

# LOT 36 AND PT LOT 28 WOODVALE DRIVE, WOODVALE

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## ENVIRONMENTAL ASSESSMENT REPORT

Prepared for: Riverswan Holdings Pty Ltd

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The logo for PGV Environmental is located at the bottom of the page. It features the letters 'PGV' in a large, bold, white sans-serif font. Below 'PGV', the word 'ENVIRONMENTAL' is written in a smaller, white, all-caps sans-serif font. The background of the logo area is a vibrant orange with a subtle, diagonal line pattern.

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# 1 INTRODUCTION

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## 1.1 Background

Lot 36 and Pt Lot 28 Woodvale Drive, Woodvale (the site) are located in the City of Joondalup, approximately 18.4km north-north-east of the Perth Central Business District (Figure 1). The site is approximately 4.45ha in size (Figure 2) and is bound by Woodvale Drive to the west, developed land to the south, the Woodvale Baptist Church to the north and Yellagonga Regional Park to the east.

The site is proposed to be developed for residential purposes in accordance with its zoning in the Metropolitan Region Scheme.

PGV Environmental was commissioned by Riverswan Holdings Pty Ltd to prepare an Environmental Assessment Report to describe the environmental values of the site and to assess the potential environmental impacts of the proposed development.

## 1.2 Scope of Works

The Environmental Assessment includes a review of the environmental studies undertaken on the site and an assessment of the key environmental attributes of the site in the context of the proposed development. The Environmental Assessment includes the following:

- Database searches including:
  - Department of Water and Environmental Regulation Contaminated Sites and Water Information databases; and
  - Department of Planning, Lands and Heritage and National Heritage databases.
- Physical characteristics including a description of:
  - Landform;
  - Drainage and water bodies; and
  - Geological, hydrogeological and hydrological characteristics;
- Recent and present land use including:
  - Surrounding land uses;
  - Assessment of current and historical activities on the subject site and surrounding areas which have the potential to result in contamination issues at the site;
- Flora and vegetation description based on the results of a Reconnaissance Flora and Vegetation Survey;
- Fauna habitat description and a Basic Fauna Survey; and
- Implications, if any, under Western Australian policies and legislation such as the *Environmental Protection Act, 1986* and the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999*.

## 2 LEGISLATION, POLICY AND GUIDELINES

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The environmental assessment of this site has taken into consideration the following legislation, policy and guidelines.

### 2.1 Commonwealth Legislation

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important heritage places, ecological communities, flora and fauna that are defined in the Act as Matters of National Environmental Significance (MNES).

The Environmental Assessment identifies any MNES that may be impacted by development on the site.

### 2.2 State Legislation

#### 2.2.1 *Environmental Protection Act 1986*

The *Environmental Protection Act 1986* (EP Act) is administered by the Department of Water and Environment Regulation (DWER). The Act provides for conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with it. The Act establishes head powers to provide mechanisms for the development of Environmental Protection Policies (EPP), the referral and assessment of proposals, the control of pollution and enforcement.

The Act also provides for an Environmental Protection Authority (EPA) that is a statutory authority and is the primary provider of independent environmental advice to Government (Environmental Protection Authority 2005). The EPA is assisted by the Office of the EPA (OEPA).

Under the EP Act, clearing of native vegetation requires a permit from DWER unless there is an exemption under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. Proposals that have approval by means of a subdivision are exempt from requiring a clearing permit to clear native vegetation if implementing the subdivision in accordance with the subdivision conditions requires the clearing of native vegetation.

#### 2.2.2 *Biodiversity Conservation Act 2016*

The *Biodiversity Conservation Act 2016* (BC Act) protects all native species and threatened ecological communities. The BC Act recognises that activities involving the taking of flora or fauna (other than threatened species) and the disturbing of fauna (including threatened species) that are approved under the EP Act do not require further approval under the BC Act, if they are undertaken in accordance with any biodiversity conservation conditions that are applied to an authorisation. These activities include clearing of native vegetation done in accordance with an implementation decision under Part IV of the EP Act.

#### 2.2.3 *Aboriginal Heritage Act 1972*

The *Aboriginal Heritage Act 1972* (AHA) protects all Aboriginal sites whether or not they are known and registered under the AHA.

If any artefacts or other heritage values are discovered during clearing or construction works they will be required to be managed according to the AHA.

## **2.3 State Policy**

### **2.3.1 State Planning Policy No. 2.8 Bushland Policy for the Perth Metropolitan Region**

SPP 2.8 in conjunction with Bush Forever (Government of Western Australia, 2000) seeks to ensure the protection of at least 10 per cent of the original extent of each vegetation complex within the Perth Metropolitan Region. SPP 2.8 was developed to ensure that bushland protection and management issues are appropriately addressed and integrated as a part of future land use. Bush Forever identified approximately 51,200 hectares of regionally significant vegetation for retention. The management of these areas include reservation and acquisition by the State government, negotiated planning solutions with owners who are seeking urban and/or industrial development and advice, assistance and incentive programs to support private conservation.

The eastern part of the site is within Bush Forever Site 299 'Yellagonga Regional Park, Wanneroo/Woodvale/Kingsley'.

### **2.3.2 State Planning Policy No. 2.9 Water Resources**

SPP 2.9 aims to ensure the protection and appropriate management of water resources in line with state guidelines as included within the planning framework. The broad aims of this policy are to:

- Protect, conserve and enhance water resources;
- Assist in ensuring the availability of suitable water resources to maintain essential requirements for human and other biological life and to maintain or improve the quality and quantity of water resources; and
- Promote and assist in the management and sustainable use of water resources.

As a part of implementing this policy, the Better Urban Water Management framework was developed (WAPC, 2008). The framework provides detail on how water resources should be considered at each stage of planning by identifying the various actions and investigations required with regard to regional and local planning strategies, town planning schemes, structure plans, subdivisions, strata subdivision and development applications (WAPC, 2008).

### **2.3.3 Environmental Guidance for Planning and Development**

The purpose of Environmental Protection Authority (EPA) Guidance Statement No. 33 *Environmental Guidance for Planning and Development* (EPA, 2008) is to outline the significance of environmental factors and to provide the key definitions associated with the environmental factors. Ensuring that environmental factors are considered in line with the EPA's principals and objectives and within the planning framework is what this EAR is primarily targeted at. In particular, EPA Guidance Statement No. 33 aims to:

- Provide an overview to environmental protection processes and information;
- Describe the referral and environmental impact assessment process under Part IV of the EP Act; and
- Provide the EPA's position and advice on a range of environmental factors, outlining how to protect, conserve and enhance the environmental values.



### **3 EXISTING ENVIRONMENT**

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#### **3.1 Zoning**

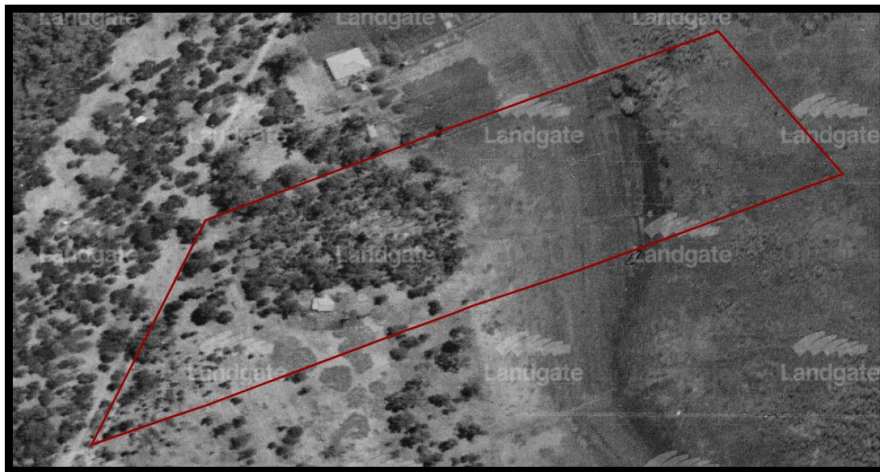
Most of the site is zoned 'Urban' under the Metropolitan Region Scheme (MRS) with the eastern end reserved as Parks & Recreation (National Map, 2023). The western part of Lot 36 is zoned Rural under the City of Joondalup Local Planning Scheme No. 3 and the eastern part is Parks & Recreation. Pt Lot 28 is zoned Private Community Purposes in LPS No. 3.

#### **3.2 Land Use**

##### **3.2.1 Historic Land Use**

Historical aerial photography shows that the site was partly cleared in 1953 (the oldest historical aerial photography available) (Plate 1) with a grove of trees remaining at the northwestern end. A house has been established on the site. A wetland is evident at the eastern end of the site.

**Plate 1: Aerial Photograph from 1953 (Landgate, 2023)**



The grove of trees remains in the photograph from 1965 (Plate 2). Otherwise the site and surrounding areas are cleared apart from the wetland.

**Plate 2: Aerial Photograph from 1965 (Landgate, 2023)**



Some thinning of the trees was undertaken between 1985 and 1989 (Plate 3).

**Plate 3: Aerial Photograph from 1989 (Landgate, 2023)**



A horse track was constructed between 2006 and 2008 (Plate 4). The eastern end of the track is within the wetland.

**Plate 4: Aerial Photograph from 2008 (Landgate, 2023)**



### 3.2.2 Current Land Use

The site contains two houses, one of which is occupied and some sheds.

The site is not listed as a contaminated site (DWER, 2023a).

### 3.2.3 Surrounding Land Use

The site has existing urban development to the south, Woodvale Drive and undeveloped grassland to the west, the Woodvale Baptist Church to the north and Yellagonga Regional Park, containing Wallubuenup Swamp to the east.

## 3.3 Topography

The site slopes very gently down from a high of 20m Australian Height Datum (AHD) at the western end to a low of around 18m AHD at the eastern end (Figure 2).

## 3.4 Geology and Soils

### 3.4.1 Geology

The site is mapped as part of the Spearwood System which has the highest relief of the dune systems on the Swan Coastal Plain (Bolland, 1998). The Spearwood system consists of slightly calcareous Aeolian sand remnant from leaching of the underlying Pleistocene Tamala limestone (Davidson, 1995).

### 3.4.2 Soils

The soil units located on the site is described as

- Spearwood Sand Phase (211Sp\_Sp) which are undulating dunes with rocky crests on aeolian sand over limestone in the Swan Coastal Plain between Wanneroo and Moore River. These soils are brown deep sands and yellow deep sands (DPIRD, 2023). These soils are mapped on the western part of the site; and
- Spearwood Wet, Swamp Phase (211SpW\_SWAMP) which are soils that occur with swamps (DPIRD, 2023). This soil phase is associated with the wetland in the eastern part of the site.

### 3.4.3 Land Capability

The Land Degradation Risk Categories of the Spearwood Sand Phase (DPIRD, 2023) are as follows:

- Water Erosion 3-10% of map unit has a high to extreme water erosion risk;
- Wind Erosion >70% of map unit has a high to extreme wind erosion risk;
- Waterlogging <3% of map unit has a moderate to very high waterlogging risk;
- Flooding <3% of the map unit has a moderate to high flood risk; and
- Salinity risk <3% of map unit has a moderate to high salinity risk or is presently saline.

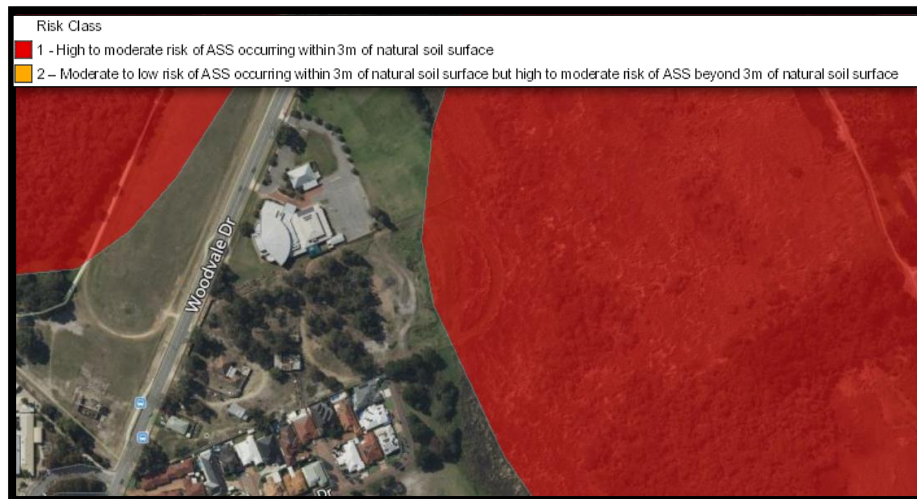
The Land Degradation Risk Categories of the Spearwood Wet, Swamp Phase (DPIRD, 2023) are as follows:

- Water Erosion <3% of map unit has a high to extreme water erosion risk;
- Wind Erosion <3% of map unit has a high to extreme wind erosion risk;
- Waterlogging >70% of map unit has a moderate to very high waterlogging risk;
- Flooding <3% of the map unit has a moderate to high flood risk; and
- Salinity risk <3% of map unit has a moderate to high salinity risk or is presently saline.

### 3.4.4 Acid Sulphate Soils

The eastern part of the site, associated with Wallubuenup Swamp, is mapped as having a High to Moderate risk of Acid Sulphate Soils (ASS) (Plate 5). The remainder of the lot is mapped as a Low risk within 3m of the surface. Wetland soils are often associated with ASS.

**Plate 5: Acid Sulphate Soil Risk Mapping (National Map, 2022)**



### 3.5 Hydrology

Maximum groundwater is at approximately 18m AHD which is around 1m below the surface in Wallubuenup Swamp and up to 2m below ground at the western end. Groundwater generally flows to the east (DWER, 2022).

The eastern end of the site is mapped as part of Wallubuenup Swamp which is a Conservation Category wetland with the Unique Feature Identifier (UFI) 15458. The wetland is classed as a Sumpland which is a seasonally inundated basin. The location of the wetland on the site is shown in Figure 3.

The alignment of the wetland boundary was assessed during a site inspection by PGV Environmental on 18 November 2022. The photograph shown in Plate 6 was taken from the boundary of the mapped wetland on the southern boundary of the lot and looking along the line of the mapped wetland towards the northern boundary. The boundary itself is mostly Kikuyu Grass. The wetland is in the right hand side of the photo and is mostly dense Typha Sedgeland on wet soil. The area to the left of the Kikuyu boundary strip is a chaotic mix of vegetation types with some Kikuyu on higher ground and some stands of Typha and Juncus in small depressions. Plate 9 shows the chaotic nature of the area just outside the wetland boundary.

The mapped boundary of the wetland aligns neatly with wetland vegetation on the lots to the north and south. PGV Environmental considers the mapped wetland boundary to be as accurate as necessary. While the area outside the wetland boundary has some aspects of being a wetland with the Typha and Juncus stands it has just as many dryland vegetation on raised grounds. This area should be treated as wetland buffer rather than an extension of the mapped wetland.

**Plate 6: Wetland Boundary**

### 3.6 Flora

A Flora and Vegetation survey of the site was undertaken by Dr Paul van der Moezel of PGV Environmental on 18 November 2022. The survey found that the western part of the site contained native trees in a parkland setting with no native understorey present. The wetland vegetation was not surveyed in detail as there are no development plans for the wetland.

Due to the Completely Degraded condition of the understorey, a Detailed Flora and Vegetation survey does not need to be undertaken in spring.

Two Declared Pest plants were recorded on the site:

- Arum Lily (*Zantedeschia aethiopica*); and
- One-Leafed Cape Tulip (*Moraea flaccida*).

### 3.7 Vegetation

#### 3.7.1 Vegetation Complexes

Vegetation complexes are a very broad mapping unit based on landform and soils type (Heddlé *et al.*, 1980). The vegetation at the western end of the site is mapped as part of the Karrakatta – Central and South vegetation complex while the vegetation in the eastern two-thirds is mapped as the Herdsman Complex. Based on the site survey by PGV Environmental the boundary between the two complexes on the site is probably around 50m further east.

The Karrakatta Central and South vegetation complex is described as:

Predominantly open forest of *Eucalyptus gomphocephala* (Tuart) - *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri) and woodland of *Eucalyptus marginata* (Jarrah) - *Banksia* species. *Agonis flexuosa* (Peppermint) is co-dominant south of the Capel River (Hedde *et al.*, 1980).

The Herdsman complex are described as:

Sedgelands and fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca* species. (Hedde *et al.*, 1980).

The Completely Degraded nature of the western part of the site means that the remaining trees are not example of the Karrakatta – Central and South vegetation complex. The wetland vegetation is considered to have conservation significance in terms of protecting good quality vegetation within the Herdsman vegetation complex.

### 3.7.2 Vegetation Types

Vegetation types are a finer level of vegetation description and mapping used for small scale sites, such as the survey area. Vegetation types are described based on the structure of the vegetation (eg. woodland, heath) and the dominant species in each structure.

The vegetation in the western dryland part of the site was mostly Marri trees (*Corymbia calophylla*) with some Tuart (*Eucalyptus gomphocephala*) and a few Jarrah (*Eucalyptus marginata*) trees (Figure 4). Plate 7 shows the completely cleared understorey under a stand of Marri trees. Common weed species included Annual Veldtgrass (*Ehrharta longiflora*), Lupins (*Lupinus cosentinii*), Pigface (*Carpobrotus edulis*), Castor Oil (*Ricinus communis*) and Fumitory (*Fumaria capreolata*).

**Plate 7: Marri Trees in the Western Half of the Site**



Two vegetation types occur in the mapped wetland area (Figure 4). At the very eastern end the vegetation is mostly a *Melaleuca raphiophylla* Tall Open Scrub over reeds. At the western end of the

wetland the vegetation is dense Bulrush (*Typha orientalis* Sedgeland) as shown in Plate 8. Plate 8 also shows the portion of the old horse track that consists mostly of Kikuyu Grass (*Cenchrus clandestinus*) and other rushes and sedges, but not dense Typha.

**Plate 8: *Typha orientalis* at the western end of the wetland**



The interface between the dryland and wetland areas is a transition zone between the wetland and dryland areas and contains a chaotic mix of vegetation types caused by changes in the natural landform over time (Plate 9). Low-lying parts of the interface contain some small Typha Sedgeland as well as areas of *Juncus acutus* Sedgeland. Higher hummocks, presumably not natural, contain Kikuyu, Couch Grass (*Cynodon dactylon*), Cape Tulip and Lupins.

**Plate 9: Wetland Interface**





### 3.7.3 Floristic Community Types

The dryland vegetation is too degraded to assign to a Floristic Community Type (FCT).

The wetland vegetation type was not included in the Gibson *et al.* (1994) analysis of FCTs or any later additions.

### 3.7.4 Vegetation Condition

The condition of the vegetation was assessed according to the system devised by Keighery and described in Bush Forever (Government of Western Australia, 2000) (Table 2).

**Table 2: Vegetation Condition Rating Scale.**

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good	Vegetation structure altered, obvious signs of disturbance. For example, 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 disturbance. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, 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. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, 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 are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Source: Government of Western Australia, 2000.

The condition of all the upland vegetation on the site is rated as Completely Degraded due to the absence of any native species in the understorey (Figure 5). The wetland interface is rated as Degraded-Good. The wetland vegetation is rated as Very Good. *Typha orientalis* is considered a native species, hence the high rating.

## 3.8 Flora and Vegetation Conservation Significance

### 3.8.1 Flora

Due to the Completely Degraded condition of the understorey there would be no Threatened or Priority plant species on the site.

### 3.8.2 Vegetation

The upland vegetation is too degraded to be any of the Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) that are defined by the FCT level of vegetation description.

### 3.8.3 Tuart Woodland TEC

The site contains three Tuart trees, mixed in with the Marri trees (Figure 6). As a result, the Tuarts may be part of the Tuart Woodlands and Forests of the Swan Coastal Plain ecological community which was listed as a Critically Endangered Threatened Ecological Community under the Commonwealth EPBC Act on 4 July 2019.

A description of the Tuart Woodland TEC is available through the EPBC Act listing and more specifically the *Approved Conservation Advice (incorporating listing advice) for the Tuart (Eucalyptus gomphocephala) woodlands and forests of the Swan Coastal Plain ecological community* (DoEE, 2017) released by the Commonwealth Government.

The three Tuart trees on the site are close enough to each to be considered one ‘patch’ of Tuart Woodland in accordance with the listing advice. For a ‘patch’ to qualify as the Tuart Woodland TEC it must meet size and/or condition thresholds, as follows:

- If the patch is smaller than 0.5 ha it is **not** part of the nationally protected ecological community.
- If **the patch is at least 0.5 ha and up to 5 ha** in size, conduct on ground surveys (see Section 3.4.3) to determine which condition category applies. Patches in this size range are presumed to be part of the nationally protected ecological community unless surveys indicate they do not meet the minimum condition. The condition thresholds are outlined in Table 3.
- **All patches of 5 ha or greater** that meet the key diagnostic characteristics **are part of the nationally protected ecological community**. It is not necessary to conduct additional surveys to confirm that they meet biotic condition thresholds (Table 1) and that they are protected.

**Table 3: Tuart TEC Condition Categories and Thresholds**

Patch size	≥2 ha <5 ha	≥0.5 ha <2 ha
<b>Biotic thresholds</b>		
<b>Very high condition</b> ≥80 % of all understorey <sup>^</sup> vegetation cover is native <sup>#</sup> Or At least 12 native understorey <sup>^</sup> species per 0.01 ha (10 m x 10 m plot or equivalent sample unit)	Medium sized patches with very high condition understorey.  PART OF THE PROTECTED ECOLOGICAL COMMUNITY	Smaller patches with very high condition understorey.  PART OF THE PROTECTED ECOLOGICAL COMMUNITY

Patch size	≥2 ha <5 ha	≥0.5 ha <2 ha
<p><b>Biotic thresholds</b></p> <p><b>High condition</b>            ≥60 % of all understorey^            vegetation cover is native#            Or            At least 8 native understorey^            species per 0.01 ha (10 m x 10 m            plot or equivalent sample unit)</p>	<p>Medium sized patches with high            condition understorey.  <b>PART OF THE PROTECTED            ECOLOGICAL COMMUNITY</b></p>	<p>Smaller patches with high condition            understorey.  <b>AND</b>            That either:            have an important landscape role            (≤100 m to native vegetation)*            OR have a habitat role (≥2 very            large trees per 0.5 ha)*            OR show regeneration (≥15            seedlings and/or saplings per            0.5 ha)*  <b>PART OF THE PROTECTED            ECOLOGICAL COMMUNITY</b></p>
<p><b>Moderate condition</b>            ≥50 % of all understorey^            vegetation cover is native#            Or            At least 4 native understorey^            species per 0.01 ha (10 m x 10 m            plot or equivalent sample unit)</p>	<p>Medium sized patches with            moderate condition            understorey.  <b>AND</b>            That either:            have an important landscape            role (≤100 m to native            vegetation)*            OR have a habitat role (≥2 very            large trees per 0.5 ha)*            OR show regeneration (≥15            seedlings and/or saplings per            0.5 ha)*  <b>PART OF THE PROTECTED            ECOLOGICAL COMMUNITY</b></p>	<p><u>NOT PART OF THE PROTECTED            ECOLOGICAL COMMUNITY</u>            (but may be a focus for local            protection or restoration)</p>
<p><b>Poor</b>            Has minimal or no native cover and            species richness. That is:            &lt;50 % of all understorey^            vegetation cover is native#            And            Less than 4 native understorey^            species per 0.01 ha (10 m x 10 m            plot or equivalent sample unit)</p>	<p><u>NOT PART OF THE PROTECTED            ECOLOGICAL COMMUNITY</u>            (but may be a focus for local            protection or restoration)</p>	<p><u>NOT PART OF THE PROTECTED            ECOLOGICAL COMMUNITY</u>            (but may be a focus for local            protection or restoration)</p>

The size of the Tuart patch defined by the three trees on site is 0.68ha. The condition of the Tuart patch is Poor as there are no native understorey species. A Tuart patch in Poor condition and between 0.5 and 2ha does not meet the criteria to be included in the Tuart Woodland TEC.

### 3.9 Fauna

#### 3.9.1 Fauna Habitat

There are two fauna habitats that occur on the site. The areas containing Marri, Tuart, Jarrah and Exotic Trees is described as Woodland habitat. The areas dominated by Kikuyu and Bulrush is a Sedgeland/grassland habitat.

Fauna habitat can be assessed using a number of factors including, the size of the habitat, the level of habitat connectivity, availability of specific resources (eg. tree hollows) and overall vegetation quality. The habitat was assessed according to the following categories:

**High Quality Fauna Habitat** – These areas closely approximate the vegetation mix and quality that would have been in the area prior to any disturbance. The habitat has connectivity with other habitats and is likely to contain the most natural vertebrate fauna assemblage.

**Very Good Fauna Habitat** - These areas show minimal signs of disturbance (e.g. grazing, clearing, fragmentation, weeds) and generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be minimally affected by disturbance.

**Good Fauna Habitat** – These areas showed signs of disturbance (e.g. grazing, clearing, fragmentation, weeds) but generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be affected by disturbance.

**Disturbed Fauna Habitat** – These areas showed signs of significant disturbance. Many of the trees, shrubs and undergrowth are cleared. These areas may be in the early succession and regeneration stages. Areas may show signs of significant grazing, contain weeds or have been damaged by vehicle or machinery. Habitats are fragmented or have limited connectivity with other fauna habitats. Fauna assemblages in these areas are likely to differ significantly from what might be expected in the area had the disturbance not occurred.

**Highly Degraded Fauna Habitat** – These areas often have a significant loss of vegetation, an abundance of weeds, and a large number of vehicle tracks or are completely cleared. Limited or no fauna habitat connectivity. Faunal assemblages in these areas are likely to be significantly different to what might have been in the area pre-disturbance. (Coffey Environments, 2009).

The fauna habitat on the site has connectivity to areas of bushland on adjoining properties, however the vegetation is in Completely Degraded condition. Therefore, the habitat on the Urban zoned portion of the site is rated as Disturbed Fauna Habitat.

The wetland area is rated as High Quality Fauna Habitat.

#### 3.9.2 Database Search Results

A search of the Atlas of Living Australia (ALA, 2023) (Appendix 1) and Protected Matters Search Tool (DCCEEW, 2022) (Appendix 2) indicated 54 species have been recorded or may occur near the site, excluding species that rely on a marine environment and pelagic species. Table 3 lists the species identified in these databases.

The DBCA Threatened, Specially Protected and Priority Fauna database shows that there are no records of Conservation Significant species recorded on the site (FAUNA#7250, DBCA, 2022). The only species recorded nearby was Carnaby's Black Cockatoo which was recorded from Wallubuenup Swamp, north of Ocean Reef Road. None of the species identified in the Atlas of Living Australia were recorded on the site (ALA, 2023).

**Table 3: List of Fauna Species Identified from Database Searches**

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
<i>Bettongia penicillata ogilbyi</i> ( <i>Bettongia penicillata</i> )	Woylie, Brush-tailed Bettong	Schedule 1 - CR	Endangered	The Woylie habitat types ranged from forest to grassland, coastal and inland. During the day the Woylie shelters under patches of dense undergrowth, logs and rock-cavities and occasionally in burrows.	Highly Unlikely – the site is too disturbed and records of the species are historical only
<i>Calidris ferruginea</i>	Curlew Sandpiper	Schedule 1 - CR	Critically Endangered	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms.	Highly Unlikely – not suitable habitat
<i>Hesperocolletes douglasi</i>	Douglas’s Broad-headed Bee	Schedule 1 - CR	Critically Endangered	Douglas’s Broad-headed Bee was recorded on Rottnest and rediscovered in Pinjar in Banksia Woodland with pollen from <i>Philothea spicata</i> , <i>Patersonia occidentalis</i> , two species of <i>Stylidium</i> , a species of <i>Scaevola</i> and species from Fabaceae and Myrtaceae (DBCA, 2018).	Highly Unlikely – no habitat plants occur on the site
<i>Limosa lapponica menzbieri</i>	Bar-tailed Godwit (northern Siberian)	Schedule 1 - CR	Marine/ Migratory	The Bar-tailed Godwit is found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It is found often around beds of seagrass and, sometimes, in nearby saltmarsh.	Highly Unlikely – not coastal habitat
<i>Numenius madagascariensis</i>	Eastern Curlew	Schedule 1 - CR	Critically Endangered	The Eastern Curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets.	Highly Unlikely – not coastal habitat

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum, Ngwayir	Schedule 1 - CR	Critically Endangered	The Western Ringtail Possum is a medium sized nocturnal marsupial. This species occurs in and near coastal Peppermint Tree ( <i>Agonis flexuosa</i> ) forest and Tuart ( <i>Eucalyptus gomphocephala</i> ) dominated forest with a Peppermint Tree understorey.	Highly Unlikely – not suitable habitat
<i>Botaurus poiciloptilus</i>	Australasian bittern	Schedule 2 - EN	Endangered	The Australasian Bittern occurs mainly in densely vegetated freshwater wetlands and, rarely, in estuaries or tidal wetlands.	Unlikely – not typical habitat
<i>Calidris canutus</i>	Red Knot	Schedule 2 - EN	Marine/ Migratory	In Australasia the Red Knot mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs.	Highly Unlikely – not beach habitat
<i>Calyptorhynchus latirostris</i>	Carnaby's Black Cockatoo	Schedule 2 - EN	Endangered	Carnaby's Cockatoo is found in the south-west of Australia from Kalbarri through to Ravensthorpe and forages on the seeds of <i>Banksia</i> , <i>Hakea</i> , <i>Eucalyptus</i> , <i>Grevillea</i> , <i>Pinus</i> and <i>Allocasuarina</i> spp. It is nomadic often moving toward the coast after breeding. It breeds in tree hollows that are 2.5 - 12m above the ground mostly in smooth-barked trees (SEWPaC, 2012).	Possible – habitat occurs on the site

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
<i>Rostratula australis</i> ( <i>Rostratula benghalensis australis</i> )	Australian Painted Snipe	Schedule 2 - EN	Endangered Marine/ Migratory	The Australian Painted Snipe has been recorded at wetlands in all states of Australia but is most common in eastern Australia. It generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. It also uses inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include a cover of vegetation, including grasses.	Unlikely due to surrounding disturbance
<i>Calyptorhynchus banksii naso</i>	Forest Red-tailed Black-Cockatoo	Schedule 3 - VU	Vulnerable	Forest Red-tailed Black Cockatoos frequent the humid to sub-humid south-west of Western Australia from Gingin in the north, to Albany in the south and west to Cape Leeuwin and Bunbury (SEWPaC, 2012). It nests in tree hollows with a depth of 1-5m, that are predominately Marri ( <i>Corymbia calophylla</i> ), Jarrah ( <i>Eucalyptus marginata</i> ) and Karri ( <i>Eucalyptus diversicolor</i> ) and it feeds primarily on the seeds of Marri.	Possible – habitat occurs on the site
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	Schedule 3 - VU	Vulnerable	The Chuditch have been known to occupy a wide range of habitats including woodlands, dry sclerophyll forests, riparian vegetation, beaches and deserts. They are opportunistic feeders, and forage on the ground at night, feeding on invertebrates, small mammals, birds and reptiles.	Highly Unlikely – has not been recorded from the area and the site is too disturbed
<i>Leipoa ocellata</i>	Mallee Fowl	Schedule 3 - VU	Vulnerable	Mallee fowl have been found in mallee regions of southern Australia from approximately the 26th parallel of latitude southwards in mallee bushland.	No – not mallee habitat



Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
<i>Macroderma gigas</i>	Ghost Bat	Schedule 3 - VU	Vulnerable	Ghost bats occur in a wide range of habitats from rainforest, monsoon and vine scrub, to open woodlands in arid areas. These habitats are used for foraging, while roost habitat is more specific. Favoured roosting sites of the ghost bat are undisturbed caves or mineshafts which have several openings (DEHP, 2015).	No – no cave habitat
<i>Sternula nereis nereis (Sterna nereis nereis)</i>	Australian Fairy Tern	Schedule 3 - VU	Vulnerable	The Fairy Tern (Australian) nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation.	Highly Unlikely – not beach habitat
<i>Charadrius leschenaultii</i>	Greater Sand Plover	Schedule 3 - VU Schedule 5 - IA	Marine/ Migratory	In Australasia, the Greater Sand Plover is almost entirely coastal, inhabiting littoral and estuarine habitats. They mainly occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons.	Highly Unlikely – not coastal habitat
<i>Actitis hypoleucos</i>	Common Sandpiper	Schedule 5 - IA	Marine/ Migratory	The Common Sandpiper is mostly found around muddy margins or rocky shores. Generally the species forages in shallow water and on bare soft mud at the edges of wetlands.	Possible – habitat may occur on the site
<i>Apus pacificus</i>	Fork-tailed Swift	Schedule 5 - IA	Marine/Mig ratory	The Fork-tailed Swift is almost exclusively aerial and is not known to breed in Australia. They are seen in inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. <i>Apus pacificus</i> subsp. <i>pacificus</i> is the only subspecies to migrate to Australia.	Highly Unlikely – may fly over the site but is unlikely to land
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Schedule 5 - IA	Marine/ Migratory	The Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation.	Possible – habitat may occur on the site

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
<i>Calidris melanotos</i>	Pectoral Sandpiper	Schedule 5 - IA	Marine/ Migratory	The Pectoral Sandpiper prefers shallow fresh to saline wetlands and is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	Possible – habitat may occur on the site
<i>Calidris ruficollis</i>	Red-necked Stint	Schedule 5 - IA	Marine/ Migratory	The Red-necked Stint is mostly found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores.	Highly Unlikely – not coastal habitat
<i>Calidris subminuta</i>	Long-toed Stint	Schedule 5 - IA	Marine/ Migratory	The Long-toed Stint prefers shallow freshwater or brackish wetlands including lakes, swamps, river floodplains, streams, lagoons and sewage ponds. The species is also fond of areas of muddy shoreline, growths of short grass, weeds, sedges, low or floating aquatic vegetation, reeds, rushes and occasionally stunted samphire.	Possible – habitat may occur on the site
<i>Limosa limosa</i>	Black-tailed Godwit	Schedule 5 - IA	Migratory/ Marine	The Black-tailed Godwit is found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It is found often around beds of seagrass and, sometimes, in nearby saltmarsh.	Highly Unlikely – not coastal habitat
<i>Motacilla cinerea</i>	Grey Wagtail	Schedule 5 - IA	Migratory/ Marine	The Grey Wagtail is mostly recorded in coastal areas in Western Australia (ALA, 2015) however is widespread. There is non-breeding habitat only in Australia and the species has a strong association with water, particularly rocky substrates along water courses but also lakes and marshes.	Unlikely – not typical habitat

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
<i>Pandion cristatus</i> ( <i>Pandion haliaetus</i> )	Osprey	Schedule 5 - IA	Marine/ Migratory	Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They feed on fish, especially mullet where available, and rarely take molluscs, crustaceans, insects, reptiles, birds and mammals.	Highly Unlikely – not coastal habitat
<i>Plegadis falcinellus</i>	Glossy Ibis	Schedule 5 - IA	Marine/Mig ratory	The Glossy Ibis is the smallest ibis known in Australia. This species preferred habitat for foraging and breeding are fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation but do not breed in South-west Western Australia.	Possible – habitat may occur on the site
<i>Pluvialis fulva</i>	Pacific Golden Plover	Schedule 5 - IA	Marine/ Migratory	Pacific Golden Plovers usually occur on beaches, mudflats and sandflats (sometimes in vegetation such as mangroves, low saltmarsh such as <i>Sarcocornia</i> , or beds of seagrass) in sheltered areas including harbours, estuaries and lagoons, and also in evaporation ponds in salt works.	Highly Unlikely – not suitable habitat
<i>Pluvialis squatarola</i>	Grey Plover	Schedule 5 - IA	Marine/ Migratory	Grey Plovers occur almost entirely in coastal areas, where they usually inhabit sheltered embayments, estuaries and lagoons with mudflats and sandflats, and occasionally on rocky coasts with wave-cut platforms or reef-flats, or on reefs within muddy lagoons.	Highly Unlikely – not coastal habitat
<i>Sterna dougallii</i>	Roseate Tern	Schedule 5 - IA	Marine/ Migratory	The Roseate Tern is a migratory coastal seabird that feeds by plunge diving. This species breeds in sites surrounded by walls and rocks or in the shelter of vegetation (in temperate regions) (Birdlife International, 2014).	Highly Unlikely – not coastal habitat

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
<i>Tringa glareola</i>	Wood Sandpiper	Schedule 5 - IA	Marine/ Migratory	The Wood Sandpiper uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. They are typically associated with emergent, aquatic plants or grass, and dominated by taller fringing vegetation, such as dense stands of rushes or reeds, shrubs, or dead or live trees, especially Melaleuca and River Red Gums Eucalyptus camaldulensis and often with fallen timber.	Possible – habitat may occur on the site
<i>Tringa nebularia</i>	Common Greenshank	Schedule 5 - IA	Marine/ Migratory	The Common Greenshank is a wader and does not breed in Australia. This species can be found in many types of wetlands and has the widest distribution of any shorebird in Australia. This species typically feeds on molluscs, crustaceans, insects, and occasionally fish and frogs.	Possible – habitat may occur on the site
<i>Ardea alba</i>	Great Egret, White Egret		Marine	The Eastern Great Egret has been reported in a wide range of wetland habitats and usually frequents shallow waters. This species feeds on fish, insects, crustaceans, molluscs, frogs, lizards, snakes and small birds and mammals.	Possible – habitat may occur on the site
<i>Ardea (Bubulcus) ibis</i>	Cattle Egret		Marine	The Cattle Egret occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands with breeding in Western Australia recorded in the far north in Wyndham in colonies in wooded swamps such as mangrove forest. This species forages away from water on low lying grasslands, improved pastures and croplands generally in areas that have livestock eating insects, frog, lizards and small mammals.	Possible – habitat may occur on the site
<i>Egretta sacra</i>	Eastern Reef Egret, Eastern Reef Heron		Marine	The Eastern Reef Egret nests in trees in island woodlands, or on the ground under shrubs or rock ledges and feeds on small fish, crustaceans and insects (Birdlife Australia, 2014).	Unlikely – not typical habitat

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
<i>Haliaeetus leucogaster</i>	White-bellied Sea-eagle		Marine	The White-bellied Sea-Eagle is found in coastal habitats with large areas of open water, especially those close to the sea-shore. This species feeds opportunistically on a variety of fish, birds, reptiles, mammals and crustaceans, and on carrion and offal.	Highly Unlikely – not coastal habitat
<i>Himantopus himantopus</i>	Black-winged Stilt		Marine	The Black-winged Stilt is found near coastal lagoons and shallow freshwater or brackish pools with extensive areas of mudflats, salt meadows, saltpans, coastal marshes and swamps (Birdlife International, 2014).	Highly Unlikely – not suitable habitat
<i>Merops ornatus</i>	Rainbow Bee-eater		Marine	Populations of the Rainbow Bee-eater that breed in northern Australia are considered to be resident, and in many northern localities the Rainbow Bee-eater is present throughout the year. The Rainbow Bee-eater nests in a burrow dug in the ground. It is found across the better-watered parts of WA including islands preferring lightly wooded, sandy country near water.	Possible –may intermittently occur on the site
<i>Rallus philippensis</i>	Buff banded rail		Marine	The Buff Banded Rail occupies a wide range of terrestrial wetlands, as well as coastal beaches, reef flats, sandbanks, and mangroves, where it forages on the ground, pecking and probing in mud to catch crustaceans, worms and other invertebrates, and rails on beaches may scavenge along the strandline (Birdlife Australia, 2017).	Possible – habitat may occur on the site
<i>Recurvirostra novaehollandiae</i>	Red-necked Avocet		Marine/ Migratory	The Red-necked Avocet occurs in wetland areas including bogs, marshes, swamps and Permanent Saline, Brackish or Alkaline Lakes (Birdlife International, 2014).	Possible – habitat may occur on the site

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
<i>Idiosoma sigillatum</i>	Swan Coastal Plain shield-backed trapdoor spider	Priority 3		The Swan Coastal Plain Shield-backed Trapdoor Spider arranges fallen twigs from the sheoak tree around the rim of its burrow entrance, enabling it to feel the vibrations of unsuspecting prey that wander by (Curtin, 2018).	Highly Unlikely – not suitable habitat
<i>Hydromys chrysogaster</i>	Water-rat, Rakali	Priority 4		The Water Rat generally prefers wetland habitats characterised by dense, low-lying vegetation (0–30 cm from ground), low-density canopy cover and shallow, narrow water bodies (Speldewinde et al., 2013).	Highly Unlikely – not permanent water
<i>Isoodon fusciventer</i>	Southern Brown Bandicoot, Quenda	Priority 4		Southern Brown Bandicoots are small grey marsupials that prefer dense scrub (up to one metre high). Their diet includes invertebrates (including earthworms, adult beetles and their larvae), underground fungi, subterranean plant material, and very occasionally, small vertebrates (DEC, 2012).	Possible – habitat may occur on the site
<i>Ixobrychus dubius</i>	Australian Little Bittern	Priority 4		The Australian Little Bittern is mainly found in freshwater wetlands, where they inhabit dense emergent vegetation of reeds and sedges, and inundated shrub thickets. They are also occasionally found in brackish and saline wetlands such as mangrove swamps, Juncus-dominated salt marsh and the wooded margins of coastal lagoons (Naturewatch NZ, 2014).	Possible – habitat may occur on the site
<i>Oxyura australis</i>	Blue-billed Duck	Priority 4		The Blue-billed Duck is found on terrestrial wetlands in temperate regions, that are freshwater to saline, and may be natural or artificial. It nests in rushes, sedges, Lignum Muehlenbeckia cunninghamii and paperbark Melaleuca (Birdlife International, 2015). The species is almost completely aquatic, and is seldom seen on land (Birds in Backyards, 2015).	No - no permanent open water on the site

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
<i>Synemon gratiosa</i>	Graceful Sun-moth	Priority 4		The Graceful Sun-moth is a diurnal moth with dull coloured brown to black forewings and brightly coloured orange hind wings. The larvae burrow into the rhizomes of <i>Lomandra maritima</i> and <i>Lomandra hermaphrodita</i> exclusively and therefore require the presence of one or both of these species to be present in an area (Bishop et al., 2011).	No - no host plants occur on the site

Habitat from SPRAT (SEWPac, 2015) unless otherwise stated

The Department of Biodiversity, Conservation and Attractions (DBCA) classifies fauna under four different Priority codes and rare and endangered fauna are classified into seven schedules of taxa. These are outlined in Appendix 3.

### 3.9.3 Conservation Significant Species

Habitat on the site was identified for two listed species of Black Cockatoos being:

- Carnaby's Black Cockatoo (*Calyptorhynchus (Zanda) latirostris*)
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*)

A detailed assessment of the Black Cockatoo Habitat on the site is in the following section.

There were twelve migratory species identified that could potentially use the wetland portion of the site, listed below, however the use is likely to be infrequent and the site is not likely to provide significant habitat to any of these species particularly given the large area of lakes and swamps in the Yellagonga Regional Park:

- *Actitis hypoleucos* (Common Sandpiper);
- *Calidris acuminata* (Sharp-tailed Sandpiper);
- *Calidris melanotos* (Pectoral Sandpiper);
- *Calidris subminuta* (Long-toed Stint)
- *Plegadis falcinellus* (Glossy Ibis);
- *Tringa glareola* (Wood Sandpiper);
- *Tringa nebularia* (Common Greenshank);
- *Ardea alba* (Great Egret, White Egret);
- *Ardea (Bubulcus) ibis* (Cattle Egret);
- *Merops ornatus* (Rainbow Bee-eater);
- *Rallus philippensis* (Buff banded rail); and
- *Recurvirostra novaehollandiae* (Red-necked Avocet).

There were two Priority 4 species that may have habitat on the site, however these species are not likely to rely on the site for survival. These species were:

- *Isoodon fusciventer* (Southern Brown Bandicoot, Quenda); and
- *Ixobrychus dubius* (Australian Little Bittern).

### 3.9.4 Black Cockatoo Habitat

#### *Foraging*

The site contains three tree species (Marri, Tuart and Jarrah) that are recognised as providing foraging habitat for foraging by Black Cockatoos. The total area of foraging habitat is 0.615 ha and is shown on Figure 6.

No evidence of Black Cockatoo foraging on trees on the site was observed. However, there was evidence of foraging by Carnaby's Black Cockatoo on a Marri tree in the adjoining Woodvale Road reserve.



### *Breeding*

Black Cockatoos are known to breed in hollows of large eucalypts. The site is not known as a breeding site for Black Cockatoos (DoP, 2011; National Map, 2022). The nearest breeding site is approximately 2.71km to the west (National Map, 2022) (Appendix 2).

No evidence of breeding by Black Cockatoos on the site was observed. None of the trees had any hollows suitable for Black Cockatoos to breed in. There were 20 trees recorded that met the definition of potential breeding habitat due to their DBH being  $\geq 500$ m (Figure 6, Appendix 4). The total consisted of 15 Marri trees, 3 Tuart trees, one Jarrah tree and a Standing Dead tree (Appendix 4).

### *Roosting*

Black Cockatoos are known to roost overnight in tall trees including native and introduced eucalypts and pine trees generally in close proximity to a fresh water source. The study area contains tall Marri, Tuart and Jarrah trees, however no evidence of roosting was recorded during the survey.

### **3.9.5 Pest Fauna**

There are several pest species that may be present on the site being:

- Red foxes;
- Feral cats;
- European Rabbits;
- House Mice; and
- Black Rats.

### **3.9.6 Ecological Linkages**

The eastern part of the site forms part of the Wallubuenup Swamp which is a part of Bush Forever Site 299 within Yellagonga Regional Park.

### **3.10 Heritage**

There are no Aboriginal Heritage Sites or Places mapped on the site (DPLH, 2023; Appendix 5). Heritage sites can be also be listed under the following lists/registers:

- World Heritage Sites;
- National Heritage Sites;
- Commonwealth Heritage Sites;
- Sites on the register of the National Estate;
- Sites on the Western Australian Heritage Council Register; and
- Sites listed in the City of Swan Municipal Heritage Inventory List.

There are no listed Heritage Sites or Interim Heritage Sites on the site (National Map, 2023; Heritage Council of Western Australia, 2023; DCCEEW, 2023).

## 4 ENVIRONMENTAL IMPACT ASSESSMENT

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### 4.1 Proposed Development

The site is proposed to be subdivided for residential purposes. A Subdivision Concept Plan has not yet been prepared but will be informed by the results of this EAR.

### 4.2 Land Use

The previous and current land uses are not considered to be a constraint to development of the site.

### 4.3 Surrounding Land Use

The land to the south and west of the site is developed for urban purposes and to the north is a church. These land uses do not impede development of the site. The eastern part of the site is within Yellagonga Regional Park and reserved as Parks & Recreation and will not be able to be developed.

### 4.4 Topography

There are no significant topographic features on the site that would be a constraint to development.

### 4.5 Geology and Soils

The Spearwood geological unit is not constrained for development. The soils on the western part of the site have a high risk of being susceptible to wind erosion and therefore dust controls will be required during construction. The eastern part has a risk of waterlogging and water erosion however this can be managed with appropriate stormwater controls.

Geotechnical investigations will need to be carried out to investigate any engineering constraints of the soils.

The ASS Risk on the development site is mapped as being High to Moderate (<3m from the surface) in the eastern part of the site associated with the wetland soils. Development in close proximity to the High to Moderate risk area may need to be investigated once the level of soil disturbance is known.

ASS Investigation and, if required, Management Plans should be prepared once the detailed design of soil disturbance on the site is finalised. This should be undertaken in accordance with the *Acid Sulphate Soils Guideline Series: Identification and Investigation of Acid Sulphate Soils and Acidic Landscapes* (DEC, 2009b) and *Treatment and Management of Soils and Water in Acid Sulphate Soil Landscapes* (DEC, 2011).

The risk of ASS can be managed in accordance with standard practices so the presence of ASS should not be an impediment to the proposed development of the site.

### 4.6 Hydrology

The Urban zoned part of the site has sandy soil which would allow for the treatment of stormwater drainage by infiltration. The treatment of stormwater will need to be undertaken in accordance with *Better Urban Water Management* (WAPC, 2008).

## 4.7 Wetlands

### 4.7.1 Wetland Boundary

PGV Environmental assessed the alignment of the mapped wetland boundary as being reasonably accurate and does not recommend any changes in the alignment.

### 4.7.2 Wetland Buffer

The usual setback distance for development from a Conservation Category wetland is 50m (EPA, 2008). A standard 50m buffer, if applied, is shown on Figure 3. As described in Section 3.7.2 the area just outside the wetland boundary is a transition zone between the wetland and the dryland areas and contains a mix of vegetation types associated with small-scale topographical changes (Plate 9). Low-lying parts in the buffer are wet in winter/spring and contain some Typha Sedgeland as well as *Juncus acutus* Sedgeland. The drier hummocks contain weeds, predominantly Kikuyu, Couch Grass, Cape Tulip and Lupins.

**Plate 9: Wetland Interface**



The eastern two-thirds of the buffer takes up about 30m of the 40m buffer and would not be usable by the public if retained in its current form in Public Open Space due to the irregular surface levels and the areas of wet depressions in winter/spring. The western third of the wetland buffer is higher and therefore drier and mostly has a regular surface, albeit slightly sloping down to the east (Plate 10). This area could be landscaped with grass and other amenities for public use and possibly planted with trees in a similar way that has occurred for the wetland buffer on the development to the south of the site.

**Plate 10: Western Side of the Wetland Buffer**



Based on the current soil and topographical conditions of the buffer area, and the City of Joondalup's likely requirement for the buffer area to have some form of public amenity, PGV Environmental does not recommend a reduction of the 50m setback from the wetland boundary.

A Wetland Management Plan is recommended to be prepared as a condition of subdivision. The Wetland Management Plan should outline the treatment of the buffer, public use of the buffer, fencing and paths.

Stormwater drainage infrastructure is not normally allowed to be located in the buffer of a CCW. Some overflow of larger events may be supported by the agencies.

Any rehabilitation proposed for the buffer will need to consider the implications on Bushfire Attack Levels (BALs) and the requirements for setbacks to dwellings due to BALs.

#### **4.8 Flora and Vegetation**

The native vegetation is Completely Degraded and there are no Threatened or Priority Flora species on the site. The native vegetation on the site is not considered to be an important remnant of a vegetation complex and is too degraded to be a TEC or PEC.

The vegetation outside of the wetland area is not considered a constraint to development.

#### **4.9 Fauna**

The fauna habitat values on the Urban portion of the site have been significantly impacted by past clearing leading to a Highly Degraded Fauna Habitat rating.

The high quality fauna habitat is associated with the wetland which will be retained in the development.

The proposed development is likely to result in the clearing of all trees on the site. The trees provide foraging habitat for Carnaby's and Forest Red-tailed Black Cockatoos as well as 20 potential breeding habitat trees. Any clearing that would have a significant impact on Black Cockatoos is required to be referred under the Commonwealth EPBC Act. A significant impact is defined in broad terms by the *EPBC Act Significant Impact Guidelines 1.1* and more specifically for Black Cockatoos the *Referral Guideline for 3 WA Threatened Black Cockatoo Species* (DAWE, 2022).

According to the Referral Guidelines the clearing of more than 1ha of quality foraging habitat could lead to a significant impact and is likely to require a Referral under the EPBC Act. The amount of foraging habitat on the site is 0.615ha which is less than 1ha, therefore referral based on foraging habitat is not required.

According to the Referral Guidelines the clearing of *any* potential nesting trees is highly likely to require a Referral under the EPBC Act. The site contains 20 potential breeding habitat trees, most, if not all, of which would be cleared for an urban development. Therefore, a Referral under the EPBC Act is recommended. Based on previous EPBC Act Referral of similar amount of habitat clearing, PGV Environmental considers the result of a Referral would highly likely not require a full assessment, however each proposal is considered on its own merits.

#### **4.10 Heritage**

There are no Aboriginal Heritage sites or sites of other heritage values on the site. Heritage, therefore is not an impediment to development.

## 5 SUMMARY AND CONCLUSION

---

### 5.1 Summary

The Environmental Assessment of Lot 36 and Pt Lot 28 Woodvale Drive, Woodvale found the following:

- The western portion of the site is zoned for Urban development in the MRS and the eastern portion is reserved Parks and Recreation and part of Bush Forever Site 299 within the Yellagonga Regional Park;
- The site is not registered as a contaminated site and the past and present land use are not considered constraints to development;
- Surrounding land use does not pose a constraint to the proposed urban development;
- The geology and soils on the site do not pose a risk to development. Acid Sulphate Soils in the central section may need to be investigated when the extent of earthworks and servicing are known;
- The Urban zoned portion of the site contains some remnant native trees in a parkland cleared setting with no native understorey species;
- The absence of a native understorey means that no Threatened or Priority flora species is likely to occur on the site;
- The remnant trees are mostly Marri, with some Tuart and Jarrah. The vegetation in the Urban portion is rated as being in Completely Degraded condition;
- The vegetation does not meet the definition of any Threatened or Priority Ecological Communities;
- The native trees on the site provide 0.615ha of potential foraging habitat for Black Cockatoos although no evidence of foraging on site was observed. The site contains 20 Marri, Jarrah and Tuart trees that meet the definition of breeding habitat. No actual breeding occurs on the site as none of the trees has any hollows large enough for Black Cockatoos to breed in;
- The site contains a portion of Wallubuenup Swamp which is a Conservation Category wetland. PGV Environmental consider the boundary of the mapped wetland is reasonably accurate and does not recommend any changes;
- The interface between the wetland and the trees on the higher western portion of the site contains about 30m of chaotic landform with some small high points and some low-lying depressions that are wet in winter/spring;
- The undulating nature of the wetland interface means that in its current form a 50m wetland buffer is recommended between the wetland boundary and the proposed dwellings. The 50m will allow landscaping of the more uniform landform in the western part of the wetland buffer to be usable POS for the public;
- A Wetland Management Plan is recommended to be prepared as a condition of subdivision;
- Stormwater drainage infrastructure is not normally allowed to be located in the buffer of a CCW. Some overflow of larger events may be supported by the agencies;
- The site does not contain any Aboriginal Heritage Sites or sites of other heritage.

## 5.2 Conclusion

The rezoning of the Rural portion of the land in the City of Joondalup's Local Planning Strategy will need to be referred to the EPA under Section 48A of the *Environmental Protection Act 1956*. PGV Environmental considers the proposed development of the western portion of the site can be done without any significant impact on environmental matters. Therefore, the EPA should not require the TPS Amendment to be fully assessed.

The clearing of up to 20 potential Black Cockatoo breeding habitat trees should be referred under the Commonwealth EPBC Act. PGV Environmental considers the result of a Referral would highly likely not require a full assessment.

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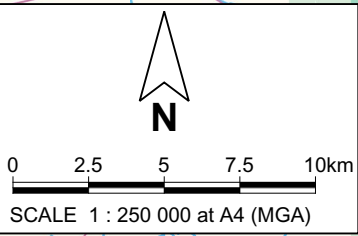
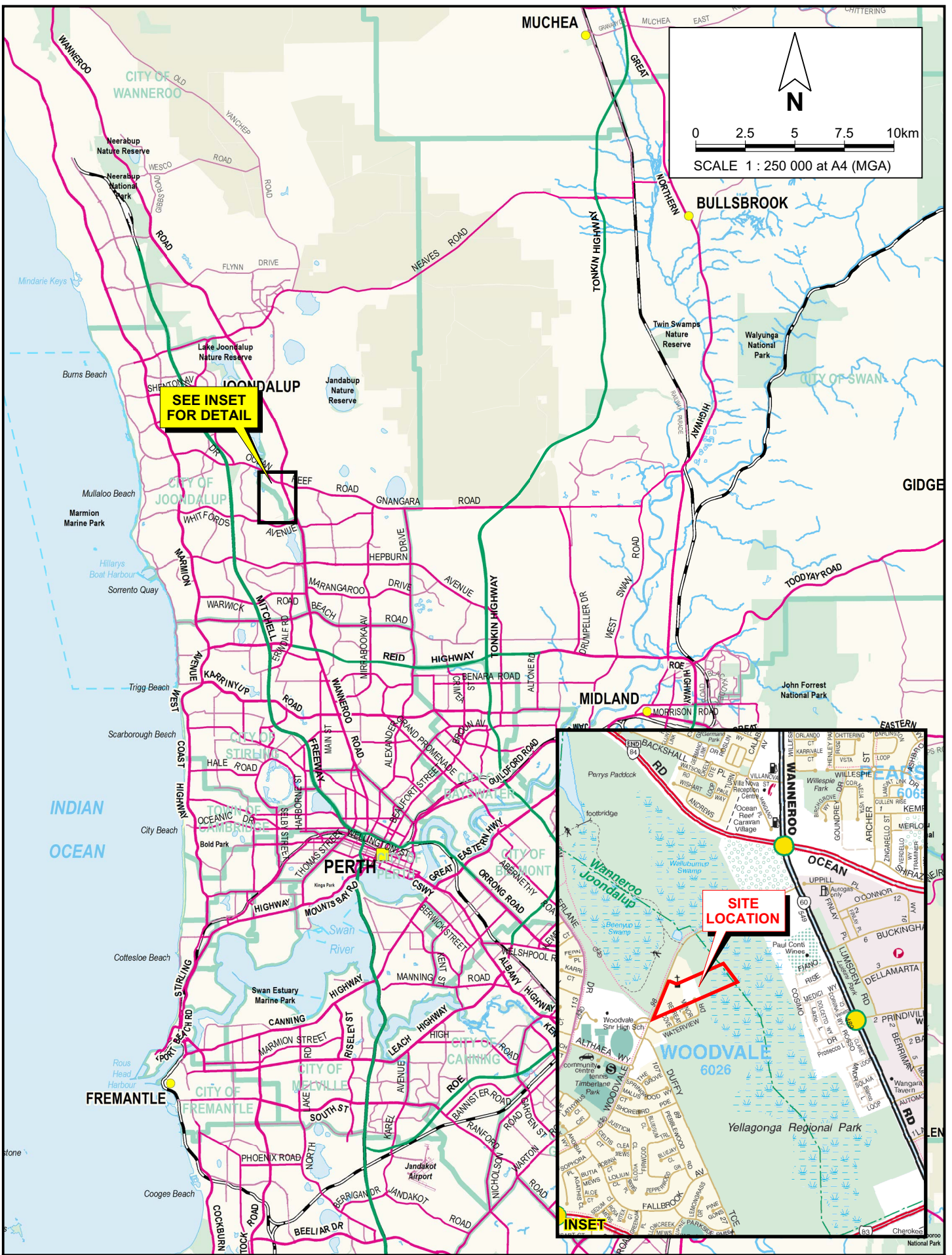
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# FIGURES



SEE INSET FOR DETAIL

SITE LOCATION

INSET

PINPOINT CARTOGRAPHICS (08) 9562 7136

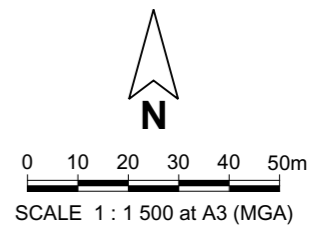
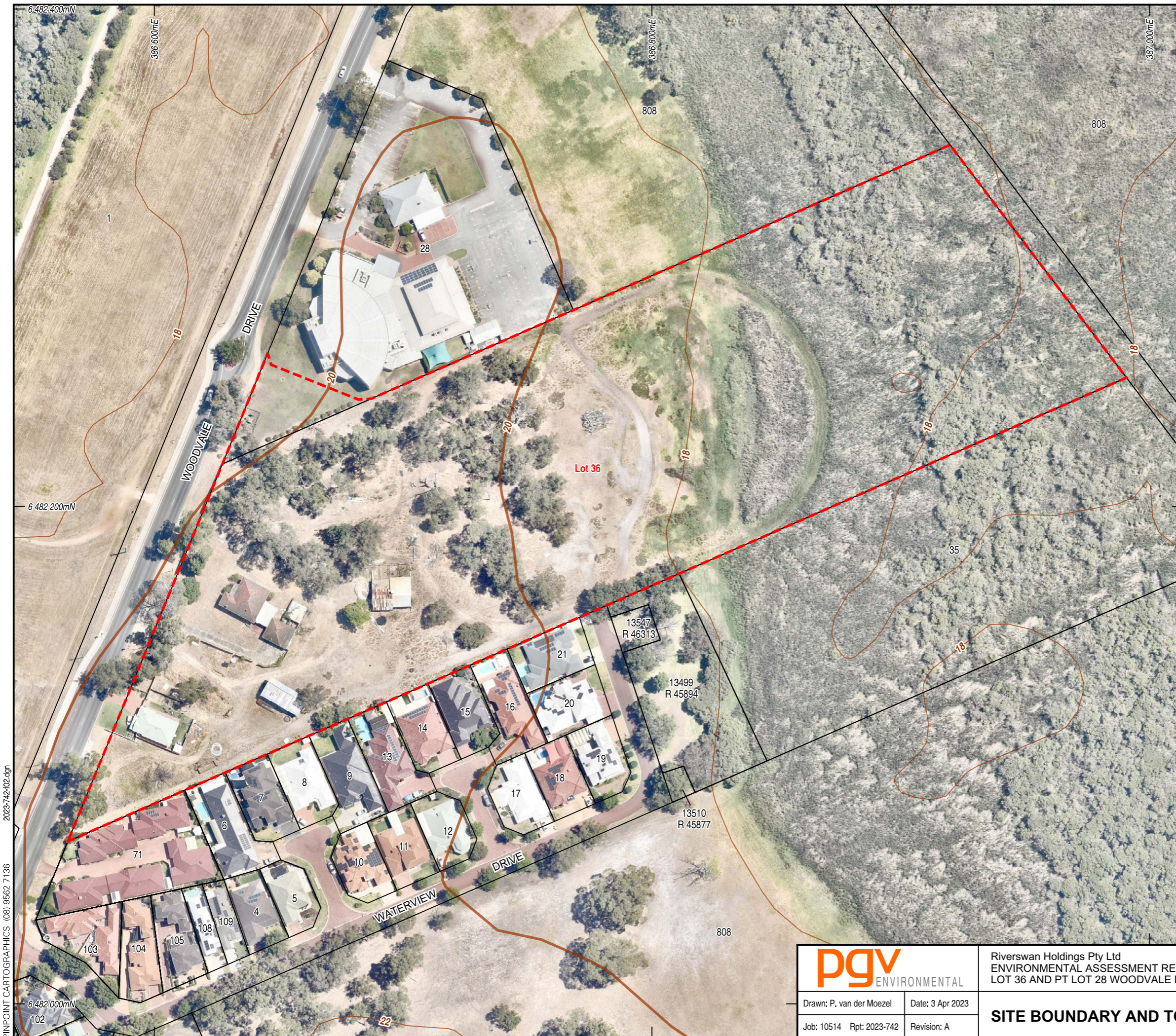
**pgv** ENVIRONMENTAL

Riverswan Holdings Pty Ltd  
ENVIRONMENTAL ASSESSMENT REPORT  
LOT 36 AND PT LOT 28 WOODVALE DRIVE, WOODVALE

Drawn: P. van der Moezel Date: 3 Apr 2023  
Job: 10514 Rpt: 2023-742 Revision: A

**SITE LOCATION**

**Figure 1**

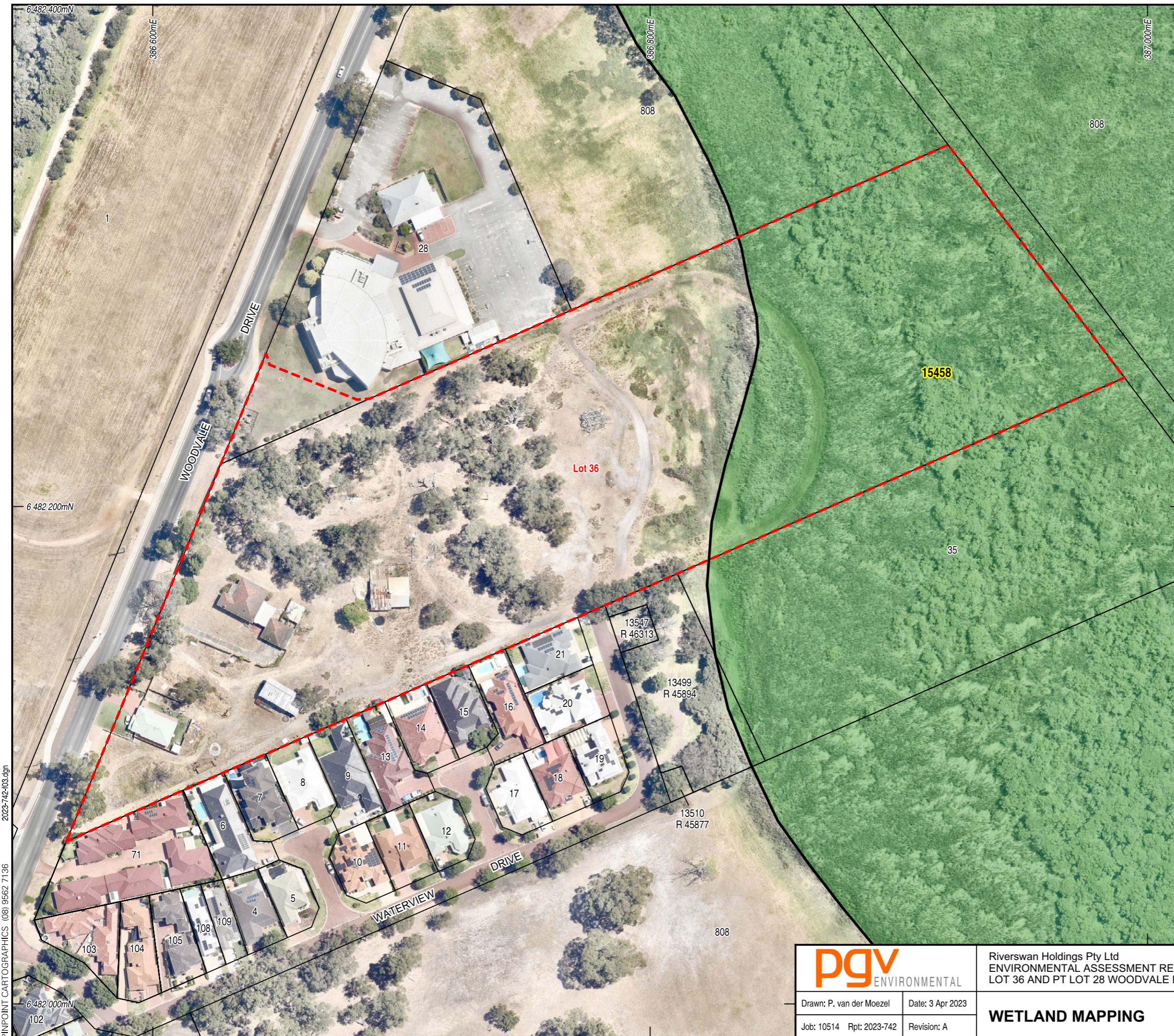


- Legend**
- - - Site Boundary
  - Cadastral Boundary
  - Topographic Contour

CADASTRAL SOURCE: Landgate, March 2023.  
 CONTOUR SOURCE: Dept. of Agriculture, 2000.  
 AERIAL PHOTOGRAPH SOURCE: NearMap, flown January 2023.  
 SITE BOUNDARY SOURCE: Burgess Design Group, Plan: NOB WOO 7-02-02, 06-02-23.

PINPOINT CARTOGRAPHICS (08) 9562 7136 2023-742-102.dgn

		Riverswan Holdings Pty Ltd ENVIRONMENTAL ASSESSMENT REPORT LOT 36 AND PT LOT 28 WOODVALE DRIVE, WOODVALE		Figure 2
Drawn: P. van der Moezel	Date: 3 Apr 2023	SITE BOUNDARY AND TOPOGRAPHY		
Job: 10514 Rpt: 2023-742	Revision: A			



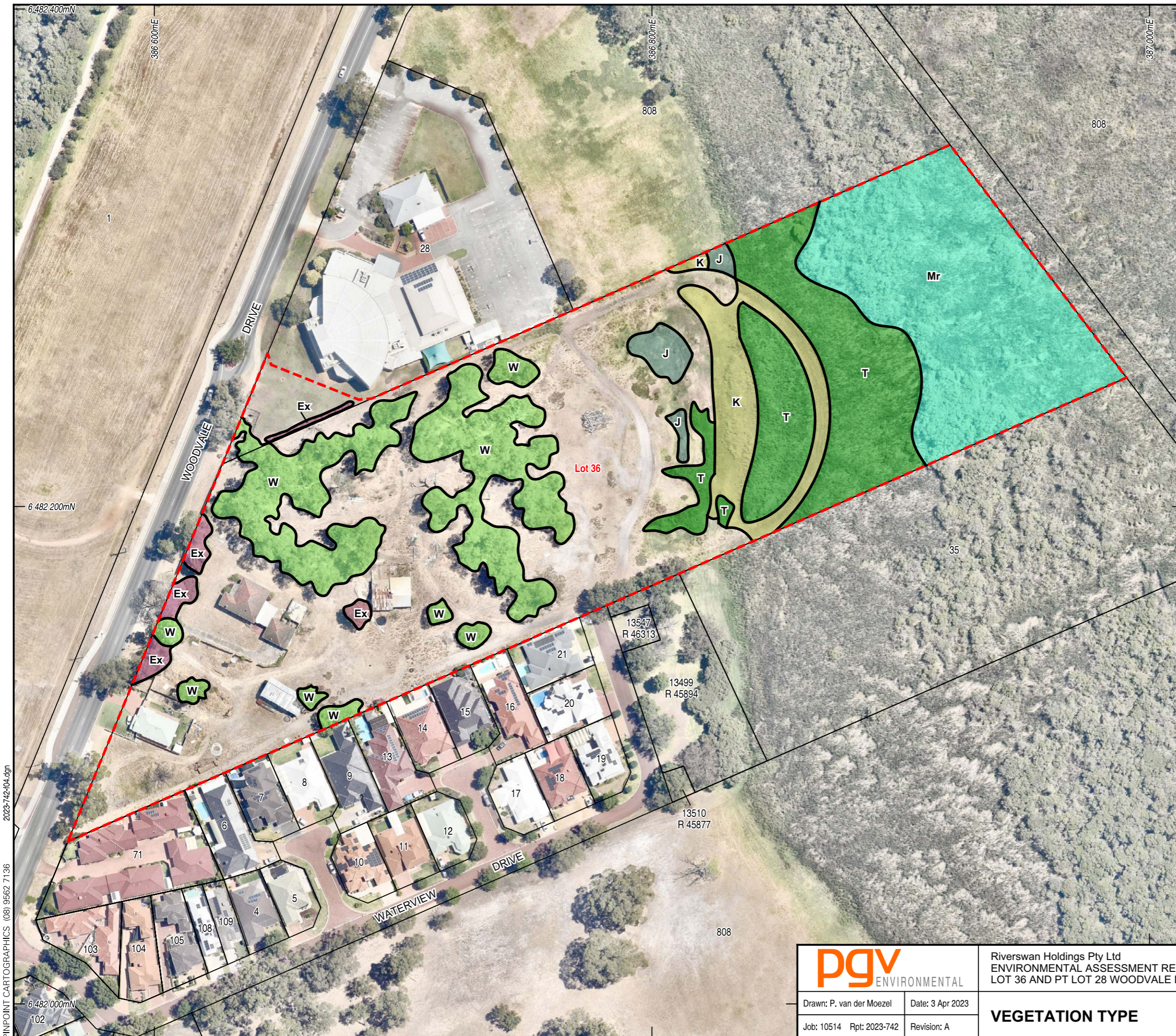
- Legend**
- - - Site Boundary
  - Cadastral Boundary
- Geomorphic Wetlands**
- Conservation Category
  - 15458** Wetland UFI Number

WETLANDS SOURCE: DBCA, November 2022.  
 CADASTRAL SOURCE: Landgate, March 2023.  
 AERIAL PHOTOGRAPH SOURCE: NearMap, flown January 2023.  
 SITE BOUNDARY SOURCE: Burgess Design Group, Plan: NOB WOO 7-02-02, 06-02-23.

		Riverswan Holdings Pty Ltd ENVIRONMENTAL ASSESSMENT REPORT LOT 36 AND PT LOT 28 WOODVALE DRIVE, WOODVALE	
		<b>WETLAND MAPPING</b>	
Drawn: P. van der Moezel	Date: 3 Apr 2023		
Job: 10514 Rpt: 2023-742	Revision: A		

**Figure 3**

2023-742-103.dgn  
PINPOINT CARTOGRAPHICS (08) 9562 7136



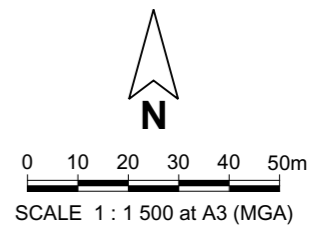
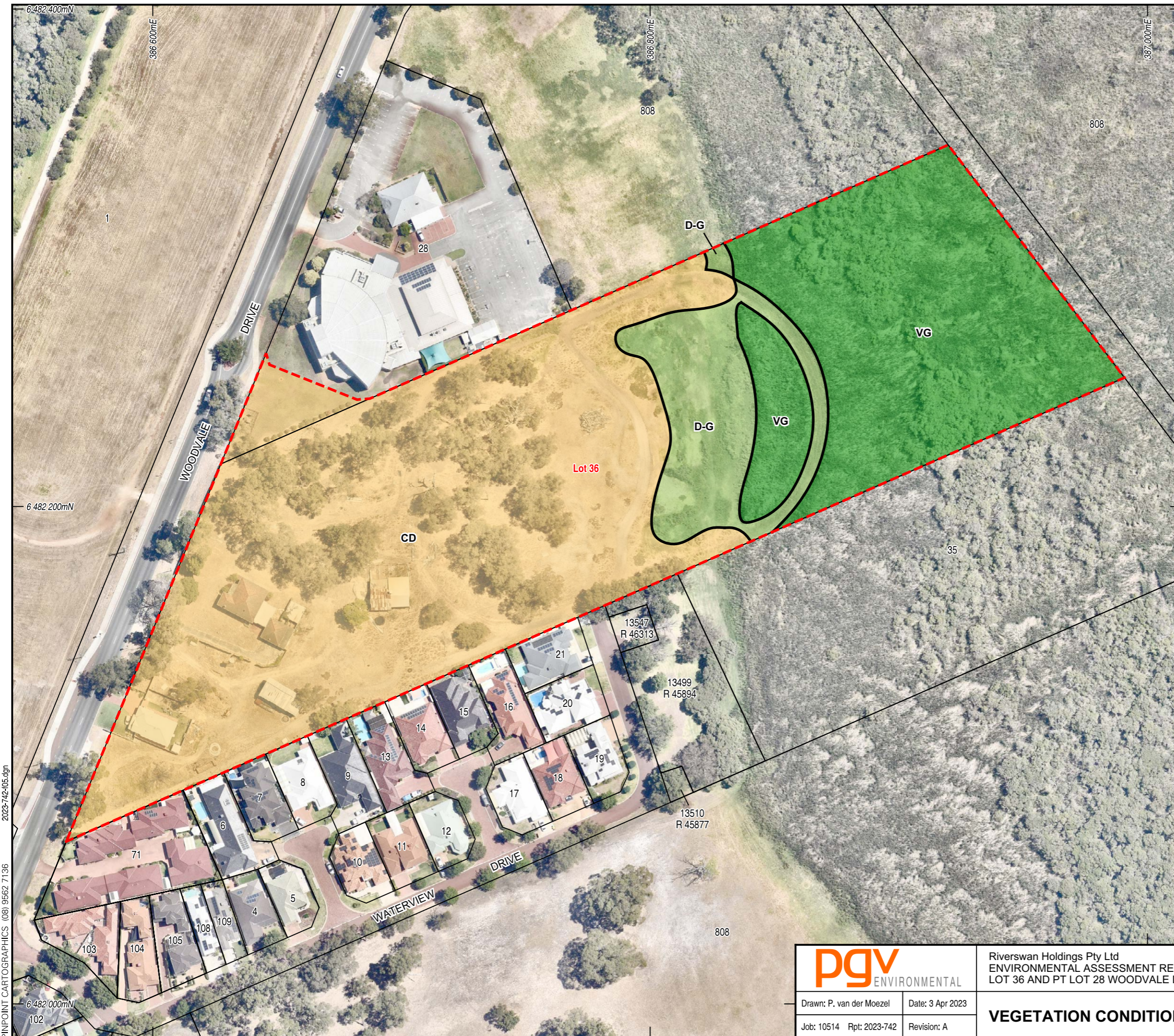
- Legend**
- - - Site Boundary
  - Cadastral Boundary
  - Vegetation Type Boundary
  - W** Vegetation Type

- Vegetation Types**
- **W**  
Marri (*Corymbia calophylla*)  
Woodland over weeds
  - **Ex**  
Exotic trees
  - **J**  
*Juncus acutus* Sedgeland
  - **T**  
*Typha orientalis* Sedgeland
  - **Mr**  
*Melaleuca raphiophylla* Tall  
Open Scrub
  - **K**  
Kikuyu (*Cenchrus clandestinus*)  
Grassland

CADASTRAL SOURCE: Landgate, March 2023.  
 AERIAL PHOTOGRAPH SOURCE: NearMap, flown January 2023.  
 SITE BOUNDARY SOURCE: Burgess Design Group, Plan: NOB WOO 7-02-02, 06-02-23.

PINPOINT CARTOGRAPHICS (08) 9562 7136 2023-742-104.dgn

		Riverswan Holdings Pty Ltd ENVIRONMENTAL ASSESSMENT REPORT LOT 36 AND PT LOT 28 WOODVALE DRIVE, WOODVALE	
		<b>VEGETATION TYPE</b>	
Drawn: P. van der Moezel Job: 10514 Rpt: 2023-742	Date: 3 Apr 2023 Revision: A		



- Legend**
- - - Site Boundary
  - Cadastral Boundary
  - Vegetation Condition Boundary
- VG** Vegetation Condition
- Vegetation Condition**
- Very Good
  - Degraded to Good
  - Completely Degraded

**Vegetation Condition**  
(SOURCE: Bush Forever, Govt. of W.A., 2000)

**P - Pristine**  
Pristine or nearly so, no obvious signs of disturbance.

**Ex - Excellent**  
Vegetation structure intact, disturbance affecting individual species and weeds are non aggressive species.

**VG - Very Good**  
Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.

**G - Good**  
Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.

**D - Degraded**  
Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.

**CD - Completely Degraded**  
The structure of the vegetation is no longer intact and the areas is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora composing weed or crop species with isolated native trees or shrubs.

**CI - Cleared**  
No native vegetation remaining.

CADASTRAL SOURCE: Landgate, March 2023.  
AERIAL PHOTOGRAPH SOURCE: NearMap, flown January 2023.  
SITE BOUNDARY SOURCE: Burgess Design Group, Plan: NOB WOO 7-02-02, 06-02-23.



Riverswan Holdings Pty Ltd  
ENVIRONMENTAL ASSESSMENT REPORT  
LOT 36 AND PT LOT 28 WOODVALE DRIVE, WOODVALE

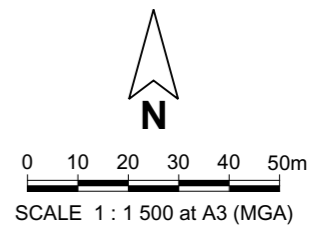
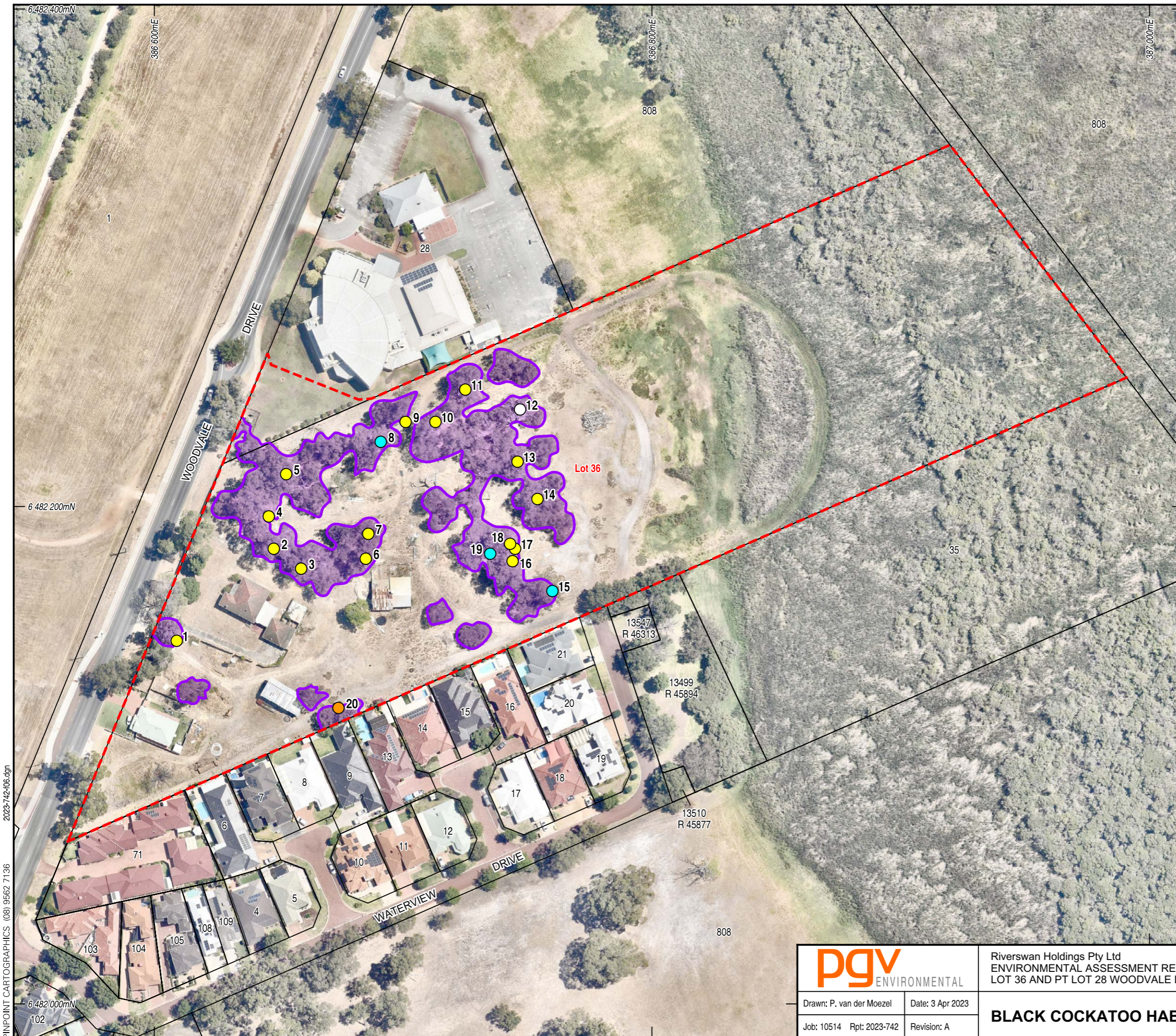
Drawn: P. van der Moezel    Date: 3 Apr 2023  
Job: 10514    Rpt: 2023-742    Revision: A

**VEGETATION CONDITION**

**Figure 5**

PINPOINT CARTOGRAPHICS (08) 9562 7136    2023-742-105.dgn





- Legend**
- - - Site Boundary
  - Cadastral Boundary
  - Black Cockatoo Foraging Habitat
- Potential Breeding Habitat Trees**
- Marri (*Corymbia calophylla*)
  - Tuart (*Eucalyptus gomphocephala*)
  - Jarrah (*Eucalyptus marginata*)
  - Standing Dead Tree
  - 7** Tree Number

CADASTRAL SOURCE: Landgate, March 2023.  
 AERIAL PHOTOGRAPH SOURCE: NearMap, flown January 2023.  
 SITE BOUNDARY SOURCE: Burgess Design Group, Plan: NOB WOO 7-02-02, 06-02-23.

<b>pgv</b> ENVIRONMENTAL	
Drawn: P. van der Moezel	Date: 3 Apr 2023
Job: 10514 Rpt: 2023-742	Revision: A

Riverswan Holdings Pty Ltd ENVIRONMENTAL ASSESSMENT REPORT LOT 36 AND PT LOT 28 WOODVALE DRIVE, WOODVALE
<b>BLACK COCKATOO HABITAT</b>

**Figure 6**

PINPOINT CARTOGRAPHICS (08) 9562 7136 2023-742-106.dgn

**APPENDIX 1**  
**Atlas of Living Australia**





















## **APPENDIX 2**

### **Protected Matters Search Tool**



Australian Government

Department of Climate Change, Energy,  
the Environment and Water

# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 15-Mar-2023

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

# Summary

## Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance (Ramsar)</a>	None
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	2
<a href="#">Listed Threatened Species:</a>	30
<a href="#">Listed Migratory Species:</a>	17

## Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

<a href="#">Commonwealth Lands:</a>	36
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	25
<a href="#">Whales and Other Cetaceans:</a>	None
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	None

## Extra Information

This part of the report provides information that may also be relevant to the area you have

<a href="#">State and Territory Reserves:</a>	6
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Nationally Important Wetlands:</a>	1
<a href="#">EPBC Act Referrals:</a>	20
<a href="#">Key Ecological Features (Marine):</a>	None
<a href="#">Biologically Important Areas:</a>	1
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	None

# Details

## Matters of National Environmental Significance

### Listed Threatened Ecological Communities

[\[ Resource Information \]](#)

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Banksia Woodlands of the Swan Coastal Plain ecological community</a>	Endangered	Community likely to occur within area	In feature area
<a href="#">Tuart (<i>Eucalyptus gomphocephala</i>) Woodlands and Forests of the Swan Coastal Plain ecological community</a>	Critically Endangered	Community likely to occur within area	In feature area

### Listed Threatened Species

[\[ Resource Information \]](#)

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
<b>BIRD</b>			
<a href="#">Botaurus poiciloptilus</a> Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Calyptorhynchus banksii naso</a> Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Leipoa ocellata</a> Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Limosa lapponica menzbieri</a> Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Pachyptila turtur subantarctica</a> Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Sternula nereis nereis</a> Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Zanda latirostris listed as Calyptorhynchus latirostris</a> Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat known to occur within area	In feature area
<b>INSECT</b>			
<a href="#">Hesperocolletes douglasi</a> Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area	In feature area
<b>MAMMAL</b>			
<a href="#">Bettongia penicillata ogilbyi</a> Woylie [66844]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Dasyurus geoffroii</a> Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Macroderma gigas</a> Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In buffer area only



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Pseudocheirus occidentalis</a> Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
<b>PLANT</b>			
<a href="#">Andersonia gracilis</a> Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Anigozanthos viridis subsp. terraspectans</a> Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Banksia mimica</a> Summer Honey-pot [82765]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Caladenia huegelii</a> King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Diuris micrantha</a> Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Diuris purdiei</a> Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Drakaea elastica</a> Glossy-leafed Hammer Orchid, Glossy-leafed Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Drakaea micrantha</a> Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Eleocharis keigheryi</a> Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Eucalyptus argutifolia</a> Yanchep Mallee, Wabbling Hill Mallee [24263]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Macarthuria keigheryi</a> Keighery's Macarthuria [64930]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Marianthus paralius</a> [83925]	Endangered	Species or species habitat known to occur within area	In buffer area only

#### SHARK

<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
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#### Listed Migratory Species

[ [Resource Information](#) ]

Scientific Name	Threatened Category	Presence Text	Buffer Status
<b>Migratory Marine Birds</b>			
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only

#### Migratory Marine Species

<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
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#### Migratory Terrestrial Species

<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
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#### Migratory Wetlands Species

<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat likely to occur within area	In feature area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Species or species habitat known to occur within area	In buffer area only
<a href="#">Calidris subminuta</a> Long-toed Stint [861]		Species or species habitat known to occur within area	In buffer area only
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat likely to occur within area	In buffer area only
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat known to occur within area	In feature area
<a href="#">Tringa glareola</a> Wood Sandpiper [829]		Species or species habitat known to occur within area	In buffer area only
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area	In feature area

## Other Matters Protected by the EPBC Act

### Commonwealth Lands

[ [Resource Information](#) ]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [50574]	WA	In buffer area only
Commonwealth Land - [50587]	WA	In buffer area only
Commonwealth Land - [50586]	WA	In buffer area only
Commonwealth Land - [50668]	WA	In buffer area only
Commonwealth Land - [50713]	WA	In buffer area only
Commonwealth Land - [50680]	WA	In buffer area only
Commonwealth Land - [50711]	WA	In buffer area only
Commonwealth Land - [50689]	WA	In buffer area only
Commonwealth Land - [50553]	WA	In buffer area only
Commonwealth Land - [50705]	WA	In buffer area only
Commonwealth Land - [50704]	WA	In buffer area only
Commonwealth Land - [50716]	WA	In buffer area only
Commonwealth Land - [50674]	WA	In buffer area only
Commonwealth Land - [50747]	WA	In buffer area only
Commonwealth Land - [50630]	WA	In buffer area only
Commonwealth Land - [50588]	WA	In buffer area only
Commonwealth Land - [50582]	WA	In buffer area only
Commonwealth Land - [50583]	WA	In buffer area only
Commonwealth Land - [50584]	WA	In buffer area only
Commonwealth Land - [50667]	WA	In buffer area only
Commonwealth Land - [50682]	WA	In buffer area only
Commonwealth Land - [50594]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [50592]	WA	In buffer area only
Commonwealth Land - [50593]	WA	In buffer area only
Commonwealth Land - [50598]	WA	In buffer area only
Commonwealth Land - [50576]	WA	In buffer area only
Commonwealth Land - [50706]	WA	In buffer area only
Commonwealth Land - [50703]	WA	In buffer area only
Commonwealth Land - [50700]	WA	In buffer area only
Commonwealth Land - [50701]	WA	In buffer area only
Commonwealth Land - [50702]	WA	In buffer area only
Commonwealth Land - [50626]	WA	In buffer area only
Commonwealth Land - [51132]	WA	In buffer area only
Commonwealth Land - [50606]	WA	In buffer area only
Commonwealth Land - [51130]	WA	In buffer area only
Commonwealth Land - [50625]	WA	In buffer area only

### Listed Marine Species [ [Resource Information](#) ]

Scientific Name	Threatened Category	Presence Text	Buffer Status
<b>Bird</b>			
<a href="#">Actitis hypoleucos</a>			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
<a href="#">Apus pacificus</a>			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Bubulcus ibis as Ardea ibis</a>			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Calidris acuminata</a>			
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area	In buffer area only
<a href="#">Calidris subminuta</a> Long-toed Stint [861]		Species or species habitat known to occur within area overfly marine area	In buffer area only
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Charadrius ruficapillus</a> Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area	In buffer area only
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
<a href="#">Himantopus himantopus</a> Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area	In buffer area only
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Pachyptila turtur</a> Fairy Prion [1066]		Species or species habitat likely to occur within area	In buffer area only
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat known to occur within area	In feature area
<a href="#">Recurvirostra novaehollandiae</a> Red-necked Avocet [871]		Species or species habitat known to occur within area overfly marine area	In buffer area only
<a href="#">Rostratula australis as Rostratula benghalensis (sensu lato)</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Thinornis cucullatus as Thinornis rubricollis</a> Hooded Plover, Hooded Dotterel [87735]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Tringa glareola</a> Wood Sandpiper [829]		Species or species habitat known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Tringa nebularia</a>			
Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area overfly marine area	In feature area

## Extra Information

### State and Territory Reserves [\[ Resource Information \]](#)

Protected Area Name	Reserve Type	State	Buffer Status
Jandabup	Nature Reserve	WA	In buffer area only
Lake Joondalup	Nature Reserve	WA	In buffer area only
Unnamed WA46756	Conservation Park	WA	In buffer area only
Unnamed WA46926	5(1)(h) Reserve	WA	In feature area
Unnamed WA50514	5(1)(h) Reserve	WA	In buffer area only
Woodvale	5(1)(h) Reserve	WA	In buffer area only

### Nationally Important Wetlands [\[ Resource Information \]](#)

Wetland Name	State	Buffer Status
<a href="#">Joondalup Lake</a>	WA	In buffer area only

### EPBC Act Referrals [\[ Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
<a href="#">Alkimos Seawater Desalination</a>	2019/8453	Controlled Action	Assessment Approach	In buffer area only
<a href="#">Land Development, James Street and Well Street, East Wanneroo, Elberton Property</a>	2021/9106	Controlled Action	Assessment Approach	In buffer area only
<a href="#">Lot 1665 Wanneroo Road, Sinagra.</a>	2017/7921	Controlled Action	Post-Approval	In buffer area only
<a href="#">Lot 9000 Wanneroo Road Sinagra Mixed Use Development, Western Australia</a>	2020/8798	Controlled Action	Proposed Decision	In buffer area only
<a href="#">Mitchell Freeway Principal Shared Path Gaps Project Ocean Reef Road to Hepburn Avenue</a>	2020/8833	Controlled Action	Post-Approval	In buffer area only
<a href="#">Nava-1 Cable System</a>	2001/510	Controlled Action	Completed	In buffer area only



Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
<b>Controlled action</b>				
<b>Not controlled action</b>				
<a href="#">Commercial development of Lot 9004 Hodges Drive, Joondalup, WA</a>	2016/7844	Not Controlled Action	Completed	In buffer area only
<a href="#">Development of ECU Engineering Annex, Joondalup Campus, WA</a>	2017/7995	Not Controlled Action	Completed	In buffer area only
<a href="#">Eradication of the European House Borer, Perth metropolitan area, WA</a>	2009/5027	Not Controlled Action	Completed	In buffer area only
<a href="#">Groundwater Replenishment Scheme (GWRS) Stage 2</a>	2016/7786	Not Controlled Action	Completed	In buffer area only
<a href="#">Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia</a>	2015/7522	Not Controlled Action	Completed	In feature area
<a href="#">Lot 594 Wanneroo Road development, Hocking</a>	2020/8621	Not Controlled Action	Completed	In buffer area only
<a href="#">Pearsall Primary School, Lots 62, 269, 1008, 1009 &amp; Part Lot 23, Pearsall, WA</a>	2012/6405	Not Controlled Action	Completed	In buffer area only
<a href="#">Residential Development, 50 Lot 2 Driver Road, Darch, Western Australia</a>	2020/8677	Not Controlled Action	Completed	In buffer area only
<a href="#">Residential Development, Lots 10 Dundobar Road and 28 and 29 Belgrade Road, East Wanneroo, WA</a>	2019/8521	Not Controlled Action	Completed	In buffer area only
<a href="#">Residential Subdivision - Lots 12, 36 &amp; 38 Capron St, Wanneroo</a>	2012/6409	Not Controlled Action	Completed	In buffer area only
<a href="#">Wangara Industrial Extension Area, WA</a>	2012/6501	Not Controlled Action	Completed	In buffer area only
<a href="#">Wanneroo Road/Ocean Reef Road Grade Separation, Pearsall, WA</a>	2017/8110	Not Controlled Action	Completed	In feature area
<b>Not controlled action (particular manner)</b>				
<a href="#">Ocean Reef Road Extension Works in Wangara</a>	2010/5388	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
<a href="#">Road realignment and widening</a>	2009/4926	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
<b>Biologically Important Areas</b>				
Scientific Name		Behaviour	Presence	Buffer Status

Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
<a href="#">Sterna dougallii</a>			
Roseate Tern [817]	Foraging	Known to occur	In buffer area only

# Caveat

## 1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

## 2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

## 3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

## 4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

# Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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# **APPENDIX 3**

## **Conservation Codes**

## Conservation Codes for Western Australian Flora and Fauna

Specially protected fauna or flora are species\* which have been adequately searched for and are deemed to be, in the wild, either rare, at risk of extinction, or otherwise in need of special protection, and have been gazetted as such. Conservation codes have been transitioned under regulations 170, 171 and 172 of the *Biodiversity Conservation Regulations 2018*.

### **T Threatened species – Schedules 1-4**

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 that subset of ‘Specially Protected Fauna’ listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.
- **Threatened flora** is that subset of ‘Rare Flora’ listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

### **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. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

### **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. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

### **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. Published under schedule 3 of the *Wildlife*

*Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

**EX Presumed 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).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

**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 threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

**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).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), 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.



Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

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

Fauna of special conservation need being species 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).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

**OS Other specially protected species**

Fauna 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).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

**P Priority species**

Possibly threatened species that do not meet survey criteria, 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 priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

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

Assessment of Priority codes 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.

**Priority 1: Poorly-known species**

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, e.g. 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 and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

## **Priority 2: Poorly-known species**

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, e.g. 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 and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

## **Priority 3: Poorly-known species**

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. Such species are in need of further survey.

## **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 Conservation Dependent.
- (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

\*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).

## **Western Australian Ecological Communities**

### **Threatened Ecological Communities**

The BC Act provides for the statutory listing of threatened ecological communities (TECs) by the Minister.

### **Presumed Totally Destroyed (PD)**

An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.

### **Critically Endangered (CR)**

An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.

### **Endangered (EN)**

An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.

### **Vulnerable (VU)**

An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.

### **Priority Ecological Communities**

Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Priority Ecological Community List under priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community. Ecological communities that are adequately known, and are rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.

#### **Priority One: Poorly-known ecological communities**

Ecological communities that are known from very few occurrences with a very restricted distribution (generally  $\leq 5$  occurrences or a total area of  $\leq 100$ ha).

Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.

### **Priority Two: Poorly-known ecological communities**

Communities that are known from few occurrences with a restricted distribution (generally  $\leq 10$  occurrences or a total area of  $\leq 200$ ha). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.

### **Priority Three: Poorly known ecological communities**

- (i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or:
- (ii) communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat (within approximately 10 years), or;
- (iii) munities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, inappropriate fire regimes, clearing, hydrological change etc.

Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.

### **Priority Four: Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.**

- (i) Rare. Ecological communities known from few occurrences 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 communities are usually represented on conservation lands.
- (ii) Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for a higher threat category.
- (iii) Ecological communities that have been removed from the list of threatened communities during the past five years.

### **Priority Five: Conservation Dependent ecological communities**

Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

# Commonwealth of Australia Conservation Codes

## Threatened Flora and Fauna

Threatened fauna and flora may be listed under Section 178 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in any one of the following six categories:

### **Extinct**

A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.

### **Extinct in the wild**

A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time:

- a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
- b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

### **Critically endangered**

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

### **Endangered**

A taxon is Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a very high risk of extinction in the wild.

### **Vulnerable**

A taxon is Vulnerable when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a high risk of extinction in the wild.

### **Conservation dependent**

A native species is eligible to be included in the conservation dependent category at a particular time if, at that time:

- a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or
- b) the following subparagraphs are satisfied:
  - i. the species is a species of fish;

- ii. the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised;
- iii. the plan of management is in force under a law of the Commonwealth or of a State or Territory;
- iv. cessation of the plan of management would adversely affect the conservation status of the species.

The EPBC Act does not provide for listing in a data deficient category. Where sufficient data (evidence) is unavailable to allow assessment by the Threatened Species Scientific Committee against the criteria for listing, the species are found to be ineligible. A recommendation is made to the Minister to not include the species in any category under the EPBC Act. For reasons of transparency and to inform future research, the Threatened Species Scientific Committee publishes the names of those species found to be data deficient. As data deficient is not a listing category under the EPBC Act, this has no statutory implications and the species is not considered to be listed under the EPBC Act.

### **Threatened Ecological Communities**

Threatened Ecological communities under the EPBC Act are listed in three categories.

#### **Critically endangered**

If, at that time, an ecological community is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years).

#### **Endangered**

If, at that time, an ecological community is not critically endangered but is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).

#### **Vulnerable**

If, at that time, an ecological community is not critically endangered or endangered, but is facing a high risk of extinction in the wild in the medium-term future (indicative timeframe being the next 50 years).

# **APPENDIX 4**

## **Tree Data**

Map and describe trees greater than 500 mm in diameter				Date: 18.11.22		Observer: PvdM			
Tree Number	Species	Easting MGA zn50	Northing MGA zn50	Photo Number	Height	Diameter	Second Branch	Third Branch	Notes (hollows, bees etc.)
1	Marri	386609	6482146	8.47	20	58			Half dead, no hollows
2	Marri	386648	6482183	8.5	22	68			no hollows
3	Marri	386659	6482175	8.52	20	58			leaning, no hollows
4	Marri	386646	6482196	8.53	25	79			no hollows
5	Marri	386653	6482213	8.57	22	55			no hollows
6	Marri	386685	6482179	9.05L	24	64			no hollows
7	Marri	386686	6482189	9.05R	23	60			no hollows
8	Tuart	386691	64821226	9.08	21	75			no hollows
9	Marri	386701	6482234	9.9	24	68			no hollows
10	Marri	386713	6482234	9.13	21	56			no hollows
11	Marri	386725	6482247	9.15	22	72			no hollows
12	Standing Dead	386747	6482239	9.18	25	88			small spouts
13	Marri	386746	6482218	9.2	30	62			leaning, no hollows
14	Marri	386754	64821203	9.21	28	67			no hollows
15	Tuart	386760	6482166	9.24	28	95	51		no hollows
16	Marri	386744	6482178	9.25	26	70	43		no hollows
17	Marri	386745	6482183	9.32L	20	51			no hollows
18	Marri	386743	6482185	9.32R	28	57			no hollows
19	Tuart	386735	6482181	9.35	18	51			no hollows
20	Jarraah	386674	6482119	10.22	10	57			no hollows



## **APPENDIX 5**

### **Aboriginal Heritage Inquiry System Reports**

## List of Registered Aboriginal Sites

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### Search Criteria

No Registered Aboriginal Sites in Custom search area - Polygon - 115.801698894543°E, 31.7913767196311°S (GDA94) : 115.802380175633°E, 31.7900225070023°S (GDA94) : 115.802380175633°E, 31.7900133876581°S (GDA94) : 115.805539817853°E, 31.7889053806424°S (GDA94) : 115.806027979893°E, 31.7897580456551°S (GDA94) : 115.801698894543°E, 31.7913767196311°S (GDA94)

### Disclaimer

The *Aboriginal Heritage Act 1972* preserves all Aboriginal sites in Western Australia whether or not they are registered. Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you email the details to the Department at [AboriginalHeritage@dplh.wa.gov.au](mailto:AboriginalHeritage@dplh.wa.gov.au) and we will make every effort to rectify it as soon as possible.

### South West Settlement ILUA Disclaimer

Your heritage enquiry is on land **within or adjacent to** the following Indigenous Land Use Agreement(s): Whadjuk People Indigenous Land Use Agreement.

On 8 June 2015, six identical Indigenous Land Use Agreements (ILUAs) were executed across the South West by the Western Australian Government and, respectively, the Yued, Whadjuk People, Gnaala Karla Booja, Ballardong People, South West Boojarah #2 and Wagyl Kaip & Southern Noongar groups, and the South West Aboriginal Land and Sea Council (SWALSC).

The ILUAs bind the parties (including 'the State', which encompasses all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas, unless they have an existing heritage agreement. It is also intended that other State agencies and instrumentalities enter into the NSHA when conducting Aboriginal Heritage Surveys in the ILUA areas. It is recommended a NSHA is entered into, and an 'Activity Notice' issued under the NSHA, if there is a risk that an activity will 'impact' (i.e. by excavating, damaging, destroying or altering in any way) an Aboriginal heritage site. The Aboriginal Heritage Due Diligence Guidelines, which are referenced by the NSHA, provide guidance on how to assess the potential risk to Aboriginal heritage.

Likewise, from 8 June 2015 the Department of Mines, Industry Regulation and Safety (DMIRS) in granting Mineral, Petroleum and related Access Authority tenures within the South West Settlement ILUA areas, will place a condition on these tenures requiring a heritage agreement or a NSHA before any rights can be exercised.

If you are a State Government Department, Agency or Instrumentality, or have a heritage condition placed on your mineral or petroleum title by DMIRS, you should seek advice as to the requirement to use the NSHA for your proposed activity. The full ILUA documents, maps of the ILUA areas and the NSHA template can be found at <https://www.wa.gov.au/organisation/departments-of-the-premier-and-cabinet/south-west-native-title-settlement>.

Further advice can also be sought from the Department of Planning, Lands and Heritage at [AboriginalHeritage@dplh.wa.gov.au](mailto:AboriginalHeritage@dplh.wa.gov.au).

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### Coordinate Accuracy

Coordinates (Easting/Northing metres) are based on the GDA 94 Datum. Accuracy is shown as a code in brackets following the coordinates.



# Aboriginal Heritage Inquiry System

## List of Registered Aboriginal Sites

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# Aboriginal Heritage Inquiry System

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 Department of Planning, Lands and Heritage's Disclaimer statement at  
<https://www.dph.wa.gov.au/about-this-website>

## Map of Registered Aboriginal Sites

