



**WESTERN**  
**ENVIRONMENTAL**

## **Lot 806 South Western Highway**

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Native Vegetation Clearing Permit  
Supporting Documentation

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ENVIRONMENTAL

## Lot 806 South Western Highway

### Native Vegetation Clearing Permit Supporting Documentation

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# Executive Summary

## Introduction and Background

Accord Property (the 'Proponent') propose to develop Lot 806 South Western Highway, Byford (the 'Site') for commercial purposes. The Site is 8.25 ha in size, and is situated within the Shire of Serpentine-Jarrahdale approximately 35 km southeast Perth Central Business District and immediately east of the Byford town centre (Figure 1). The Site is zoned Urban under the Metropolitan Region Scheme and Urban Development under the Shire of Serpentine-Jarrahdale Local Planning Scheme No. 3.

The proposed development will result in the entirety of the Site being cleared.

## Current and Former Land Uses

The Site was cleared of native vegetation prior to 1953, which is the earliest available aerial imagery over the Site. Since then, some native vegetation has regenerated, with stands of parkland cleared vegetation present in pockets. The Site has not been developed for urban purposes.

## Topography, Geology, Soils and Hydrology

The Site slopes generally east to west, with the highest point being approximately 72 m Australian Height Datum (m AHD) at the eastern boundary and the lowest point being approximately 58 m AHD at the western boundary. Subsurface conditions as very dense, locally hard, orange brown, locally mottled, brown and red, medium grained, clayey sand with carrying amounts of gravel. The Site has low permeability and poor drainage. The Site contains no surface water features, however is intersected by a multiple use wetland (Armadale Palusplain).

## Flora and Vegetation

The Site occurs largely within the Guildford Vegetation Complex, with a small portion in the south located within the Forrestfield complex.

Two flora and vegetation surveys have been conducted within the Site, by Bennett Environmental Consulting (2010) and Western Environmental Approvals (2024). Based on these assessments, the Site contains 3.38 ha of native vegetation of which the significant majority (88%) is in Degraded or worse condition. Five vegetation units were described within the Site, with the dominant species being Marri (*Corymbia calophylla*).

## Fauna Habitat and Observations

WEPL (2024) identified five fauna habitat types, with marri woodland being the most dominant (35.2%). The Site contains 3.10 ha of foraging habitat for Carnaby's black cockatoo, Baudin's black cockatoo, and Forest red-tailed black cockatoo. Given the presence of Marri (*Corymbia calophylla*) trees, the foraging value was assessed as 'very high'. Foraging evidence (chewed marri nuts) for all three species was recorded during the field survey, throughout the Site.

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The Site contains a total of 45 trees with a diameter at breast height (DBH) greater than 500 mm, the majority of which are marri (*Corymbia calophylla*; 91%). Of those, two trees contain small hollows that are unsuitable for black cockatoo nesting, and one contains a potentially suitable hollow (based on size and tree structure) that does not show signs of use. The remaining 42 trees do not contain any hollows or broken branches.

Throughout the Site, isolated stands of tall (>10 m) eucalypts are scattered which may provide suitable roosting habitat. No evidence of roosting (scat marking, branch clipping, or feather dropping) was recorded.

Clearing within the Site is estimated to constitute 0.013% of foraging resources within a 12 km radius.

### **Conservation Areas and Environmentally Sensitive Areas**

The Site is situated immediately east of, and shares a boundary with, Bush Forever Site 350 (BF 350). The Site is situated within a mapped Environmentally Sensitive Area associated with the buffer of a Threatened Ecological Community.

### **Assessment of Impacts**

The proposed development will necessitate the removal of 3.38 ha of native vegetation, predominantly in Degraded or worse condition, with the following values:

- Majority (93.4%) forms part of the mapped Guildford vegetation complex which has been extensively cleared within the Swan Coastal Plain bioregion (with 5.0% of the estimated pre-European extent remaining).
- Contains 3.10 ha of foraging habitat for Carnaby's black cockatoo, Baudin's black cockatoo, and Forest red-tailed black cockatoo, of which the majority is of very high quality and that is currently used by the three species.
- Contains 45 trees of a suitable size (DBH greater than 500 mm) and species to develop hollows suitable for black cockatoo breeding.
- Contains one tree (Marri with DBH of 650 mm) that possesses a single hollow of a suitable size to be used for black cockatoo nesting. The hollow does not show signs of use by black cockatoos (i.e. no chew marks present) and is currently being used by galahs.

An assessment against the ten clearing principles found that the proposed clearing is likely to be at variance with principle b due to the proposed impacts to black cockatoo foraging and potential breeding habitat.



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Appendix B	Flora and Vegetation Survey Report (WEPL, 2024)
Appendix C	Landscaping Plans (Plan E, 2022)

# 1. Introduction

## 1.1 Background

Accord Property (the 'Proponent') propose to develop Lot 806 South Western Highway, Byford (the 'Site') for commercial purposes. The Site is 8.25 ha in size, and is situated within the Shire of Serpentine-Jarrahdale approximately 35 km southeast Perth Central Business District and immediately east of the Byford town centre (Figure 1).

The Site is currently zoned Urban under the Metropolitan Region Scheme (MRS; Figure 2) and as Urban Development under the Shire of Serpentine-Jarrahdale Local Planning Scheme No. 3 (LPS 3; Figure 3). The proposed commercial development is consistent with both the MRS and LPS. The Site is bounded by South Western Highway to the west, light industrial to the north, Cohunu Koala Park to the east, and residential land uses to the south (Figure 3).

The Site was entirely cleared prior to 1953, according to the earliest available aerial imagery (Landgate, n.d.). Currently, the Site is predominantly cleared with some areas of native vegetation occurring in a parkland cleared state.

A development application was submitted to the Shire of Serpentine-Jarrahdale in 2023. Council made an official recommendation to the Metro Outer Joint Development Assessment Panel (MODAP) to approve the development on 20 March 2023 (subject to conditions). The proposed development comprises of the following:

- 21 Showroom tenancies.
- Five fast food/takeaway tenancies.
- Realignment of Wilaring Street, with the inclusion of a roundabout to direct traffic into the Site or to the existing residential area to the south.
- New access to the Site via Dougal street to the north.
- Landscaping and siteworks.
- 699 parking bays.

## 1.2 Approvals Context

The Site contains native vegetation that will be required to be removed for the proposed development. As such, a Native Vegetation Clearing Permit (NVCP) is required under Part V Division 2 of the *Environmental Protection Act 1986* (EP Act).

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Development of the Site may also impact Matters of National Environmental Significance (MNES) which are protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). As such, the proposed development will undergo a separate referral and potential assessment under the EPBC Act.

### 1.3 Previous Environmental Reports Prepared over the Site

A number of technical reports have been prepared for the Site. Information contained in this NVCP supporting document has been consolidated from publicly available datasets, government databases, and the following reports:

- Bennett Environmental Consulting (2010) Vegetation and Flora of Lot 806 South West Highway, Byford. Report prepared for Coterra Environment.
- Cardno (2010) Lot 806 South West Highway Local Water Management Strategy. Report prepared for C&E Development Pty Ltd.
- Thompson McRobert Edgeloe Group (2011) Pre-Preliminary Hydrological Monitoring Report (2010 - 2011) Lot 806 South West Highway, Byford. Report prepared for Knight Frank Australia Pty Ltd.
- Brown Geotechnical (2012) Geotechnical Investigation Lot 806 South Western Highway Byford, Western Australia. Report prepared for C&E Developments.
- Cardno (2013) Lot 806 South Western Highway Urban Water Management Plan. Report prepared for C&E Development Pty Ltd.
- Coterra Environment. (2018). Environmental Assessment Report Lot 806 South Western Highway, Byford. Report prepared for CLE Town Planning & Design.
- Coterra Environment. (2018). Local Water Management Strategy Lot 806 South Western Highway, Byford. Report prepared for CLE Town Planning & Design.
- GHD (2021) Byford Rail Extension Flora and Vegetation Assessment. Report prepared for Public Transport Authority.
- Brown Falconer (2022) Development Application Byford Commercial, South Western Highway. Prepared for Accord Property.
- PGV Environmental. (2023). Lot 806 South Western Highway, Byford - Environmental Advice. Letter report prepared for Planning Solutions.
- Plan E Landscape Architects (2023) Landscaping Plans. Prepared for Accord Property.

This report also recognises the referral comments and public submissions received on the application for development approval for the Byford Mixed Commercial Centre.

## 1.4 Purpose and Scope

This report has been prepared to support the NVCP application to facilitate the proposed development within the Site. The NVCP will be submitted to the Department of Water and Environmental Regulation (DWER) for assessment.

This report comprises of the following:

- Description of the Site's environmental context.
- Description of the proposed environmental impacts of the development.
- Description of avoidance and mitigation measures that will be undertaken as part of the proposed development to minimise the risk of environmental harm.
- Assessment of the proposed clearing against the ten clearing principles.

## 1.5 Summary of Impacts

The proposed development will necessitate the removal of up to 3.38 ha native vegetation that provides habitat for threatened species listed under the *Biodiversity Conservation Act 2016* (BC Act). Specifically, the development will impact:

- 3.10 ha of foraging habitat for Carnaby's black cockatoo (*Zanda latirostris*) - Endangered.
- 3.10 ha of foraging habitat for Baudin's black cockatoo (*Zanda baudinii*) - Endangered.
- 3.10 ha of foraging habitat for Forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) - Vulnerable.
- 45 potential breeding trees (diameter at breast height [DBH] > 500 mm) that do not contain suitable hollows for black cockatoo nesting.
- One potential breeding tree (DBH > 500 mm) that contains one suitable hollow for black cockatoo nesting.

## 1.6 Stakeholder Consultation

As part of the application for development approval, the proposed development was advertised for public consultation. The application for development approval was lodged with the Shire of Serpentine-Jarrahdale (the 'Shire') on 26 October 2022.

The following stakeholders provided submissions on the proposed development:

- Shire of Serpentine-Jarrahdale.
- Interested community members.
- Department of Water and Environmental Regulation (DWER).
- Department of Fire and Emergency Services (DFES).
- Main Roads Western Australia (MRWA).
- Department of Planning, Lands and Heritage (DPLH).
- Department of Biodiversity, Conservation and Attractions (DBCA).

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**Figure 1: Site Location**



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**Figure 2: Metropolitan Region Scheme Zones and Reserves**

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**Figure 3: Surrounding Land Use and Zoning**

## **2. Existing Environment**

### **2.1 Surrounding Land Use**

The Site is currently zoned for urban purposes under the MRS and LPS. The Site was cleared of native vegetation prior to 1953, which is the earliest available aerial imagery over the Site (Landgate, n.d.). Since then, some native vegetation has regenerated, with stands of parkland cleared vegetation present in pockets. The Site has not been developed for urban purposes. Table 1 shows historical aerial imagery over the Site.

**Table 1. Historical Aerial Imagery**

Date	Image	Description
November 1953		<p>Earliest available aerial imagery over the Site.</p> <p>Site had been entirely cleared of native vegetation prior to November 1953.</p>
March 1965		<p>Scattered regeneration of native vegetation evident through the Site.</p>

Date	Image	Description
December 2006		<p>Native vegetation has regenerated in pockets across the Site and is beginning to mature.</p>
September 2023		<p>Pockets of native vegetation present within the Site. Native vegetation limited to trees over a cleared understorey.</p>

## 2.2 Topography, Geology and Soils

### 2.2.1 Topography

The Site slopes generally east to west, with the highest point being approximately 72 m Australian Height Datum (m AHD) at the eastern boundary and the lowest point being approximately 58 m AHD at the western boundary (DPIRD-072) as shown on Figure 4.

### 2.2.2 Landform, Geology and Soils

The Site is situated on the eastern margin of the Pinjarra Plain, within the colluvial slope at the foothills of the Darling Scarp.

The Armadale 1:50,000 Environmental Geology Series map (Jordan, 1986) shows the dominant soil type present as Cs - Sandy Clay. This is described as white-grey to brown, fine to coarse-grained, subangular to rounded sand, clay of moderate plasticity, gravel and silt layers near scarp, of alluvial origin.

According to mapping managed by the Department of Primary Industries and Regional Development (DPIRD-027) the Site contains three soil landscape units. These are presented and described in Table 1.

**Table 2. Soil Landscape Units within the Site (DPIRD-027)**

Unit Symbol	Unit Name	Description	Extent within the Site
213FoX_URBAN	Forrestfield disturbed land, urban phase	Urban	0.01 ha
213Fo_Ff2	Forrestfield (D Range) F2 phase	Foot and low slopes < 10%. Well drained gravelly yellow or brown duplex soils with sandy topsoil. Woodland of <i>Eucalyptus marginata</i> , <i>Corymbia calophylla</i> and some <i>Banksia grandis</i> .	7.78 ha
213Pj_P1a	Pinjarra phase P1a	Flat to very gently undulating plain with deep acidic mottled yellow duplex (or seffective duplexi) soils. Shallow pale sand to sandy loam over clay; imperfect to poorly drained and generally not susceptible to salinity.	0.47 ha

### 2.2.3 Geotechnical Investigation and Land Capability

A geotechnical investigation was undertaken over the Site by Brown Geotechnical in 2012. The investigation consisted of 15 test holes, 2 in situ permeability tests and penetrometer tests. Brown Geotechnical (2012) described the subsurface conditions as very dense, locally hard, orange brown, locally mottled, brown and red, medium grained, clayey sand with carrying amounts of gravel. The material often contained laterises gravel, cobbles, and boulders (Brown Geotechnical, 2012). The Site was found to have very low permeability and therefore poor drainage.

Table 3 provides a description of the Site Class under AS 2870-2011 and fill requirements to achieve Class 'S' or 'A' across the Site.

**Table 3. Site Classification (AS 2870-2011) and Fill Requirements to Meet Class S or A.**

Class	Description of Foundation	Comment in Relation to the Site
M	Moderately reactive clay or silt sites, which can experience moderate ground movement from moisture changes ( $y_s$ 20-40mm).	Site is currently Class 'M'.
S	Slightly reactive clay sites with only slight ground movement for moisture changes ( $y_s$ <20mm).	For the Site to achieve Class 'S', a minimum of 500 mm of non-cohesive sand is required above the clayey subgrade.
A	Most sand and rock sites with little or no ground movement from moisture changes.	For the Site to achieve Class 'A', a minimum of 1.35 m of clean sand fill will be required above the clayey subgrade.

$Y_s$ : Characteristic Surface Movement

## 2.3 Acid Sulfate Soils Risk

According to DWER acid sulfate soils (ASS) risk mapping (DWER-055) the Site has no risk of ASS occurring within three metres of the natural soil surface (Figure 5).

## 2.4 Known and Potential Contamination

According to the DWER contaminated sites database, there are no known contamination issues within the Site. The nearest recorded contaminated site is situated over 2 km to the north (Figure 6).

In a letter dated 12 December 2022 in response to the application for development approval, DWER advised that the Site was part of former Lot 523 which was formerly used as an ammunitions depot. Site investigations identified asbestos-impacted areas in multiple locations across former Lot 523 including ear the southern boundary of the Site. However, at the time of classification, the Department held no information on the contamination status of the Site, and it was classified on 7 November 2008 as 'report not substantiated' under the *Contaminated Sites Act 2003* (CS Act). DWER recommended that the development approval should include an advice note requiring a health and safety management plan be prepared in accordance with the *Code of Practice: How to Safely Remove Asbestos* (Safe Work Australia, 2018) prior to soil disturbing works to address the potential exposure of asbestos-containing material during excavations.

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**Figure 4: Topography, Soils and Geology**



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**Figure 5: Acid Sulfate Soils Risk**

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**Figure 6: Known and Potential Contamination**

## 2.5 Groundwater

The Site is outside of regional groundwater mapping available from DWER, however the Byford Townsite Drainage and Water Management Plan (DoW, 2008) indicates that groundwater levels in the wider Byford area are relatively shallow and that groundwater is often perched during winter months.

Pre-development groundwater monitoring was undertaken at three locations within the Site between August 2010 and November 2011, capturing two winter peak periods. The bores ranged between 5 m and 6 m deep, and were screened from 1 m below ground level (bgl). The results of this monitoring were reported over two monitoring reports prepared by TME Brown (2011 and 2012).

The groundwater monitoring data indicates that the maximum groundwater level sits between 0.13 m and 1.58 m below the natural ground level across the Site (TME Brown, 2011; TME Brown, 2012).

Maximum groundwater level contours were developed by Cardno (2013) based on the results of the groundwater monitoring. These contours are provided as Appendix A.

## 2.6 Surface Water

The Site is situated approximately 250 m south of Beenyup Brook (DWER-031; Figure 7).

## 2.7 Geomorphic Wetlands

According to mapping by the Department of Biodiversity, Conservation and Attractions (DBCA) the Site is intersected by one Multiple Use Wetland (MUW) as shown on Figure 7. This wetland is identified as Armadale Palusplain (UFI 15797) (DBCA-019).

The nearest Conservation Category Wetland (CCW) is situated 30 m to the west of the Site to the opposite site of South Western Highway.

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**Figure 7: Surface Water Features and Geomorphic Wetlands**

## 2.8 Pre-European Vegetation

### 2.8.1 Vegetation Complexes

Hedde et al. (1980) described the vegetation complexes of the Darling System at a scale of 1:250 000. There was found to be a distinct pattern of plant distribution linked to landforms, soils and climate. The Site occurs largely within the Guildford Complex, with a small portion in the south located within the Forrestfield complex (DBCA-046). These complexes are described as:

- Guildford: Consisting of a mixture of marri (*Corymbia calophylla*)-wandoo (*Eucalyptus wandoo*)-jarrah (*Eucalyptus marginata*) open forest (in places tall open forest) and Wandoo woodland, with a small number of locations fringed by *Eucalyptus rudis*-*Melaleuca raphiophylla*.
- Forrestfield: Dominated by an open-forest of marri-wandoo-jarrah on the heavier gravelly soils and of jarrah-marri-sheoak on the sandy soils. The open forest now approximates a woodland as a result of logging and clearing. Remnant plants species on the gravelly soils include *Banksia grandis*, *Xymelum occidentale*, *Banksia sessilis*, *Macrozamia riedlei*, *Xanthorrhoea preissii* and species of *Hibbertia*. On the sandier soils there are remnant pockets of the jarrah-marri-sheoak open forest with common species including *B. attenuata*, *B. grandis*, *Stirlingia latifolia*, *Mesomelaena tetragona* and *Nuytsia floribunda*.

Table 4 provides the pre-European and current extent of the vegetation complexes grouped by major landforms, soils and climate (Hedde et al., 1980; GoWA, 2017). Table 4 also provides the percentage of the current extent of each vegetation complex that is held within conservation reserves (GoWA, 2017).

**Table 4. Pre-European and Current Extent of Vegetation Complexes within the Site (data from GoWA [2017])**

Vegetation Complex	Pre-European Extent (ha)	Current Extent (2017) (ha)	Percentage of Pre-European Extent Remaining (2017)	Percentage of Current Extent within Conservation Reserves (2017)
Guildford	90,513.13	4,522.01	5.0%	5.3%
Forrestfield	22,812.92	2,804.97	12.3%	11.2%

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**Figure 8: Vegetation Complexes**

## 2.9 Flora and Vegetation

### 2.9.1 Previous Surveys

A flora and vegetation survey of the Site was undertaken by Bennett Environmental Consulting Pty Ltd (BEC) in November 2010 (BEC, 2010). The survey report is provided as Appendix B. The following scope was covered by the survey:

- Level 1 flora and vegetation survey.
- Record and assess any significant trees.
- Search for and record all significant species at the Site.

WEPL undertook a targeted search for threatened flora on 12 October 2023, and recorded the following (Appendix C):

- Observer, date, and time.
- Local abundance/population size and/or population boundary.
- Representative photos of each species and habitat.
- Collection of representative specimens.
- Notes on habitat and vegetation type.

**Table 5. Aerial Image from Approximate Date of Flora and Vegetation Survey (BEC, 2010) and Targeted Searches and Black Cockatoo Habitat Assessment (WEPL, 2024)**

Date	Image
<p>May 2010</p>	
<p>September 2023</p>	



## 2.9.2 Conservation Significant Flora

### *Desktop*

According to DBCA database search results (DBCA-036) and the flora and vegetation survey (BEC, 2010) there are no records of threatened flora species occurring within the Site. The nearest occurrence of conservation significant flora is a Priority 3 species situated approximately 165 m west of the Site to the opposite side of South Western Highway (Figure 9).

Prior to the field survey, WEPL assessed the likelihood of conservation significant flora species occurring within the Site (WEPL, 2024). This was undertaken based on the habitats described by BEC (2010), database search results, and the habitat preferences of each species. The following three species were considered to have a 'medium' likelihood of occurrence based on the pre-survey likelihood assessment:

- *Synaphea* sp. Pinjarra Plain (A.S. George 17182) - Endangered.
- *Synaphea* sp. Serpentine (G.R. Brand 103) - Critically Endangered.
- *Synaphea* sp. Fairbridge Farm (D. Papenfus 696) - Critically Endangered.

### *Field Results*

A post-survey likelihood of occurrence identified that no threatened species are likely to occur within the Site (WEPL, 2024; Appendix C). Given that suitable survey effort was applied during an appropriate seasonal period, and noting the degraded condition of the Site, it was determined that no Threatened flora species are likely to occur within the Site (WEPL, 2024; Appendix C).

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**Figure 9: Conservation Significant Flora**

### 2.9.3 Vegetation Types

A flora and vegetation assessment was undertaken by Bennett Consulting in 2010 (BEC, 2010). This survey identified five native vegetation types across the Site comprising 4.64 ha. WEPL (2024) confirmed that the values on-site were consistent with that reported by BEC (2010) however the mapping was inaccurate and captured significant areas of cleared land as native vegetation. Therefore, the vegetation type and condition mapping was refined to retain the vegetation units described by BEC (2010) and calculate their extent accurately.

Vegetation units recorded within the Site, as mapped by BEC (2010) and confirmed by WEPL (2024) are described in Table 6 and shown on Figure 10. A total of 4.86 ha is comprised of cleared land.

**Table 6. Description of Vegetation Types within the Site (Bennett Consulting, 2010)**

Vegetation Type	Description	Extent within Site (ha)
Bs	Open Low Woodland A of <i>Corymbia calophylla</i> over Thicket of <i>Banksia sessilis</i> var. <i>sessilis</i> and <i>*Leptospermum laevigatum</i> Over Dwarf Scrub C of mixed taxa over Dense Tall Grass dominated by <i>*Avena barbata</i> , <i>*Briza maxima</i> , <i>*Ehrharta calycina</i> and <i>*Eragrostis curvula</i> in lateritic soil with laterite pebbles on the surface.	0.52
C1	Forest of <i>Corymbia calophylla</i> over Open Scrub of <i>Kingia australis</i> over Open Low Scrub B of <i>Hakea lissocarpa</i> and <i>Banksia armata</i> over Dwarf Scrub C of mixed taxa over Open Low Grass dominated by <i>Austrodanthonia occidentalis</i> and <i>Neurachne alopecuroidea</i> over Tall Sedges dominated by <i>Lepidosperma leptostachyum</i> , <i>Lepidosperma squamatum</i> and <i>Tetraria capillaris</i> in lateritic soils with laterite pebbles on the surface.	1.56
Ew	Forest of <i>Eucalyptus wandoo</i> over weeds in loam. <i>Eucalyptus wandoo</i> was the only native taxa recorded in this unit.	0.09
C2	Forest of <i>Corymbia calophylla</i> over weeds in loam	0.83
Ap	Open Woodland of <i>Corymbia calophylla</i> with scattered <i>Eucalyptus marginata</i> subsp. <i>marginata</i> over Thicket of <i>*Acacia podalyriifolia</i> over Dense Low Grass dominated by <i>*Briza maxima</i> .	0.40
<b>Total Native Vegetation</b>		<b>3.38</b>
<b>Cleared</b>	Cleared areas	4.86
<b>Grand Total</b>		<b>8.25</b>

### 2.9.4 Vegetation Condition

Native vegetation (excluding cleared areas) within the Site ranges from Completely Degraded to Very Good condition. A breakdown of native vegetation by condition is provided in Table 7 and Figure 11. The majority of native vegetation within the Site is Degraded (42.9%) and over 88% is in Degraded or worse condition.

**Table 7. Condition of Native Vegetation within the Site (Bennett Consulting, 2010)**

Vegetation Condition	Area (ha)	% of Native Vegetation
Completely Degraded	0.52	15.4
Degraded to Completely Degraded	1.01	29.9
Degraded	1.45	42.9
Good to Degraded	0.14	4.7
Very Good	0.20	7.1
<b>Total (native vegetation)</b>	<b>3.38</b>	<b>100</b>
Cleared land	4.87	-

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**Figure 10:Vegetation Units**

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**Figure 11: Vegetation Condition**

## 2.10 Terrestrial Fauna

### 2.10.1 Habitat Types

WEPL (2024) recorded five fauna habitat types within the Site (amongst areas of cleared land with negligible foraging value). These habitat types are presented in Table 8, together with their extent within the Site.

**Table 8. Fauna Habitat Types within the Site (WEPL, 2024)**

Fauna Habitat Type	Extent within the Site (ha)	Proportion of Fauna Habitat (%)	Proportion of Site (%)
Marri woodland	2.90	83.3	35.2
Jarrah woodland	0.02	0.6	0.2
Acacia sp. and planted Eucalyptus camaldulensis	0.44	12.6	5.3
Wandoo woodland	0.09	2.6	1.1
Landscaping plantings	0.03	0.9	0.4
<b>Total Fauna Habitat</b>	<b>3.48</b>	<b>100</b>	<b>57.8</b>

The Site provides limited habitat value for non-aerial species given the highly degraded nature of the vegetation present and lack of understorey. However, there are a number of large eucalyptus present (including *Eucalyptus wandoo*, *E. marginata* and *Corymbia calophylla*) that provide foraging and potential breeding habitat for black cockatoo species.

### 2.10.2 Conservation Significant Fauna

#### *Desktop Assessment*

The Site falls within the modelled distribution and breeding range for Baudin's black cockatoo, Carnaby's black cockatoo and Forest Red-tailed black cockatoo (DCCEEW, 2022). Numerous observation records for all three species are present in DBCA database search results within 5 km of the Site.

A confirmed Carnaby's black cockatoo breeding location is present approximately 17 km north of the Site within the Roleystone locality (DBCA-054). The Site does not overlap with the (12 km) key foraging area buffer of this confirmed breeding location.

The Survey Area falls within the 1 km buffer applied to confirmed Carnaby's black cockatoo roost sites (no specific ID code supplied) (DBCA-64).

A previous fauna habitat survey undertaken by Coterra (2016) identified approximately 43 trees that may provide potential breeding habitat for black cockatoo species (jarrah and marri trees with a diameter at breast height [DBH] greater than 500 mm and wandoo trees with a DBH greater than 300 mm). Coterra (2016) recorded foraging evidence of Forest red-tailed black cockatoo and Baudin's black cockatoo via chewed marri nuts.

## Black Cockatoo Habitat Assessment

### Methodology

WEPL (2024) undertook a black cockatoo foraging and breeding habitat assessment on 12 October 2023. The survey report is provided as Appendix C and a summary of the methods implemented is provided below.

The foraging habitat assessment comprised:

- A description of the foraging potential of vegetation within the Site for each black cockatoo species.
- Records of any foraging evidence of foraging by black cockatoo species (e.g. chewed nuts).
- Records of any opportunistic sightings of black cockatoo individuals.
- Application of all findings to subsequently determine a numerical value of foraging quality using a habitat quality scoring (HQS) tool developed by DCCEEW (n.d.).

In accordance with DAWE (2022), the breeding habitat assessment involved recording the location all trees of a species with the potential to form hollows (typically jarrah, marri and tuart) and with a DBH greater than 300 mm using a handheld GPS. The following information was recorded for each tree:

- Species.
- DBH (at approximately 1.3 m from the ground).
- Tree health (noting the presence of diseases and other threatening processes such as the presence of dieback [*Phytophthora cinnamomi*] or marri canker [*Quambalaria coyrecup*]).
- Presence of hollows (as observable from the ground).

In addition to the Commonwealth guidelines for assessing potential breeding trees (DAWE, 2022), a scoring system based on that developed by Dr Mike Bamford was applied to class potential breeding trees, as shown in Table 8.

**Table 9: Classification of Potential Black Cockatoo Breeding Trees**

Class	Description of Tree and Hollows/Activity
1	Active nest observed; adult (or immature) bird seen entering or emerging from hollow, eggs present.
2	Hollow of suitable size and angle visible with chew marks around entrance.
3	Potentially suitable hollow visible but no chew marks present; or potentially suitable hollow present (as suggested by structure of tree, such as large, vertical trunk broken off at a height of >10m).
4	Tree with hollows or broken branches that might contain hollows, but hollows or potential hollows are not of a suitable size, or are aligned or obstructed so as to prevent access
5	Tree lacking large hollows or broken branches that might have large hollows; a tree with more or less intact branches and a spreading crown.



Where trees were identified to contain a potentially suitable breeding hollow (based on the entrance size), an internal hollow inspection was undertaken using a pole camera to inspect the internal dimensions.

Any stands of tall trees may provide roosting habitat for black cockatoo species. During the field survey, searches were conducted for evidence of roosting, such as piles of scats, feeding debris, and chewed trees.

## Results

A summary of the foraging, breeding, and roosting habitat assessment undertaken by WEPL (2024) is provided in the following subsections. The survey report is provided as Appendix C.

## Observations

Foraging evidence (chewed marri nuts) for all three species was recorded during the field survey. Foraging evidence was recorded at three locations for Baudin's black cockatoo, four locations for Carnaby's black cockatoo, and eleven locations for Forest red-tailed black cockatoo.

## Foraging Habitat

Foraging habitat within the Site is comprised primarily of marri, jarrah and wandoo trees. A detailed assessment of foraging quality was undertaken by applying a HQS tool developed by DCCEEW (n.d.).

WEPL (2024) found that the Site contains 3.10 ha of foraging habitat for Carnaby's black cockatoo, Baudin's black cockatoo, and Forest red-tailed black cockatoo (i.e. 37.5% of the Site) (Figure 12). The remaining 5.16 ha does not provide foraging habitat for any species of black cockatoo. The quality of foraging habitat was assessed to be the same for each species of black cockatoo. As such, Table 9 provides a breakdown of habitat quality and extent within the Site for all three species of black cockatoo.

**Table 10. Quality of Foraging Habitat within the Site (Assessed under DCCEEW [n.d.]**

Foraging Quality for Carnaby's, Baudin's and Forest Red-tailed Black Cockatoo	Area (ha)	Proportion of Habitat (%)	Proportion of the Site (%)
10 (Very High)	2.64	85.2%	32.0%
9 (High)	0.21	6.8%	2.5%
6 (Moderate)	0.14	4.5%	1.7%
2 (Low)	0.10	3.2%	1.2%
<b>Total</b>	<b>3.10</b>	<b>100%</b>	<b>37.5%</b>

The majority (85.2%) of foraging habitat within the Site is of very high quality for all species of black cockatoo. The weighted average foraging quality across the Site is 9.5.

## Breeding Habitat

The Site contains a total of 45 trees with a DBH greater than 500 mm (Figure 13), the majority of which are marri (*Corymbia calophylla*; 91%). Of those, two trees contain small hollows that are unsuitable for black cockatoo nesting (Class 4), and one contains a potentially suitable hollow (based on size and tree structure)

that does not show signs of use (Class 3). The remaining 42 trees do not contain any hollows or broken branches (Class 5).

The Site contains a further 107 trees with a DBH greater than 300 mm but less than 500 mm that are of a suitable species to develop hollows in the future. One of those trees (a stag) contains hollows that are too small to be used black cockatoos (Class 4). The remaining 106 do not contain any hollows or broken branches (Class 5).

A breakdown of all trees with a DBH greater than 300 mm is provided in Table 10. Table 10 summarises the number of trees by species and Class according to the classification system devised by Dr Mike Bamford (see Table 8 for a description of each Class).

**Table 11. Species, Size, and Breeding Classification of Trees within the Site (DBH > 300 mm)**

Tree Species	Tree Classification (Bamford)			Total
	3	4	5	
<b>DBH &gt; 500 mm</b>				
Jarrah ( <i>Eucalyptus marginata</i> )	-	-	1	1
Marri ( <i>Corymbia calophylla</i> )	1	2	38	41
Wandoo ( <i>Eucalyptus wandoo</i> )	-	-	3	3
<b>Sub-total</b>	<b>1</b>	<b>2</b>	<b>42</b>	<b>45</b>
<b>DBH &lt;500 mm and &gt; 300 mm</b>				
Dead	-	1	3	4
Jarrah ( <i>Eucalyptus marginata</i> )	-	-	2	2
Marri ( <i>Corymbia calophylla</i> )	-	-	97	97
Wandoo ( <i>Eucalyptus wandoo</i> )	-	-	4	4
<b>Sub-total</b>	<b>-</b>	<b>1</b>	<b>106</b>	<b>107</b>
<b>Total</b>	<b>1</b>	<b>3</b>	<b>148</b>	<b>152</b>

Overall, the Site contains three trees that possess small hollows that are currently of an insufficient size to support nesting; however, these trees are of sufficient age and growth form to be developing hollows (Class 4 trees).

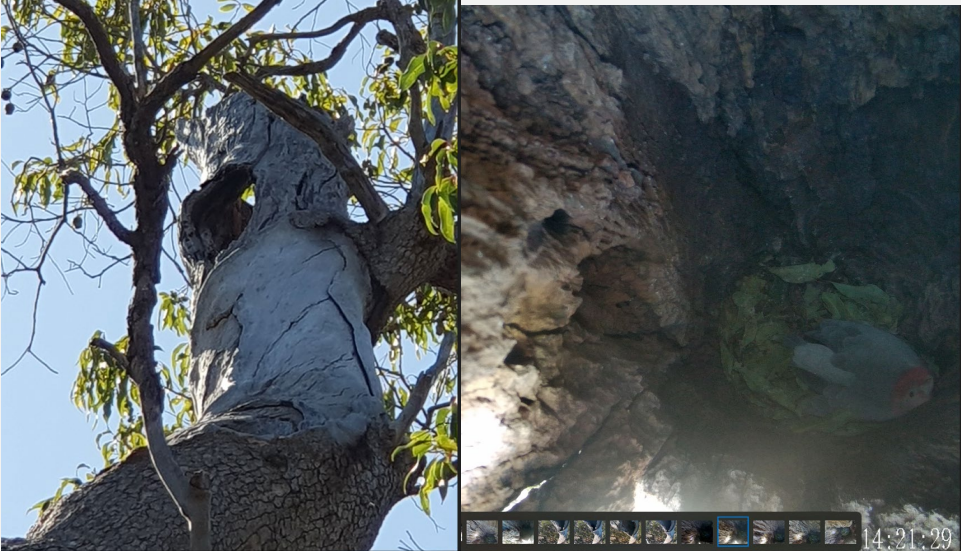
The Site contains one tree (marri; Tree 51) that is classified as Class 3. Class 3 trees are those which contain a suitable hollow but where no chew marks present, or that contain a potentially suitable hollow as suggested by the structure of the tree (e.g. has a large, vertical trunk broken off at a height of >10 m).

The hollow within Tree 51 has sufficient entry diameter, internal chamber dimensions and depth to represent a marginally suitable potential nesting hollow (WEPL, 2024). No signs of usage by black cockatoo (distinctive chewing pattern) were present. Chew marks on branches around the hollow and hollow entrance indicate

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usage by galahs. Through further inspection using a pole camera, it was confirmed that galahs were occupying the hollow. Further details and photos of the hollow in Tree 51 are provided in Table 11.

**Table 12. Potentially Suitable Nesting Hollow - Tree 51**

Tree ID	Species	Tree Class (Bamford)	DBH (mm)	Hollow Comment	Photo
51	Marri	3	650	Chimney hollow at 10m. Top opening 15-20cm. Side opening 15x25cm. Internal chamber 20-25 cm wide and 50-60cm deep. Galah pair nesting, Galah chew on rim and trunk below. No evidence of BC chew	 <p>The 'Photo' column contains two side-by-side images. The left image shows a tree trunk with a large, irregular hollow opening. The right image is a close-up of a Galah bird sitting on a nest inside a dark, hollowed-out section of a tree trunk. A video player interface is visible at the bottom right of the images, showing a timeline and a timestamp of 14:21:29.</p>

**Figure 12: Black Cockatoo Foraging Habitat**

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**Figure 13: Black Cockatoo Potential Breeding Habitat**

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## Roosting Habitat

Throughout the Site, isolated stands of tall (>10 m) eucalypts are scattered which may provide suitable roosting habitat. No evidence of roosting (scat marking, branch clipping, or feather dropping) was recorded. Access to water is present from nearby brooks and recreational dams.

## *Regional Foraging Habitat for Black Cockatoos*

Analysis of estimated foraging habitat extent within the local area has also been undertaken to provide further context. The estimated extent of foraging habitat is calculated based on a buffer of 12 km around and including the Site. This buffer is selected as recommended in the Commonwealth referral guidelines due to black cockatoos mainly foraging within 12 km of their nest site during the breeding season and their reliance on this proximity of foraging resources to successfully raise chicks (DAWE, 2022).

The analysis considered the approximate extent of regional vegetation complexes that are likely to contain known foraging species of black cockatoos (based on their description). As such, the analysis is based on the following datasets:

- Remnant Native Vegetation Extent mapping (DPIRD-005).
- Vegetation Complexes- Swan Coastal Plain (DBCA-046).
- Vegetation Complexes - South West forest region (DBCA-047).

A summary of the regional vegetation complexes and extents is provided in Table 12 and is displayed on Figure 14.

Results of the analysis indicate that there is an estimated 22,267.68 ha of remnant native vegetation within 12 km of the Site. The majority of this (22,112.39 ha) is expected to contain foraging species at the same or greater rate than that present within the Site. Much of the regional remnant native vegetation within 12km of the Site occurs within the jarrah forest to the east.

Within the Site there is 2.99 ha of foraging habitat scoring between 3 (Low to Moderate) and 7 (Very High) according to the DCCEEW (n.d.) HQS for Site Condition (i.e. vegetation structure and composition). This represents 0.013% of the estimated regional foraging habitat extent. The habitat quality within the Site is considered likely to be of similar quality than much of the regional foraging habitat, which includes high quality banksia woodlands of the Bassendean Complex sandplains and the jarrah and marri forests of the Darling Scarp.

**Table 13: Regional Foraging Habitat Extent within 12 km Buffer**

Vegetation Complex and Description	Contains Foraging Habitat	Remnant Extent (ha)	Extent of Potential Black Cockatoo Foraging Habitat within 12 km
<b>Bassendean Complex-Central and South</b> Vegetation ranges from woodland of <i>Eucalyptus marginata</i> (jarrah) - <i>Allocasuarina fraseriana</i> (sheoak) - <i>Banksia</i> species to low woodland of <i>Melaleuca</i> species, and sedgeland on the moister sites. This area includes the transition of <i>Eucalyptus marginata</i> (jarrah) to <i>Eucalyptus tottiana</i> (pricklybark) in the vicinity of Perth.	1,907.16	1,907.16	1,907.16
<b>Beermullah Complex</b> Mixture of low open forest of <i>Casuarina obesa</i> (swamp sheoak) and open woodland of <i>Corymbia calophylla</i> (marri) - <i>Eucalyptus wandoo</i> (wandoo) - <i>Eucalyptus marginata</i> (jarrah). Minor components include closed scrub of <i>Melaleuca</i> species and occurrence of <i>Actinostrobus pyramidalis</i> (swamp cypress).	135.48	135.48	135.48
<b>Cooke, Ce</b> Mosaic of open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia calophylla</i> (subhumid zone) and open forest of <i>Eucalyptus marginata</i> subsp. <i>thalassica</i> - <i>Corymbia calophylla</i> (semiarid and arid zones) and on deeper soils adjacent to outcrops, closed heath of Myrtaceae-Proteaceae species and lithic complex on granite rocks and associated soils in all climate zones, with some <i>Eucalyptus laeliae</i> (semiarid), and <i>Allocasuarina huegeliana</i> and <i>Eucalyptus wandoo</i> (mainly semiarid to perarid zones).	110.75	110.75	110.75
<b>Darling Scarp, DS2</b> Mosaic of open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia calophylla</i> , with some admixtures with <i>Eucalyptus laeliae</i> in the north (subhumid zone), with occasional <i>Eucalyptus marginata</i> subsp. <i>elegantella</i> (mainly in subhumid zone) and <i>Corymbia haematoxylon</i> in the south (humid zone) on deeper soils adjacent to outcrops, woodland of <i>Eucalyptus wandoo</i> (subhumid and semiarid zones), low woodland of <i>Allocasuarina huegeliana</i> on shallow soils over granite outcrops, closed heath of Myrtaceae-Proteaceae species and lithic complex on or near granite outcrops in all climate zones.	1,858.45	1,858.45	1,858.45
<b>Dwellingup, D1</b> Open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia calophylla</i> on lateritic uplands in mainly humid and subhumid zones.	1,050.41	1,050.41	1,050.41
<b>Dwellingup, D2</b> Open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia calophylla</i> on lateritic uplands in subhumid and semiarid zones.	8,841.70	8,841.70	8,841.70



Vegetation Complex and Description	Contains Foraging Habitat	Remnant Extent (ha)	Extent of Potential Black Cockatoo Foraging Habitat within 2 km
<b>Forrestfield Complex</b> Vegetation ranges from open forest of <i>Corymbia calophylla</i> (Marri) - <i>Eucalyptus wandoo</i> (Wandoo) - <i>Eucalyptus marginata</i> (Jarrah) to open forest of <i>Eucalyptus marginata</i> (Jarrah) - <i>Corymbia calophylla</i> (Marri) - <i>Allocasuarina fraseriana</i> (Sheoak) - <i>Banksia</i> species. Fringing woodland of <i>Eucalyptus rudis</i> (Flooded Gum) in the gullies that dissect this landform.	583.92	583.92	583.92
<b>Guildford Complex</b> A mixture of open forest to tall open forest of <i>Corymbia calophylla</i> (Marri) - <i>Eucalyptus wandoo</i> (Wandoo) - <i>Eucalyptus marginata</i> (Jarrah) and woodland of <i>Eucalyptus wandoo</i> (Wandoo) (with rare occurrences of <i>Eucalyptus lane-poolei</i> (Salmon White Gum)). Minor components include <i>Eucalyptus rudis</i> (Flooded Gum) - <i>Melaleuca raphiophylla</i> (Swamp Paperbark).	380.31	380.31	380.31
<b>Helena 1, He1</b> Mosaic of open forest of <i>Corymbia calophylla</i> - <i>Eucalyptus patens</i> - <i>Eucalyptus marginata</i> subsp. <i>marginata</i> with some <i>Eucalyptus rudis</i> on the deeper soils ranging to closed heath and lithic complex on shallow soils associated with granite on steep slopes of valleys in humid and subhumid zones.	774.64	774.64	774.64
<b>Murray 1, My1</b> Open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia calophylla</i> - <i>Eucalyptus patens</i> on valley slopes to woodland of <i>Eucalyptus rudis</i> - <i>Melaleuca raphiophylla</i> on the valley floors in humid and subhumid zones.	3,400.87	3,400.87	3,400.87
<b>Serpentine River Complex</b> Closed scrub of <i>Melaleuca</i> species and fringing woodland of <i>Eucalyptus rudis</i> (Flooded Gum) - <i>Melaleuca raphiophylla</i> (Swamp Paperbark) along streams.	Unlikely to provide quality habitat.	78.46	Unlikely to provide quality habitat.
<b>Southern River Complex</b> Open woodland of <i>Corymbia calophylla</i> (Marri) - <i>Eucalyptus marginata</i> (Jarrah) - <i>Banksia</i> species with fringing woodland of <i>Eucalyptus rudis</i> (Flooded Gum) - <i>Melaleuca raphiophylla</i> (Swamp Paperbark) along creek beds.	665.45	665.45	665.45
<b>Swamp, S</b> Mosaic of low open woodland of <i>Melaleuca preissiana</i> - <i>Banksia littoralis</i> , closed scrub of <i>Myrtaceae</i> spp., closed heath of <i>Myrtaceae</i> spp. and sedgelands of <i>Baumea</i> and <i>Leptocarpus</i> spp. on seasonally wet or moist sand, peat and clay soils on valley floors in all climatic zones.	Unlikely to provide quality habitat.	76.83	Unlikely to provide quality habitat.
<b>Yarragil 1, Yg1</b> Open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia calophylla</i> on slopes with mixtures of <i>Eucalyptus</i>	2,023.62	2,023.62	2,023.62

Vegetation Complex and Description	Contains Foraging Habitat	Remnant Extent (ha)	Extent of Potential Black Cockatoo Foraging Habitat within 2 km
<i>patens</i> and <i>Eucalyptus megacarpa</i> on the valley floors in humid and subhumid zones.			
Yarragil 2, Yg2 Open forest of <i>Eucalyptus marginata</i> subsp. <i>thalassica-Corymbia calophylla</i> on slopes, woodland of <i>Eucalyptus patens-Eucalyptus rudis</i> with <i>Hakea prostrata</i> and <i>Melaleuca viminea</i> on valley floors in subhumid and semiarid zones.	379.65	379.65	379.65
<b>Grand Total</b>	22,112.39 ha	22,267.68	22,112.39 ha

### Roosting Habitat Assessment

The Site intersects the buffer of a known roost site of Carnaby's black cockatoos (DBCA-064) (Figure 15). No evidence of night roosting (e.g. piles of scats, feeding debris or chewed trees) were recorded within the Site.

Night roosting locations are typically in proximity to foraging habitat (with black cockatoos foraging primarily within 20 km of night roosts) and with access to water points within 2 km of roosting location (DAWE, 2022). Any groups of tall trees, particularly large native eucalypts in proximity to water sources, may provide night roosting habitat (DAWE, 2022). Throughout the Site, isolated stands of tall (> 10 m) eucalypts are scattered which may provide suitable roosting habitat. Adjacent bushland with foraging potential are located 1.2 km east of the Site, and access to permanent water is provided by Beenyup Brook (300 m to the north) and Cardup Brook (1.2 km to the south) (DWER-031).

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**Figure 14: Regional Black Cockatoo Foraging Habitat**

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**Figure 15: Regional Black Cockatoo Breeding and Roosting Habitat**

## 2.11 Conservation Areas

The Site is situated immediately east of, and shares a boundary with, Bush Forever Site 350 (BF 350). The portion of BF 350 that abuts the Site has already been impacted by South Western Highway, and is also impacted further west by Soldiers Road (Figure 16). Another Bush Forever Site (BF 321) is situated to the opposite side of BF 350 to the west of BF 350 (150 m west of the Site). BF 271 is situated approximately 400 m southeast of the Site, separated by existing development (Figure 16).

The nearest piece of land managed by DBCA is an un-named Crown Freehold reserve situated 900 m east of the Site. Jarrahdale State Forest is situated to the opposite side of the Crown Freehold reserve, approximately 2 km east of the Site (Figure 16).

## 2.12 Environmentally Sensitive Areas

The Site is situated within a mapped Environmentally Sensitive Area (ESA) associated with the buffer of a Threatened Ecological Community (TEC) as shown on Figure 17.

## 2.13 Regional Ecological Linkages

The Site does not form part of an important regional ecological linkages, as mapped by the Perth Biodiversity Project (WALGA, 2004). There is a mapped regional ecological linkage mapped immediately west of the Site and that intersects the Site by approximately 500 m<sup>2</sup> (Figure 18).

## 2.14 Heritage

According to the *Aboriginal Cultural Heritage Register* (DPLH-999) database managed by the Department of Planning, Lands and Heritage (DPLH) the Site does not contain any Registered heritage places. One heritage places identified as 'Stored data/not a site' is present within the Site (Place ID: 21305) named Byford Village Isolated Finds. There are a number of Registered heritage places within 1 km of the Site, as described in Table 14 and shown on Figure 19.

**Table 14. Known Aboriginal Heritage Places within 1 km of the Site**

Site ID	Status	Name and/or Description	Type	Location in Relation to the Site
16089	Registered site	Byford 01	Artefacts/scatter	450 m southeast
16090	Registered site	Byford 02	Artefacts/scatter	570 m southeast
16091	Registered site	Byford 03	Artefacts/scatter	730 m southeast
16092	Registered site	Byford 04	Artefacts/scatter	740 m southeast
16093	Registered site	Byford 05	Artefacts/scatter	635 m south
16094	Registered site	Byford 06	Artefacts/scatter	20 m south
16095	Registered site	Byford 07	Artefacts/scatter	90 m south

Site ID	Status	Name and/or Description	Type	Location in Relation to the Site
16096	Registered site	Byford 08	Artefacts/scatter	840 m south
16097	Registered site	Byford 09	Artefacts/scatter, shell	130 m south
16098	Stored data/not a site	Byford 10	Artefacts/scatter	15 m south
16099	Registered site	Byford 11	Artefacts/scatter	85 m south
16105	Stored data/not a site	Byford 17	Artefacts/scatter	840 m south
16106	Stored data/not a site	Byford 18	Artefacts/scatter	940 m south
21305	Stored data/not a site	Byrord Village Isolated Finds	Artefacts/scatter, Other: Multiple isolated finds	Within the site
24979	Stored data/not a site	Nettleton Road 19-09-07/001	Artefacts/scatter	500 m north
24980	Stored data/not a site	Nettleton Road 19-09-07/002	Artefacts/scatter	115 m north
24981	Stored data/not a site	Nettleton Road 19-09-07/003	Artefacts/scatter	450 m north
24982	Stored data/not a site	Nettleton Road Isolated Finds	Artefacts/scatter	740 m northeast
24983	Stored data/not a site	Nettleton Road 1-06	Artefacts/scatter	470 m north
24984	Stored data/not a site	Nettleton Road 2-06	Artefacts/scatter	675 m northeast
24985	Stored data/not a site	Nettleton Road 3-06	Artefacts/scatter	815 m northeast
24991	Stored data/not a site	Beenyup Brook	Mythological; Natural feature	300 m north

**Figure 16: Conservation Areas**

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**Figure 17. Environmentally Sensitive Areas**



**Figure 18. Ecological Linkages**

**Figure 19. Heritage**

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### 3. Proposed Impacts and Mitigation

The proposed development will necessitate the clearing of approximately 3.38 ha of native vegetation in Completely Degraded to Very Good condition. The majority of native vegetation is in Degraded condition (1.45 ha; 42.9%) while only 0.20 ha is in Very Good condition.

The majority (93.4%) of native vegetation to be cleared forms part of the Guildford vegetation complex, based on regional mapping by Heddle (1980). This complex has been extensively cleared within the Swan Coastal Plain bioregion, with only 5.0% of the estimated pre-European extent remaining (GoWA, 2017). The complex is also poorly represented at the local scale, with 4.04% of the estimated pre-European extent remaining (GoWA, 2017).

The Site provides 3.10 ha of foraging habitat for Carnaby's black cockatoo, Baudin's black cockatoo, and Forest red-tailed black cockatoo. The majority of habitat is of very high quality (2.64 ha) as assessed under the HQS developed by DCCEEW (n.d.).

The Site contains 45 trees of a suitable size (DBH greater than 500 mm) and species to develop hollows suitable for black cockatoo breeding. The Site contains an additional 107 trees with a DBH between 300 mm and 500 mm. One tree (marri with DBH of 650 mm) currently contains one hollow of a suitable size to be used for black cockatoo nesting. However, the hollow does not show signs of use by black cockatoos (i.e. no chew marks present) and is currently being used by galahs.

The Site does not contain any Threatened or Priority flora species or ecological communities.

#### 3.1 Assessment of Alternatives

Alternatives for the proposed development are limited due to the soil type within the Site. Opportunities to retain trees and other native vegetation within the Site has been explored, however will not be feasible given the soils present and resulting land capability.

As described in section 2.2, a geotechnical investigation identified the Site as Class M in accordance with AS2870 – 2011, characterised by moderately reactive clay or silts, which can experience moderate ground movement from moisture changes (Brown Geotechnical, 2012). The Site experiences poor drainage with low infiltration rates (Brown Geotechnical, 2012). To facilitate the proposed development, the Site must be treated to achieve a Class S condition, requiring 600 mm of clean sand fill above the clayey subgrade. Given the extent of proposed grade change, it is highly likely that any retained trees would be damaged (e.g. through extensive fill suffocating the root system or water collecting at the base of the tree).

#### 3.2 Mitigation Measures

Due to the nature of the Site's geology and soils, the proposed action will necessitate the removal of all vegetation to facilitate the removal of the clay layer and import of clean fill to 600 mm. The retention of native vegetation within the Site is therefore not possible, as the fill would cause significant damage to

mature trees. The proposed development will include landscaping plantings, in accordance with the plans provided as Appendix D (Plan E, 2022).

### **3.3 Assessment Against Clearing Principles**

To assess whether the clearing of 3.38 ha native vegetation associated with the proposed development is likely to have a significant impact on the environment, an assessment against the ten clearing principles (Schedule 5 of the EP Act) was undertaken. The assessment is provided in Table 15.

The assessment found that the proposed clearing is likely to be at variance with principle b due to proposed impacts to black cockatoo foraging and potential breeding habitat.

**Table 15. Assessment of the Proposed Clearing against the Ten Clearing Principles**

Principle	Assessed Outcome	Assessment
<p><b>(a) Native vegetation should not be cleared if it comprises a high level of biological diversity</b></p>	<p>Not at variance.</p>	<p>The purpose of this principle is to protect intact natural systems with naturally occurring high levels of species diversity, ecosystem diversity, or genetic diversity and natural systems that may be degraded but contain high levels of diversity compared with the remaining native vegetation of that ecological community.</p> <p>The Site is not located within an area identified by the Threatened Species Scientific Committee (TSSC) as a Biodiversity Hotspot for priority action.</p> <p>Flora, vegetation, and black cockatoo habitat information was previously reported by Bennett Environmental Consultants (2010) as described in section 2.9.1 and verified by WEPL (2024).</p> <p>The Site was cleared of native vegetation prior to 1953. Since then, native vegetation has regenerated across 3.38 ha of the Site. Given the previous disturbance, five highly modified vegetation units were mapped within the Site in 2010 (BEC, 2010) as described in Table 6 and shown on Figure 10. These vegetation units were verified during the survey undertaken by WEPL (2024).</p> <p>As presented in Table 7 and shown on Figure 11, vegetation within the Site ranges from Very Good to Completely Degraded condition, with the majority (1.45 ha; 42.9%) being in Degraded condition. Only 0.20 ha of vegetation present is in Very Good condition, while 0.14 ha is in Good to Degraded condition. The remaining native vegetation is in Degraded to Completely Degraded (1.01 ha) and Completely Degraded (0.52 ha) condition.</p> <p>BEC (2010) recorded a total of 59 flora taxa from 18 families within the Site Of those taxa, 48 were native and 11 were exotic. Most flora taxa were from Poaceae (four native and six exotic), Myrtaceae (seven native and one exotic), and Proteaceae (eight native).</p> <p>The Site has a high level of weed cover, and the majority of vegetation is lacking a native mid stratum and understorey.</p> <p>Database searches undertaken by Eco Logical Australia (2022) identified fourteen species of Threatened flora present within a 10 km radius of the Site. No Threatened flora species were recorded in a previous survey undertaken by Bennett Environmental Consultants (BEC, 2010). WEPL (2024) identified three Threatened flora species as having a 'medium' likelihood of occurrence within the Site.</p> <p>A targeted search for Threatened flora was completed by WEPL (2024) on 12 October 2023 via 10 m spaced transects. No Threatened flora species were identified, and a post-survey likelihood of occurrence</p>

Principle	Assessed Outcome	Assessment
<p><b>(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.</b></p>	<p>Likely to be at variance.</p>	<p>assessment identified no Threatened flora to have a 'high' or 'medium' likelihood of occurrence. Given the degraded nature of the Site and that suitable survey effort was applied during an appropriate seasonal period, no Threatened flora species are likely to occur within the Site.</p> <p>The Site provides 3.10 ha of predominantly very high foraging habitat for Carnaby's black cockatoo, Baudin's black cockatoo, and Forest red-tailed black cockatoo, as shown on Figure 12. Foraging habitat is comprised of marri and jarrah trees. Some areas in the southwest and west of the Site contain <i>Banksia sessilis</i> which provides foraging habitat for Carnaby's black cockatoo.</p> <p>Overall, whilst the Site provides habitat value for avian species (including three black cockatoo species), its biodiversity value is low given it was previously cleared of native vegetation and remains highly degraded with limited mid stratum and understorey, and over 18% of all flora taxa recorded being exotic.</p> <p>Based on the above, the proposed clearing is not at variance with this principle.</p> <p>The purpose of this principle is to maintain indigenous fauna species and assemblages of species in their local natural habitat. The principle protects habitat for threatened fauna and significant habitat for meta-populations of fauna.</p> <p>The Site is within the distribution of Carnaby's black cockatoo, Baudin's black cockatoo, and Forest red-tailed black cockatoo (DAWE, 2022). A black cockatoo habitat assessment was undertaken by WEPL (2024) which recorded:</p> <ul style="list-style-type: none"> <li>• The extent and quality of foraging habitat.</li> <li>• The location, species, and size of trees that are of a suitable size (DBH &gt; 50 cm) and species to develop hollows suitable for black cockatoo nesting (i.e. potential breeding habitat).</li> <li>• The location, species, and size of trees that may provide potential roosting habitat for black cockatoos (predominantly stands of eucalyptus at least 10 m tall).</li> </ul> <p>Detailed results of the habitat assessment are provided in section 2.10.2.</p> <p>WEPL (2024) undertook a black cockatoo habitat assessment against a scoring tool developed by DCCEEW (n.d.) which identified that the majority (2.64 ha; 85.2%) of habitat is of Very High quality for all three species. This is primarily a result of <i>Corymbia calophylla</i> (marri) being the dominant species.</p> <p>The Site contains 45 trees of a suitable size (DBH &gt; 500 m) and species to develop hollows suitable for black cockatoo nesting. WEPL (2024) identified four trees containing hollows of any size. Of those, three trees (two</p>

Principle	Assessed Outcome	Assessment
		<p>marri and one stag) contained hollows that were found to be of insufficient size to support nesting; however, are of sufficient age and growth form to be developing hollows (Class 4 trees).</p> <p>One tree (marri) identified as Tree 51 contains a single hollow that is considered suitable for black cockatoo nesting, based on its size, depth, and situation within the tree. As such, the tree was identified as Class 3. However, when inspected using a pole camera, WEPL (2024) found the hollow to be occupied by nesting galahs (see image in Table 12).</p> <p>As such, habitat for conservation significant fauna within the Site is summarised as:</p> <ul style="list-style-type: none"> <li>• 3.10 ha of predominantly (85.2%) 'Very High' quality foraging habitat for Carnaby's, Baudin's, and Forest red-tailed black cockatoo.</li> </ul> <p>Which contains:</p> <ul style="list-style-type: none"> <li>• 45 potential breeding trees (DBH &gt; 500 mm), one of which contains a hollow suitable for black cockatoo nesting.</li> <li>• 152 tall (&gt; 10 m) eucalypts that may comprise suitable roosting habitat.</li> </ul> <p>WEPL (2024) recorded evidence of foraging by all three black cockatoo species, however, did not record any evidence of roosting or breeding by any species.</p> <p>To contextualise the proposed impact to 3.10 ha foraging habitat for Carnaby's, Baudin's, and Forest red-tailed black cockatoo, an assessment of the foraging, breeding, roosting, and watering habitat values present within 12 km of the Site was completed. Based the extent of remnant native vegetation (DPIRD-005) within 12 km of the Site that is of a vegetation complex (DBCA-046) containing key foraging species (predominantly marri and jarrah for all three species and Banksia spp. for Carnaby's and Baudin's black cockatoo). This assessment found that there is an estimated 22,112.39 ha of foraging habitat for all three species within 12 km of the Site, with the majority located within the Jarrah Forest IBRA region. As such, it is assumed that the majority of this potential foraging habitat contains potential breeding and roosting habitat for black cockatoo species.</p> <p>Based on this, the proposed development will necessitate the removal of approximately 0.01% of the estimated extent of foraging habitat within 12 km of the Site.</p> <p>There are 37 potential roosting sites within 12 km of the Site (DBCA-064), of which eight are confirmed (DBCA-050).</p>

Principle	Assessed Outcome	Assessment
<p><b>(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.</b></p>	<p>Not at variance.</p>	<p>The purpose of this principle is to provide for the continuing <i>in situ</i> existence of rare flora and protect habitat necessary for its maintenance.</p> <p>WEPL (2024) undertook targeted searches for rare (Threatened) flora through parallel transects (approximately 10 m spacing) across the entirety of the Site. No Threatened flora were recorded within the Site.</p> <p>Considering that suitable survey effort was applied during an appropriate seasonal period, and noting the degraded condition of the Site, it was concluded that no Threatened flora species (or suitable habitat for Threatened flora species) are likely to occur.</p> <p>Therefore, the proposed clearing is not at variance with this principle.</p>
<p><b>(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.</b></p>	<p>Not at variance.</p>	<p>The purpose of this principle is to provide for the continuing <i>in situ</i> existence of threatened ecological communities.</p> <p>Flora and vegetation values within the Site were initially reported by Bennett Environmental Consultants (2010) and verified by WEPL (2024). The Site was cleared of native vegetation prior to 1953. Since then, native vegetation has regenerated across 3.38 ha of the Site. As a result, vegetation within the Site is in a highly disturbed state with the majority (88.2%) being in Degraded or worse condition.</p> <p>No threatened ecological communities are present within the Site.</p> <p>Therefore, the proposed clearing is not at variance with this principle.</p>
<p><b>(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.</b></p>	<p>May be at variance.</p>	<p>The purpose of this principle is to maintain sufficient native vegetation in the landscape for the maintenance of ecological values. It also recognises the need to protect ecological communities that have been extensively cleared and to retain a representation of each ecological community in local areas throughout its pre-European range.</p> <p>The National Objectives and Targets for Biodiversity Conservation 2001–2005 recognise that the retention of 30 per cent or more of the pre-clearing extent of each ecological community is necessary to protect Australia’s biological diversity.</p> <p>The Site is situated in a constrained area, being zoned for urban purposes under both the MRS and LPS. Within constrained areas, an appropriate retention objective is considered to be ~10% (DER, 2014).</p> <p>The Site is representative of the Guildford Complex and the Forrestfield Complex (DBCA-046). Of, the vegetation proposed to be cleared, 3.16 ha is representative of the Guildford Complex and 0.22 ha is</p>



Principle	Assessed Outcome	Assessment												
		<p>representative of the Forrestfield Complex (according to Heddle et al. 1980 and mapping managed by DBCA [DBCA-046]). Vegetation complexes mapped over the Site are shown in Figure 8. The percentage of each vegetation complex remaining at the Regional and Local scales is presented in Table 16 using data derived from DBCA (2017). It should be noted that these statistics have not been calculated since 2017 and may be out of date.</p> <p><b>Table 16. Percentage of Guildford and Forrestfield Vegetation Complexes Remaining in the Region and Local Area (Data from DBCA [2017])</b></p> <table border="1" data-bbox="911 515 2074 767"> <thead> <tr> <th data-bbox="911 515 1205 646">Vegetation Complex</th> <th data-bbox="1209 515 1491 646">Pre-European Extent (ha)</th> <th data-bbox="1496 515 1778 646">% Remaining in the Swan Coastal Plain</th> <th data-bbox="1783 515 2074 646">% Remaining in the Shire of Serpentine-Jarrahdale</th> </tr> </thead> <tbody> <tr> <td data-bbox="911 649 1205 703">Guildford</td> <td data-bbox="1209 649 1491 703">90,513.13</td> <td data-bbox="1496 649 1778 703">5.0%</td> <td data-bbox="1783 649 2074 703">4.0%</td> </tr> <tr> <td data-bbox="911 707 1205 767">Forrestfield</td> <td data-bbox="1209 707 1491 767">22,812.92</td> <td data-bbox="1496 707 1778 767">12.3%</td> <td data-bbox="1783 707 2074 767">9.1%</td> </tr> </tbody> </table> <p>As identified in Table 16 and based on the above, the Forrestfield Complex may be considered adequately represented at the regional scale; however, is under-represented at the local scale (9.1%). The Guildford Complex is poorly represented at both the regional and local scales with 5.0% and 4.0% remaining, respectively.</p> <p>The area surrounding the Site has experienced fragmentation in recent years, with urban development occurring to the immediate south (Forrestfield Complex) in 2006 and north (Guildford Complex) during the late 1980s. Perth Biodiversity Project (2004) mapped regional ecological linkages to the immediate west of the Site (extending to the south and west) as shown on Figure 18.</p> <p>The vegetation within the Site was previously removed prior to 1953 and has since regenerated (see Table 1). Therefore, the native vegetation present is highly disturbed and over 88% is in Degraded or worse condition (Figure 11). The Site does not support rare (Threatened) flora or any Threatened or Priority ecological communities. Species diversity is low, with the majority of the Site lacking native mid- and lower stratum. The Site provides limited fauna habitat value given its degraded nature, however does provide foraging and potential roosting and breeding habitat for Carnaby's black cockatoo and Forest red-tailed black cockatoo (Figure 12 and Figure 13).</p>	Vegetation Complex	Pre-European Extent (ha)	% Remaining in the Swan Coastal Plain	% Remaining in the Shire of Serpentine-Jarrahdale	Guildford	90,513.13	5.0%	4.0%	Forrestfield	22,812.92	12.3%	9.1%
Vegetation Complex	Pre-European Extent (ha)	% Remaining in the Swan Coastal Plain	% Remaining in the Shire of Serpentine-Jarrahdale											
Guildford	90,513.13	5.0%	4.0%											
Forrestfield	22,812.92	12.3%	9.1%											

Principle	Assessed Outcome	Assessment
<p><b>(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.</b></p>	<p>Not at variance.</p>	<p>At the regional scale, the proposed clearing would reduce the current extent of the Guildford Complex from 4,522.01 ha to 4,518.85 ha (reduction of 0.07%), and the current extent of the Forrestfield Complex from 2,804.97 ha to 2,804.75 ha (reduction of 0.01%). At the local scale, the proposed clearing would reduce the current extent of the Guildford Complex from 525.11 ha to 521.95 ha (reduction of 0.60%) and the current extent of the Forrestfield Complex from 411.02 ha to 410.80 ha (reduction of 0.05%). All statistics are based on GoWA (2017).</p> <p>The proposed clearing will remove 3.16 ha of highly disturbed vegetation representative of the Guildford Complex which is poorly represented at the regional and local levels, with 50% and 4.0% remaining, respectively (GoWA, 2017). It should be noted that, however, that the Site is in highly degraded condition, was previously cleared, and does not support rare flora or threatened ecological communities.</p> <p>Based on the above, the proposed clearing may be at variance with this principle.</p> <p>The purpose of this principle is to conserve vegetation watercourses and wetlands, together with their buffers.</p> <p>There are no watercourses within or immediately adjacent to the Site, with the nearest being Beenyup Brook 250 m to the north (DWER-031; Figure 7). One mapped geomorphic wetland intersects the Site (DBCA-019; Figure 7) which is classified as a MUW (Armadale Palusplain; UFI 15797). According to DBCA (2017), MUWs may be considered appropriate for development where consistent with ecologically sustainable development and best practice catchment management to ensure the natural hydrological and hydrogeological regime of the area can be maintained.</p> <p>The nearest CCW to the Site is 30 m to the west, on the opposite side of South Western Highway (Figure 7). The CCW is continuous with the MUW mapped within the Site. DBCA (2017) recommend that a buffer of 50 m be applied to CCWs. However, the buffer area for CCWs near to the Site have been intersected by South Western Highway and Soldiers Road since approximately 1974.</p> <p>The vegetation present within the Site is not characteristic of riparian vegetation and has previously been cleared. As such, it is not considered to be growing in association with the mapped MUW, nor is it considered important to sustaining the quality of wetlands in the surrounding area given the separation by existing roads and urban development.</p> <p>Based on the above, the proposed clearing is not at variance with this principle.</p>

Principle	Assessed Outcome	Assessment
<p><b>(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.</b></p>	<p>Not at variance.</p>	<p>The purpose of this principle is to maintain sufficient native vegetation in the landscape to prevent land degradation through soil erosion, salinity, nutrient export, acidification, waterlogging, and flooding.</p> <p>The Site is part of the Forrestfield System, with soils that are predominantly representative of the Forrestfield (D Range) F2 Phase, described as well-drained gravelly yellow or brown duplex soils (DPIRD-027). A smaller area is representative of Pinjarra P1a Phase, described as deep acidic mottled yellow duplex soil, and shallow pale sand to sandy loam over clay. Soils of the Pinjarra P1a Phase have imperfect to poor drainage, and are not typically susceptible to salinity (DPIRD-027).</p> <p>A geotechnical investigation was undertaken over the Site (Brown Geotechnical, 2012) which described the subsurface conditions as very dense, locally hard, orange brown, locally mottled, brown and red, medium grained, clayey sand with varying amounts of gravel.</p> <p>The mapped average rainfall in the local area, according to the Australian Bureau of Meteorology, is 677.4 mm. Elevation across the Site ranges from 72 m AHD in the east to 58 m AHD to the west, with an approximate 14 m drop from east to west.</p> <p>The Site is not mapped as having a known risk of ASS occurring within 3 m of the natural ground surface (DWER-055). NRInfo identifies the Site as having a high risk of acidity at the surface, and high susceptibility to subsurface acidification (DPIRD, 2022).</p> <p>The proposed clearing will form part of a commercial development. To facilitate the proposed development, following clearing, the Site will be overcut some 600mm to create a constructed shaped clay layer which will be nominally 600mm below the finished pavement levels. Imported material will occupy this 600mm above the shaped clay layer to facilitate the retention and infiltration of stormwater and to reduce the risk of erosion and waterlogging. In addition, the Site is proposed to be levelled.</p> <p>Groundwater beneath the Site is marginal to brackish, with total dissolved solids ranging from 500 to 1,500 mg/L (DWER, 2022). TME Brown (2013) identified groundwater beneath the Site as having background nitrogen and phosphorus concentrations that are high when compared to freshwater aquatic ecosystem standards.</p> <p>The proposed clearing will expose the Site to erosion over the short term, however as part of the proposed development, this will be remedied through the removal of the clayey soils, levelling of the Site, and</p>

Principle	Assessed Outcome	Assessment
<p><b>(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area</b></p>	<p>Not at variance.</p>	<p>application of clean fill. This will facilitate Site permeability and stormwater retention so as to avoid ongoing risk of erosion and waterlogging.</p> <p>Based on the above, the proposed clearing is not at variance with this principle.</p> <p>The purpose of this principle is to ensure that the conservation values of conservation areas are not reduced as a result of native vegetation clearing.</p> <p>The Site is situated immediately east of BF 350, with no overlap (Figure 16).</p> <p>The eastern most portion of BF 350 has been cleared and disturbed for the construction of South Western Highway. BF 321 is situated to the west of BF 350 (approximately 145 m west of the Site) and will not be impacted by the proposed clearing given the separation.</p> <p>Based on the above, the proposed clearing is not at variance with this principle.</p>
<p><b>(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.</b></p>	<p>Not at variance</p>	<p>The purpose of this principle is to ensure that the quality of water supplies is not reduced, that salinity, pH, or nutrient levels in water bodies and discharge water are not significantly altered by clearing, and that water regimes and environmental water provisions are not adversely affected.</p> <p>There are no surface water features within the Site, and the nearest is situated 250 m to the north. One multiple use wetland is mapped within the Site (UFI 15797). The nearest conservation category wetland is situated 30 m west of the Site, within BF 350. Surface water features and wetlands within and surrounding the Site are shown on Figure 7.</p> <p>Groundwater monitoring data from 2010 and 2011 indicates that the maximum groundwater level sits between 0.13 m and 1.58 m below the natural ground level across the Site (TME Brown, 2011; TME Brown, 2012). Cardno (2013) created groundwater contours across the Site which indicate that groundwater greater separation to groundwater occurs in the east.</p> <p>The peak discharge rate leaving the site in the 5-year and 100-year ARI rainfall events are 0.723m<sup>3</sup>/s and 1.373m<sup>3</sup>/s, respectively (Cardno, 2013).</p> <p>The proposed clearing is not expected to cause deterioration in the quality of surface or underground water. To facilitate the proposed development, earthworks following clearing will include removal of the clay layer and addition of clean fill to improve Site permeability and stormwater retention. As a result, a greater proportion of stormwater will be retained on Site. Nutrient levels in groundwater beneath the Site are</p>

Principle	Assessed Outcome	Assessment
<p><b>(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.</b></p>	<p>Not at variance.</p>	<p>currently elevated (TME Brown, 2011; TME Brown, 2012) and will not increase as a result of the proposed clearing.</p> <p>Based on the above, the proposed clearing is not at variance with this principle.</p> <p>The purpose of this principle is to ensure there is no increase in the frequency or intensity of flooding from the clearing of native vegetation. For smaller applications, clearing should not cause waterlogging.</p> <p>According to NRInfo, the Site is not identified as having a moderate or high risk of waterlogging and inundation. A geotechnical investigation identified the Site as having low permeability; however, part of the proposed development will include earth working to ensure this is improved and the risk of waterlogging and/or flash flooding is minimised.</p> <p>Based on the above, the proposed clearing is not at variance with this principle.</p>

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## 4. References

### 4.1.1 Datasets

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- DBCA-046. Vegetation Complexes - Swan Coastal Plain (DBCA-046). Available from: <https://catalogue.data.wa.gov.au/dataset/vegetation-complexes-swan-coastal-plain>.
- DBCA-047. Vegetation Complexes - South West forest region of Western Australia (DBCA-047). Available from: [https://public-services.slip.wa.gov.au/public/rest/services/SLIP\\_Public\\_Services/Environment/MapServer/48](https://public-services.slip.wa.gov.au/public/rest/services/SLIP_Public_Services/Environment/MapServer/48).
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# **Appendix A Groundwater Contours (Cardno, 2013)**

**Appendix B**

**Vegetation and Flora of Lot 806 South  
West Highway, Byford (Bennett  
Environmental Consulting, 2010)**

# **Appendix C Flora and Vegetation Survey Report (WEPL, 2024)**



# **Appendix D Landscaping Plans (Plan E, 2022)**

