of threatened species is in accordance with the BC Act listing criteria and the requirements of Ministerial Guideline Number 1 and Ministerial Guideline Number 2 that adopts the use of the International Union for Conservation of Nature (IUCN) Red List of Threatened Species Categories and Criteria[3], and is based on the national distribution of the species.

CR Critically endangered species

Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines.

Examples of use:

- The western ringtail possum (*Pseudocheirus occidentalis*) is listed as a critically endangered threatened species under the *Biodiversity Conservation Act 2016.*
- Western ringtail possum is listed as critically endangered under the *Biodiversity Conservation Act 2016.*
- Listing reference in a table: column heading: BC Act, row text: CR.

EN Endangered species

Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines.

Examples of use:

- *Caladenia hopperiana* is listed as an endangered threatened species under the *Biodiversity Conservation Act 2016.*
- *Caladenia hopperiana* is listed as endangered under the *Biodiversity Conservation Act 2016.*
- Listing reference in a table: column heading: BC Act, row text: EN.

VU Vulnerable species

Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines.

Examples of use:

- The forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) is listed as a vulnerable threatened species under the *Biodiversity Conservation Act 2016*.
- Forest red-tailed black cockatoo is listed as vulnerable under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: VU.

Extinct species

Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.

EX Extinct species

Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Examples of use:

- *Acacia kingiana* is listed as an extinct species under the *Biodiversity Conservation Act 2016*.
- *Acacia kingiana* is listed as extinct under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: EX.

EW Extinct in the wild species

Species that "*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no fauna or flora species listed as extinct in the wild.

SP Specially protected species

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered, or vulnerable) or extinct species under the BC Act cannot also be listed as specially protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Migratory species include birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA)[4], China (CAMBA)[5] or The Republic of Korea (ROKAMBA)[6], and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention)[7], an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Examples of use:

- The wedge-tailed shearwater (*Ardenna pacifica*) is listed as a specially protected migratory species under the *Biodiversity Conservation Act 2016*.
- Wedge-tailed shearwater is listed as migratory under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: MI.

CD **Species of special conservation interest (conservation dependent)**

Species of special conservation need that are dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Currently only fauna are listed as species of special conservation interest.

Examples of use:

- The wambenger, south-western brush-tailed phascogale (*Phascogale tapoatafa wambenger*) is listed as a specially protected species of special conservation interest under the *Biodiversity Conservation Act 2016*.
- Wambenger, south-western brush-tailed phascogale, is listed as conservation dependent under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: CD.

OS **Species otherwise in need of special protection (other specially protected)**

Species otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Currently only fauna are listed as species otherwise in need of special protection.

Examples of use:

- The dugong (*Dugong dugon*) is listed as a specially protected species otherwise in need of special protection under the *Biodiversity Conservation Act 2016*.
- Dugon is listed as other specially protected fauna under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: OS.

P **Priority species**

Priority is not a listing category under the BC Act. The Priority Flora and Fauna lists are maintained by the department and are published on the department's website.

All fauna and flora are protected in WA following the provisions in Part 10 of the BC Act. The protection applies even when a species is not listed as threatened or specially protected, and regardless of land tenure (State managed land (Crown land), private land, or Commonwealth land).

Species that may possibly be threatened species that do not meet the criteria for listing under the BC Act because of insufficient survey or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of prioritisation for survey and evaluation of conservation status so that consideration can be given to potential listing as threatened.

Species that are adequately known, meet criteria for near threatened, or are rare but not threatened, or that have been recently removed from the threatened species list or conservation dependent or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of priority status is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

1 **Priority 1: Poorly-known species - known from few locations, none on conservation lands**

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, for example, agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation.

Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements for threatened listing and appear to be under immediate threat from known threatening processes. These species are in urgent need of further survey.

Examples of use:

- *Borya stenophylla* is listed as a Priority 1 species by the Department of Biodiversity, Conservation and Attractions.
- *Borya stenophylla* is listed as Priority 1 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P1.

2 Priority 2: Poorly-known species - known from few locations, some on conservation lands

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, for example, national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation.

Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements for threatened listing and appear to be under threat from known threatening processes. These species are in urgent need of further survey.

Examples of use:

- *Caladenia nivalis* is listed as a Priority 2 species by the Department of Biodiversity, Conservation and Attractions.
- *Caladenia nivalis* is listed as Priority 2 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P2.

3 Priority 3: Poorly-known species - known from several locations

Species that are known from several locations and the species does not appear to be under imminent threat or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat.

Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. These species need further survey.

Examples of use:

- *Acacia nitidula* is listed as a Priority 3 species by the Department of Biodiversity, Conservation and Attractions.
- *Acacia nitidula* is listed as Priority 3 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P3.

4 Priority 4: Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as a conservation dependent specially protected species.

(c) Species that have been removed from the list of threatened species or lists of conservation dependent or other specially protected species, during the past five years for reasons other than taxonomy.

(d) Other species in need of monitoring.

Examples of use:

- *Banksia aculeata* is listed as a Priority 4 species by the Department of Biodiversity, Conservation and Attractions.
- *Banksia aculeata* is listed as Priority 4 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P4.

[1] The definition of flora includes algae, fungi, and lichens.

[2] Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

[3] Western Australia has assigned species to threat categories using the *IUCN Red List of Threatened Species Categories and Criteria* since 1996 (referencing all criteria).

[4] JAMBA - first included in the WA migratory species list in 1980.

[5] CAMBA - first included in the WA migratory species list in 2010.

[6] ROKAMBA - first included in the WA migratory species list in 2010.

[7] Bonn Convention (Birds) - first included in the WA migratory species list in 2015.