

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning  
Vale

Project No: EP20-099(01)

**Prepared for City of Gosnells  
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# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



## Executive Summary

The City of Gosnells ('the City') is proposing to duplicate a portion of Warton Road between Nicholson Road and Ranford Road in Canning Vale. The proposed 'works area' encompasses the area of disturbance and is largely confined to the existing road reserve. However, this portion of Warton Road is bordered by Jandakot Regional Park to the east (herein referred to as the 'Jandakot Regional Park') and the City has recently successfully completed a land acquisition process to enable road widening in two small areas within the Jandakot Regional Park, which fall within the City of Armadale municipality. The City will re-instate all of the Jandakot Regional Park access points and firebreaks (to 3 m wide) along the new boundaries of the land take areas, which forms part of the 'works area'.

Emerge Associates were engaged by the City to provide information on the flora and vegetation, weeds, significant trees and infrastructure within the proposed works area, and to set up a baseline for a monitoring program to determine if road construction results in future impacts to surrounding vegetation. A 20m buffer into the Jandakot Regional Park has been included as part of this assessment (referred to herein as the 'survey area'). The City of Gosnells has committed to managing and monitoring this 20 m buffer into the Jandakot Regional Park for three years post-construction of the road. The City will also commit to undertaking six weekly weed control and rubbish removal within the 20 m buffer into the Regional Park for three years post-construction and will undertake bi-annual monitoring against pre-construction findings.

Outcomes of the flora and vegetation assessment include the following:

- A total of 133 native and 45 non-native (weed) species were recorded within the survey area during the field survey, representing 47 families and 129 genera.
- No threatened or priority flora were recorded within the works area or the survey area. A number of locally or regionally significant species were recorded within the Jandakot Regional Park portion of the survey area, including *Hensmania turbinata*, *Gonocarpus cordiger*, *Platysace juncea* and *Styphelia xerophylla*.
- No declared pest species were recorded within the works area. One species listed as declared pest was recorded in the Jandakot Regional Park portion of the survey area: *Zantedeschia aethiopica* (arum lily).
- Four native plant communities were identified within the works area and survey area: **BaBm**, **AcEaPc**, **AfBK** and **MpAf**.
- The majority of the works area was mapped as being in 'degraded' or 'completely degraded' condition and contains tracks, bare ground and scattered native trees and shrubs over non-native grasses and herbs. However, some small pockets of 'very good' and 'good' condition vegetation also occur within the works area.
- The best condition vegetation was recorded within the Jandakot Regional Park portion in the survey area and was mapped as being in 'very good' and 'excellent' condition.
- Plant communities **BaBm** and **AcEaPc** were considered to most likely represent FCT 23a ('Central *Banksia attenuata* – *B. menziesii* woodlands'). Plant communities **AfBK** and **MpAf** were considered to represent FCT 21c ('low lying *Banksia attenuata* woodlands and shrublands'). Both FCT 23a and FCT 21c are included within the 'banksia woodlands of the Swan Coastal Plain' Commonwealth 'threatened ecological community' (TEC) and the State 'priority ecological

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



community' (PEC) (P3). FCT 21c is also separately listed at the State level as a PEC. As such, 0.6981 ha of the Commonwealth TEC and State PEC, and 0.3352 ha of FCT 21c is present within the works area. Applying the diagnostic criteria for inclusion as the banksia woodland Commonwealth TEC and State PEC, the vegetation within the works area is contiguous with banksia woodland vegetation within the survey area and extending further to the east and west. As such, the banksia woodland TEC and PEC within the works area is part of a large (approximately 170 ha) patch.

Outcomes of the weed assessment include the following:

- Four weed suites were identified within the works area and the survey area along with one declared pest and two significant woody weeds.
- Priority areas for weed control are proposed based on the location of woody weeds within the Jandakot Regional Park and the area of high bulbous weed cover within the Jandakot Regional Park.

Outcomes of the significant tree assessment include the following:

- Twelve significant trees (native trees with a diameter at breast height over 500 mm), consisting of nine *Allocasuarina fraseriana*, one *Eucalyptus tottiana*, one *Banksia ilicifolia* and one stag are present within the works area.
- An additional 25 significant trees were located in the Jandakot Regional Park portion of the survey area, including nine *A. fraseriana*, two *Banksia attenuata*, five *Eucalyptus marginata*, two *E. tottiana*, five *Melaleuca preissiana*, one *Nuytsia floribunda* and one stag.
- None of these trees contained hollows suitable for breeding by threatened species of black cockatoo.
- The large trees present in parts of the survey area may be locally and regionally significant due to their potential as black cockatoo habitat and close proximity to Harrisdale Swamp.

Outcomes of the baseline monitoring include the following:

- Eleven baseline quadrats were established within the Jandakot Regional Park portion of the survey area for future monitoring post disturbance. The quadrat data shows the vegetation within the Jandakot Regional Park is currently subject to a low to moderate level of disturbance to the vegetation, with some weed and minor rubbish incursion.

Outcomes of the infrastructure assessment include the following:

- Fencing, gates, signage and other structures are generally in good condition.

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



## Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
1.1	Project background .....	1
1.2	Purpose and scope of work .....	1
<b>2</b>	<b>Environmental Context .....</b>	<b>3</b>
2.1	Climate .....	3
2.2	Geomorphology and soils .....	3
2.3	Topography .....	4
2.4	Hydrology and wetlands .....	4
2.5	Regional vegetation .....	5
2.6	Historic land use .....	6
2.7	Significant flora and vegetation .....	6
2.7.1	Threatened and priority flora .....	6
2.7.2	Threatened and priority ecological communities .....	7
2.7.3	Local and regional significance .....	7
2.7.4	Weeds .....	7
2.8	Bush Forever .....	8
2.9	Environmentally sensitive areas .....	8
2.10	Managed or legislated lands .....	8
2.11	Ecological linkages .....	9
2.12	Previous surveys .....	9
<b>3</b>	<b>Methods .....</b>	<b>10</b>
3.1	Flora and vegetation survey .....	10
3.1.1	Desktop assessment .....	10
3.1.2	Field survey .....	10
3.1.3	Mapping and data analysis .....	12
3.1.3.1	Conservation significant flora and vegetation .....	12
3.1.3.2	Plant community identification and description .....	12
3.1.3.3	Floristic community type assignment .....	12
3.1.3.4	Threatened and priority ecological communities .....	13
3.1.3.5	Species accumulation curve .....	13
3.2	Weed Assessment .....	13
3.2.1	Weed suites .....	13
3.2.2	Sampling design .....	13
3.2.3	Field survey .....	14
3.2.4	Data analysis and mapping .....	14
3.3	Significant tree survey .....	14
3.4	Baseline quadrat survey for future monitoring .....	16
3.4.1	Field survey .....	16
3.5	Infrastructure assessment .....	16
3.5.1	Field survey .....	16
3.5.2	Data analysis and mapping .....	16
3.6	Survey limitations .....	17
3.6.1	Flora and Vegetation assessment .....	17
3.6.2	Weed assessment .....	18
3.6.3	Significant tree and infrastructure locations .....	18
<b>4</b>	<b>Results .....</b>	<b>19</b>
4.1	General site conditions .....	19
4.2	Flora and vegetation .....	19
4.2.1	Desktop assessment .....	19

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



4.2.1.1	Flora 19	
4.2.1.2	Vegetation .....	21
4.2.2	Species inventory .....	22
4.2.3	Threatened and priority flora .....	22
4.2.4	Locally and regionally significant flora .....	22
4.2.5	Declared pests .....	22
4.2.6	Plant communities .....	22
4.2.7	Vegetation condition .....	29
4.2.8	Floristic community types .....	30
4.2.9	Threatened and priority ecological communities .....	32
4.2.10	Species richness and sampling adequacy .....	34
4.3	Weeds .....	35
4.3.1	Weed suites .....	35
4.3.2	Significant and prominent weeds .....	39
4.3.3	Priority weed control areas .....	39
4.4	Significant trees .....	39
4.5	Baseline quadrat survey .....	40
4.6	Infrastructure .....	41
<b>5</b>	<b>Discussion .....</b>	<b>43</b>
5.1	Threatened and priority flora .....	43
5.2	Vegetation condition .....	43
5.3	Floristic community type assignment .....	44
5.4	Threatened and priority ecological communities .....	44
5.5	Weeds .....	45
5.6	Monitoring baseline .....	45
5.7	Post-development monitoring program .....	45
5.7.1	Goals and Objectives .....	46
5.7.2	Program .....	46
5.7.3	Evaluation .....	46
5.7.4	Contingency .....	46
5.7.5	Reporting .....	47
<b>6</b>	<b>Conclusions .....</b>	<b>48</b>
<b>7</b>	<b>References .....</b>	<b>49</b>
7.1	General references .....	49
7.2	Online references .....	51

## List of Tables

Table 1: Vegetation condition scale applied during the field assessment .....	11
Table 2: Likelihood of occurrence assessment categories and definitions .....	12
Table 3: Attributes recorded for each significant tree in the works area .....	15
Table 4: Habitat tree categories .....	15
Table 5: Evaluation of survey methodology against standard constraints outlined in EPA (2016) .....	17
Table 6: Conservation significant flora species with habitat preferences considered to potentially occur in the site .....	19
Table 7: Description and extent of plant communities identified within the works area and survey area .....	23
Table 8: Extent of vegetation condition categories within the works area and survey area .....	30
Table 9: Plant community and likely FCT represented within the survey area for each sample. ....	31
Table 10: Criteria for determining presence of Banksia Woodlands of the Swan Coastal Plain TEC adapted from (TSSC 2016) .....	32
Table 11: Descriptions of weed suites identified within the works area and survey area .....	36
Table 12: Monitoring parameters recorded for baseline quadrats .....	40

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



Table 13: Warton Road duplication project goals and objectives.....	46
Table 14: Examples of circumstances and potential contingency actions .....	47

## List of Plates

Plate 1: Plant community <b>BaBm</b> in 'degraded' condition within the north eastern extent of the works area .....	24
Plate 2: Plant community <b>BaBm</b> in 'good' condition within the south western extent of the works area. ....	24
Plate 3: Plant Community <b>BaBm</b> in 'very good' condition within Jandakot Regional Park. ....	25
Plate 4: Plant community <b>AcEaPc</b> in 'very good' condition within Jandakot Regional Park. ....	25
Plate 5: Plant community <b>MpAf</b> in 'degraded' condition within the works area.....	26
Plate 6: Plant community <b>MpAf</b> in 'very good' condition within Jandakot Regional Park.....	26
Plate 7: Plant community <b>AfBKg</b> in 'degraded' condition within the works area.....	27
Plate 8: Plant community <b>AfBKg</b> in 'good' condition within the works area.....	27
Plate 9: Plant community <b>AfBKg</b> in 'very good' condition within Jandakot Regional Park.....	28
Plate 10: Cleared vegetation in 'completely degraded' condition within the works area.....	28
Plate 11: Cleared vegetation in 'completely degraded' condition within Jandakot Regional Park. Note presence of planted <i>Melaleuca lanceolata</i> . ....	29
Plate 12: Species accumulation curve derived from sample data ( $y = 43.751\ln(x) + 9.7613$ $R^2 = 0.9739$ )	35
Plate 13: Example within works area of high cover of weed suite 1 – annual and perennial grass species .....	37
Plate 14: Example within works area of high cover of weed suite 2 – herbaceous weed species.....	37
Plate 15: Example of area with weed suite 3 – woody weeds ( <i>Chamelaucium uncinatum</i> ) both within the works area (left) and spreading into Jandakot Regional Park (right). ....	38
Plate 16: Area of predominantly non-native vegetation within Jandakot Regional Park with high cover of Suite 4 - bulbous weeds (particularly <i>Ixia maculata</i> ). ....	38
Plate 17: Hollow inspection photographs for tree ID 63 (stag), showing external hollow (left) and internal view (right). The hollow is considered to be too shallow for breeding purposes for black cockatoo species.....	39
Plate 18: Jandakot Regional Park vehicular and pedestrian access location in the central portion of the survey area.....	41
Plate 19: Telstra pit .....	41
Plate 20: Jandakot Regional Park signage .....	42
Plate 21: Groundwater monitoring bore.....	42

## Figures

Figure 1: Site Location
Figure 2: Soils and Topography
Figure 3: Environmental Features
Figure 4: Plant Communities
Figure 5: Vegetation Condition
Figure 6: Conservation Significant Vegetation
Figure 7: Weed Suite 1 - Annual and Perennial Grasses
Figure 8: Weed Suite 2 - Herbaceous weeds
Figure 9: Weed Suite 3 - Woody weeds
Figure 10: Weed Suite 4 - Bulbous weeds
Figure 11: Infrastructure



# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



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# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



## Appendices

### **Appendix A**

Additional Information

### **Appendix B**

Conservation Significant Flora Species and Likelihood of Occurrence

### **Appendix C**

Conservation Significant Communities and Likelihood of Occurrence Assessment

### **Appendix D**

Species List

### **Appendix E**

Species x Plant Community Matrix

### **Appendix F**

Survey Data

### **Appendix G**

Cluster Dendrograms

### **Appendix H**

Significant Tree Details

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



## Abbreviation Tables

Table A1: Abbreviations – Organisations

Organisations	
EPA	Environmental Protection Authority
DBCA	Department of Biodiversity, Conservation and Attractions
DoW	Department of Water (now DWER)
DWER	Department of Water and Environmental Regulation
DPaW	Department of Parks and Wildlife (now DBCA)
WALGA	Western Australia Local Government Association

Table A2: Abbreviations – General terms

General terms	
CCW	Conservation category wetland
ESA	Environmentally sensitive area
FCT	Floristic community type
IBRA	Interim Biogeographic Regionalisation of Australia
MUW	Multiple use wetland
NVIS	National Vegetation Inventory System (ESCAVI 2003)
P1	Priority 1
P2	Priority 2
P3	Priority 3
P4	Priority 4
P5	Priority 5
PEC	Priority ecological community
REW	Resource enhancement wetland
T	Threatened
TEC	Threatened ecological community
UFI	Unique feature identifier

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Table A3: Abbreviations –Legislation

Legislation	
BAM Act	Biosecurity and Agriculture Management Act 2007
EP Act	Environmental Protection Act 1986
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
BC Act	Biodiversity Conservation Act 2016
BC Regs	Biodiversity Conservation Regulations 2018

Table A4: Abbreviations – planning

Planning terms	
MRS	Metropolitan region scheme
TPS	Town planning scheme

Table A5: Abbreviations – units of measurement

Units of measurement	
Cm	Centimetre
Ha	Hectare
M	Metre
m <sup>2</sup>	Square metre
m AHD	m in relation to the Australian height datum
Mm	Millimetre

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



## 1 Introduction

### 1.1 Project background

The City of Gosnells ('the City') is proposing to duplicate a portion of Warton Road between Nicholson Road and Ranford Road in Canning Vale. The proposed 'works area' encompasses the area of disturbance and is largely confined to the existing road reserve. However, this portion of Warton Road is bordered by Jandakot Regional Park to the east (herein referred to as the 'Jandakot Regional Park') and the City has recently successfully completed a land acquisition process to enable road widening in two small areas within the Jandakot Regional Park, which fall within the City of Armadale municipality. The City will re-instate all of the Jandakot Regional Park access points and firebreaks (to 3 m wide) along the new boundaries of the land take areas, which forms part of the 'works area'. A 20m buffer into the Jandakot Regional Park has been included as part of this assessment (referred to herein as the 'survey area'). The City of Gosnells has committed to managing and monitoring this 20 m buffer into the Jandakot Regional Park for three years post-construction of the road. The City will also commit to undertaking six weekly weed control and rubbish removal within the 20 m buffer into the Regional Park for three years post-construction and will undertake bi-annual monitoring against pre-construction findings.

The survey area is located approximately 24.6 kilometres (km) south of the Perth Central Business District. The majority of the road reserve is located within the City of Gosnells, however the recent land take areas and the Jandakot Regional Park form part of the City of Armadale municipality. The Jandakot Regional Park is owned by the Western Australian Planning Commission (WAPC), but the Department of Biodiversity, Conservation and Attractions (DBCA) manages Lots 7, 8 and 9 under a Conservation and Land Management Act (CALM Act) management agreement. The WAPC currently retains ownership and management of Lot 201 and Lot 81 in the Jandakot Regional Park.

The survey area is classified as 'reserve' under the Metropolitan Region Scheme (MRS) and the Jandakot Regional Park is reserved for 'parks and recreation' under the City of Armadale *Town Planning Scheme* (TPS) No. 4.

The survey area is approximately 6.57 hectares (ha) in size and is bounded by the Jandakot Regional Park to the east, Nicholson Road to the north, bushland surrounding several Department of Justice facilities to the west and a residential area to the south. The location and extent of the works area and wider survey area are shown in **Figure 1**.

### 1.2 Purpose and scope of work

Emerge Associates (Emerge) were engaged by the City to provide environmental consultancy services to support the road duplication process. The purpose of this assessment is to provide sufficient information on the flora and vegetation values of the works area and wider survey area to inform this process, and to set up a baseline monitoring program within the adjacent Jandakot Regional Park.

The scope of work was specifically to undertake the following field assessments within the survey area:



# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



- A spring flora and vegetation assessment to the standard required of a detailed and a targeted survey in accordance with the Environmental Protection Authority's (EPA's) *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016) and the Department of Environment's (DoE) *Survey Guidelines for Australia's Threatened Orchids* (DoE 2013).
- A non-native (weed) flora species assessment detailing weed suites and significant weeds.
- A significant tree assessment.
- Baseline quadrat survey for future monitoring.
- An infrastructure assessment listing existing infrastructure and recommended improvements.

As part of this scope of work, the following tasks were undertaken:

- Desktop review of relevant background information pertaining to the survey area and surrounds, including review of database search results for threatened flora species and ecological communities, and review of previous reports applicable to the survey area.
- Compilation of a comprehensive list of flora species recorded as part of the field surveys.
- Identification of conservation significant flora and vegetation.
- Mapping of:
  - plant communities and vegetation condition
  - significant flora and vegetation
  - weed suites including density and priority areas for control
  - locations of significant weed species
  - locations of significant trees
  - monitoring locations
  - existing and proposed infrastructure.
- Documentation of the desktop assessment, survey methodology and results into a report.

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



## 2 Environmental Context

### 2.1 Climate

Climate has a strong influence on the types of vegetation that grow in a region and the life cycles of the flora present. It is therefore critical for a flora and vegetation survey to respond appropriately to climatic conditions to ensure that surveys are conducted during times when flora species are easiest to detect and identify.

The south west of Western Australia experiences a Mediterranean climate of hot dry summers and cool wet winters. In Mediterranean type climates some flora species will typically spend part of their lifecycle as either underground storage organs or as seed. This is an adaptation to unfavourable environmental conditions such as excessive heat and drought that occur over the summer period. These species, known as 'geophytes' or 'annuals', tend to re-emerge during winter when favourable conditions return and are most visible during spring, which is the flowering period for a majority of plant species. Therefore, spring is the optimal time to complete flora and vegetation surveys in the south west of WA.

An average of 819.6 millimetres (mm) of rainfall is recorded annually from the Jandakot Aero weather station, which is the closest weather station, located approximately 5 km from the survey area. The majority of this rainfall is received between the months of April and August. Mean maximum temperatures at the Jandakot Aero weather station, range from 18.9°C in July to 32.8°C in December, while mean minimum temperatures range from 7.1°C in August to 17°C in February (BoM 2020).

A total of 522.6 mm of rain was recorded from April to August 2020 prior to the survey which is approximately 77% of the mean of 682.9 mm for this period (BoM 2020). Although lower than the mean this amount of rainfall was considered to have been sufficient to promote the flowering and emergence of native flora.

### 2.2 Geomorphology and soils

Landform and soils influence vegetation types at regional and local scales. The survey area occurs on the Swan Coastal Plain, which is the geomorphic unit that characterises much of the Perth metropolitan area.

The Swan Coastal Plain is approximately 500 km long and 20 to 30 km wide and is roughly bounded by the Indian Ocean to the west and the Darling Scarp to the east. Broadly the Swan Coastal Plain consists of two sedimentary belts of different origin. Its eastern side has formed from the deposition of alluvial material washed down from the Darling Scarp, while its western side is comprised of three dune systems that run roughly parallel to the Indian Ocean coastline (Seddon 2004). These dune systems, referred to as Quindalup, Spearwood and Bassendean associations, represent a succession of coastal deposition that has occurred since the late Quaternary period (approximately two million years ago) (Kendrick *et al.* 1991) and, as a result, they contain soils at different stages of leaching and formation.

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



Examination of broad scale soil mapping places the survey area within the Southern River association (Churchward and McArthur 1980). The Southern River association comprises of sandplain with low dunes and many intervening swamps; iron and humus podzols, peats and clays.

Finer scale mapping by the Department of Primary Industry and Regional Development (DPIRD) also places the south western portion and north eastern portion of the survey area in Bassendean sands (B1 and B2 respectively). A portion in the western half of the survey area aligning with a wetland feature (described in **Section 2.4**) is mapped as comprising Bassendean sands (B3). A description of each Bassendean sand type is provided below.

- B1 Bassendean sands are described as ‘extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands, sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; banksia dominant’ (DPIRD 2018).
- B2 Bassendean sands are described as ‘flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m’ (DPIRD 2018).
- B3 bassendean sands are described as ‘closed depressions and poorly defined stream channels with moderately deep, poorly to very poorly drained bleached sands with an iron-organic pan, or clay subsoil. Surfaces are dark grey sand or sandy loam’ (DPIRD 2018).

The soil types described above were later confirmed during the field survey. The soil types mapped within the survey area are shown in **Figure 2**.

## 2.3 Topography

The elevation of the survey area ranges from 27 m in relation to the Australian height datum (mAHD) on the northern side of the survey area to 31 mAHD on the southern side of the survey area (DoW 2008) (**Figure 2**).

## 2.4 Hydrology and wetlands

Wetlands include “areas of seasonally, intermittently or permanently waterlogged soils or inundated land, whether natural or otherwise, fresh and saline, e.g. waterlogged soils, ponds, billabongs, lakes, swamps, tidal flats, estuaries, rivers and their tributaries” (Wetlands Advisory Committee 1977). Wetlands can further be recognised by the presence of vegetation associated with waterlogging or the presence of hydric soils such as peat, peaty sand or carbonate mud (Hill *et al.* 1996).

Wetlands of national or international significance may be afforded special protection under Commonwealth or international agreements. The following lists of important wetlands were checked as part of this assessment:

- *Ramsar List of Wetlands of International Importance* (DBCA 2017d)
- *A Directory of Important Wetlands in Australia* (DBCA 2018).

No Ramsar or listed ‘important wetlands’ are located within or near the survey area. The Ramsar site ‘Forrestdale and Thomsons Lakes’ (ID 246) is located 14 km south of the site.

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



Examination of the Department of Water and Environmental Regulation (DWER) hydrography dataset (DWER 2018) shows a dampland occurs in the south western portion of the survey area.

On the Swan Coastal Plain DBCA (2017c) have used the geomorphic wetland classification system developed by Semeniuk (1987) and Semeniuk and Semeniuk (1995) to classify wetlands based on the landform shape and water permanence (hydro-period). The Department of Biodiversity, Conservation and Attractions (DBCA) maintains the *Geomorphic Wetlands of the Swan Coastal Plain* dataset (DBCA 2020), which further categorises geomorphic wetland features into specific management categories to guide land use and conservation. Note that as this dataset was drafted at a regional scale the boundaries of mapped wetland features are often inconsistent with physical wetland boundaries.

A review of the *Geomorphic Wetlands, Swan Coastal Plain* dataset (DBCA 2020) indicated that UFI 7209 'Conservation' category dampland occurs on the south-western part of the survey area. UFI 7069 'Multiple use' category wetland occurs just outside the southwestern end of the survey area. UFI 7208 'Conservation' category sumpland (Harrisdale Swamp) is located to the south east of the survey area within the Jandakot Regional Park. The locations of the geomorphic wetlands in the vicinity of survey area are shown in **Figure 3**.

## 2.5 Regional vegetation

Native vegetation is described and mapped at different scales in order to illustrate patterns in its distribution. At a continental scale the *Interim Biogeographic Regionalisation of Australia* (IBRA) divides the Swan Coastal Plain into two floristic subregions (Environment Australia 2000). The survey area is contained within the 'SWA02' or Perth subregion, which is characterised as mainly containing *Banksia* low woodland on leached sands with *Melaleuca* swamps where ill-drained; and woodland of *Eucalyptus gomphocephala* (tuart), *E. marginata* (jarrah) and *Corymbia calophylla* (marri) on less leached soils (Beard 1990). This subregion is recognised as a biodiversity hotspot and contains a wide variety of endemic flora and vegetation types.

Variations in native vegetation within the survey area can be further classified based on regional vegetation associations. Heddle *et al.* (1980) mapping shows the site as comprising the 'Southern River Complex', which is described as comprising open woodland of *Corymbia calophylla* - *Eucalyptus marginata* - *Banksia* spp. with fringing woodland of *Eucalyptus rudis* - *Melaleuca raphiophylla* along creek beds. This complex was determined to have 18.43% remaining in 2018, of which 1.37% is under formal protection (Government of Western Australia 2019).

More recent Beard *et al.* (2013) mapping shows the survey area comprises vegetation association 'Bassendean\_1001'. This association is described as 'low forest, woodland or low woodland with scattered trees' of '*Eucalyptus marginata*, *Banksia* spp., *Allocasuarina* spp.' (Beard *et al.* 2013). 'Bassendean\_1001' association has 22% of its pre-European extent remaining on the Swan Coastal Plain with 2.8% protected for conservation purposes (Government of Western Australia 2018).

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



Studies have indicated that the loss of biodiversity caused by habitat fragmentation is significantly greater once a habitat type falls below 30% of its original extent (Miles 2001). The national objectives and targets for biodiversity conservation established an objective of retaining 30% of the original extent of each vegetation complex (Environment Australia 2001). However, a lower objective of 10% is applied in 'constrained urban areas' such as the Swan Coastal Plain (Ministry for Planning 1995). The percentage protected for conservation of the 'Southern River Complex' and the 'Bassendean\_1001' association fall below the 30% and 10% retention objective.

## 2.6 Historic land use

Review of historical images available from 1953 (WALIA 2021) onwards shows that the survey area was uncleared at this time, with the exception of some minor tracks. By 1965 the entire road reserve was cleared and Warton Road was constructed. Some clearing was also visible within the Jandakot Regional Park to the east at this time. Further significant clearing is visible by 1977, particularly within the Jandakot Regional Park and the Department of Justice lands to the west of the survey area. Between 1995 to 2003, a building can be seen within Lots 8 and 9 to the east of the survey area. Once these structures were removed in 2003, the area appears to have been left to regenerate. By 2000, additional clearing close to the south western portion of the survey area is visible within the Department of Justice land with the construction of the Banksia Hill Juvenile Detention Centre as well as housing developments to the north west and south west of the survey area. Since this time vegetation cover within the area appeared to have remained relatively stable.

## 2.7 Significant flora and vegetation

### 2.7.1 Threatened and priority flora

Certain flora taxa that are considered to be rare or under threat warrant special protection under Commonwealth and/or State legislation. At a Commonwealth level, flora taxa may be listed as 'threatened' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Threatened flora species listed under the EPBC Act are assigned a conservation status according to attributes such as population size and geographic distribution. Any action likely to have a significant impact on a taxon listed under the EPBC Act requires Ministerial approval.

In Western Australia flora species may also be classed as 'threatened' under the *Biodiversity Conservation Act 2016* (BC Act). Similarly, it is an offence to 'take' or 'disturb' threatened flora listed under the BC Act without Ministerial approval.

Flora species that do not currently meet the criteria for listing as threatened but are potentially rare or threatened may be added to the DBCA's *Priority Flora List*. These species are classified into 'priority' levels based on threat. Whilst priority species are not under direct statutory protection, they are considered during State approval processes. Further information on threatened and priority species and their categories is provided in **Appendix A**.



## Flora and Vegetation Survey and Monitoring Report

### Proposed Warton Road Duplication, Canning Vale



#### 2.7.2 Threatened and priority ecological communities

An ecological community is a naturally occurring group of native plants, animals and other organisms that are interacting in a unique habitat. An ecological community's structure, composition and distribution are influenced by environmental factors such as soil type, position in the landscape, altitude, climate and water availability (DAWE 2020b). 'Threatened ecological communities' (TECs) are ecological communities that are recognised as rare or under threat and therefore warrant special protection.

Selected TECs are afforded statutory protection at a Commonwealth level under the EPBC Act. Similar to flora species, TECs listed under the EPBC Act are assigned a conservation status. Any action likely to have a significant impact on a community listed under the EPBC Act requires Ministerial approval.

TECs are also listed within Western Australia under the BC Act and the BC Regulations. Their significance is also acknowledged through other state environmental approval processes such as 'environmental impact assessment' pursuant to Part IV of the *Environmental Protection Act 1986* (EP Act) and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*.

A plant community that is under consideration for listing as a TEC in Western Australia, but does not yet meet survey criteria or has not been adequately defined, may be listed as a 'priority ecological community' (PEC). Listing as a PEC is similarly considered during State approval processes. Further information on categories of TECs and PECs is provided in **Appendix A**.

#### 2.7.3 Local and regional significance

Flora species and ecological communities may be significant for a number of reasons irrespective of whether they have special protection under policy or legislation.

Three key reasons that vegetation within the survey area may be significant are listed below:

- The survey area is adjacent to remnant native vegetation to the east and west.
- The vegetation within the survey area is closely associated with wetlands.
- The vegetation within the survey area has potential value as habitat for threatened or priority fauna species including, in particular, Carnaby's black cockatoo and the forest red-tailed black cockatoo, which are listed as 'vulnerable' under the EPBC Act and 'endangered' under the BC Act.

#### 2.7.4 Weeds

The term 'weed' can refer to any plant that requires some form of action to reduce its effect on the economy, the environment, human health and amenity. Many non-native flora species and some native species are considered to be weeds.

A particularly invasive or detrimental weed species may be listed as a 'declared pest' pursuant to Western Australia's *Biosecurity and Agriculture Management Act 2007* (BAM Act), indicating that it warrants special management to limit its spread.

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



At a National level, the Australian government has compiled a list of 32 *Weeds of National Significance* (WoNS) (DAWE 2020c). Whilst the WoNS list is non-statutory, many WoNS are also listed under the BAM Act. Further information on categories of declared pests is provided in

## Appendix A.

Due to historical disturbance and proximity to Warton Road, some weed species are expected to be present within the works area and the survey area.

## 2.8 Bush Forever

The Government of Western Australia's *Bush Forever* policy is a strategic plan for conserving regionally significant bushland within the Swan Coastal Plain portion of the Perth Metropolitan Region. The objective of *Bush Forever* is to protect comprehensive representations of all original ecological communities by targeting a minimum of 10% of each vegetation complex for protection (Government of WA 2000a). *Bush Forever* sites are representative of regional ecosystems and habitat and have a key role in the conservation of Perth's biodiversity.

*Bush Forever* Site 253 (Harrisdale Swamp and Adjacent Bushland, Forrestdale) is present over the eastern portion of the survey area (including small areas within the works area) and extends over the remainder of the Jandakot Regional Park. *Bush Forever* Site 472 (Canning Vale Prison Bushland) is present on the other side of Warton Road to the west of the survey area. Significant flora species are known to occur in these *Bush Forever* sites, including the threatened flora species, *Caladenia huegelii*. The location of *Bush Forever* Sites 253 and 472 are shown in **Figure 3**.

## 2.9 Environmentally sensitive areas

'Environmentally sensitive areas' (ESAs) are prescribed under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* and have been identified to protect native vegetation values of areas surrounding values such as significant wetlands, threatened flora, threatened communities and *Bush Forever* sites. Within an ESA none of the exemptions under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* apply. However, exemptions under Schedule 6 of the EP Act still apply, which includes any clearing in accordance with a subdivision approval under the *Planning and Development Act 2005* (a recognised exemption under the Schedule 6 of the EP Act).

One ESA is present over the survey area and extends over remnant vegetation on both sides of Warton Road. The location of this ESA is shown in **Figure 3**.

## 2.10 Managed or legislated lands

DBCA has tenure of or interests in numerous areas of land across the state for a range of purposes. Tenure categories include national parks, nature reserves, conservation parks, marine parks, marine nature reserves, marine management areas, section 5(1)(g) reserves, state forest and timber reserves. These areas are mapped within the *Legislated Lands and Waters* (DBCA 2017a) and *Lands of Interest* (DBCA 2017b) datasets.

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



The *Legislated Lands and Waters* (DBCA 2017a) dataset includes lands subject to the following legislation; the *Conservation and Land Management Act 1984* (CALM Act 1984), Swan and Canning Rivers Management Act 2006 (SCRM Act) and lands identified under the Land Administration Act 1997 (LA Act). The *Lands of Interest* (DBCA 2017b) dataset includes all other lands of which DBCA is recognised as the manager but is not vested under any act. These lands comprise of crown land and freehold land which DBCA has been acknowledged by the Department of Lands as the responsible agency.

The land directly to the west of the survey area is managed by the Department of Justice. The eastern portion of the survey area is mapped as part of the Jandakot Regional Park. Jandakot Regional Park comprises a fragmented mosaic of land comprising approximately 2,362 hectares, extending over six local government areas. Jandakot Regional Park is jointly managed by WAPC, DBCA, City of Armadale, the City of Cockburn and the City of Kwinana (CCWA *et al.* 2010).

A number of lots included within the Jandakot Regional Park and located within the eastern portion of the survey area are included within the *Legislated Lands and Waters* (DBCA 2017a) dataset as 'Crown Freehold' under the CALM Act. These lots are managed by DBCA and are shown on **Figure 3**.

## 2.11 Ecological linkages

Ecological linkages are linear landscape elements that allow the movement of fauna, flora and genetic material between areas of remnant habitat. This exchange of genetic material between vegetation remnants improves the viability of those remnants by allowing greater access to breeding partners and food sources, refuge from disturbances such as fire and maintenance of genetic diversity of plant communities and populations. Ecological linkages are ideally continuous or near-continuous as the more fractured a linkage is, the less ease flora and fauna have in moving within the corridor (Alan Tingay and Associates 1998).

The Perth Biodiversity Project, supported by the Western Australia Local Government Association (WALGA), have identified and mapped regional ecological linkages within the Perth Metropolitan Region (WALGA and PBP 2004). This study was extended beyond the Perth Metropolitan Region through the South West Biodiversity Project, resulting in the identification and mapping of the South West regional ecological linkages (Molloy *et al.* 2009).

Ecological linkage (number 48) runs east to west through the centre of the survey area. This ecological linkage connects with ecological linkage (number 45) to the west of the survey area. These ecological linkages connect areas of *Bush Forever* located in the wider local area (**Figure 3**).

## 2.12 Previous surveys

No previous surveys over the works area or within Jandakot Regional Park were publicly available, however Ecoscape conducted a flora and vegetation survey to the north of the survey area in 2016.

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



## 3 Methods

### 3.1 Flora and vegetation survey

#### 3.1.1 Desktop assessment

A search was conducted for threatened and priority flora that may occur or have been recorded within a 10 km radius of the survey area using the *Protected Matters Search Tool* (DAWE 2020a), *NatureMap* (DBCA 2020) and DBCA's threatened and priority flora database (reference no. 57-0820FL).

A search was also conducted for TECs and PECs that may occur or have been recorded within a 10 km radius of the survey area using the *Protected Matters Search Tool* (DAWE 2020a), the *weed and native flora dataset* (Keighery *et al.* 2012) and DBCA's threatened and priority ecological communities' databases (reference no. 11-0920EC).

Prior to undertaking the field survey, information on the habitat preferences of threatened and priority flora species and communities identified from database searches was reviewed. This was compared to existing environmental information available for the survey area, such as geomorphology, soils, regional vegetation and historic land use, to identify species and communities for which habitat may occur in the survey area.

#### 3.1.2 Field survey

One botanist with nine years of botanical experience in the Swan Coastal Plain bioregion and one environmental consultant from Emerge visited the survey area on 25 September and 9, 20 and 27 October 2020 to conduct the flora and vegetation field survey.

The survey area was traversed on foot and the composition and condition of vegetation was recorded.

Detailed sampling of the vegetation was undertaken using non-permanent 10 x 10 m quadrats. Within the works area an equivalent area of 5 x 20 m quadrats was used due to the narrow width of vegetation present. The quadrats were established using fence droppers bound by measuring tape.

A total of fourteen quadrats were sampled, three within the works area and 11 within the Jandakot Regional Park. The position of each sample location was recorded with a hand-held GPS unit, as shown in **Figure 4**.

The data recorded within each sample included:

- site details (site name, site number, observers, date, location)
- environmental information (slope, aspect, bare-ground, rock outcropping soil type and colour class, litter layer, topographical position, time since last fire event)
- biological information (vegetation structure and condition, 'foliage projective cover' (FPC), degree of disturbance and species present).

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



Additional plant taxa not observed within samples were recorded opportunistically as the botanist traversed the survey area. Photographs were taken throughout the field visit to show particular site conditions.

The suitability of habitat within the survey area for conservation significant species identified in the desktop assessment was assessed (refer **Section 3.1**). Where identified, areas of suitable habitat were traversed to search for conservation significant species.

All plant specimens collected during the field survey were dried, pressed and then named in accordance with requirements of the Western Australian Herbarium. Identification of specimens occurred through comparison with named material and through the use of taxonomic keys. Flora species not native to Western Australia are denoted by an asterisk (\*) in text and raw data.

Vegetation condition was assigned at each sample and changes in vegetation condition were also noted and mapped across the survey area. The condition of the vegetation was assessed using methods from Keighery (1994) as per EPA's *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016). For vegetation in the survey area containing *Banksia* spp., the condition scale provided in the conservation advice for the 'banksia Woodlands of the Swan Coastal Plain TEC' (TSSC 2016) was applied in addition to the Keighery scale (as shown in **Table 1**).

Table 1: Vegetation condition scale applied during the field assessment

Condition category	Definition (Keighery 1994)	Indicator (TSSC 2016)	
		Typical native vegetation composition	Typical weed cover
Pristine	Pristine or nearly so, no obvious signs of disturbance.	Native plant species diversity fully retained or almost so	Zero or close to
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.	High native plant species diversity	Less than 10%
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	Moderate native plant species diversity	5-20%
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. 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.	Low native plant species diversity	5-50%
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.	Very low native plant species diversity	20-70%



# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Table 1: Vegetation condition scale applied during the field assessment (continued)

Condition category	Definition (Keighery 1994)	Indicator (TSSC 2016)	
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.	Very low to no native species diversity	Greater than 70%

### 3.1.3 Mapping and data analysis

#### 3.1.3.1 Conservation significant flora and vegetation

Based on the information recorded during the field survey, an assessment of the likelihood of occurrence of threatened and priority flora species and communities within the survey area was undertaken using the categories outlined in **Table 2**.

Table 2: Likelihood of occurrence assessment categories and definitions

Likelihood	Definition
Recorded	The species was recorded during the current field survey.
Likely	The site contains suitable habitat for the species and it is likely the species may occur based on presence of a recent historical record within or close to the site.
Possible	The site contains suitable habitat for the species but there is no other information to suggest that the species may occur within or close to the site.
Unlikely	The site does not contain suitable habitat for the species <u>or</u> the site contains suitable habitat for the species within which thorough targeted searches were completed and conclusion has been made that the species is unlikely to be present.

#### 3.1.3.2 Plant community identification and description

The local plant communities within the site were identified from the sample data collected during the field survey. The vegetation was described according to the dominant species present using the structural formation descriptions of the *National Vegetation Inventory System* (NVIS) (ESCAVI 2003). The identified plant communities were mapped on aerial photography from the sample locations and boundaries were interpreted from aerial photography and notes taken in the field. Vegetation condition was mapped on aerial photography based on the locations and notes recorded during the field survey to define areas with differing condition.

#### 3.1.3.3 Floristic community type assignment

The identified plant communities were then compared to the regional 'floristic community type' (FCT) dataset *A floristic survey of the southern Swan Coastal Plain* by Gibson *et al.* (1994). The sample data (presence/absence) was reconciled with Gibson *et al.* (1994) by standardising the names of taxa with those used in the earlier study. This was necessary due to changes in nomenclature in the intervening period. Taxa that were only identified to genus level were excluded, while some infra-species that have been identified since 1994 were reduced to species level. The combined dataset was then imported into the statistical analysis package PRIMER v6 (Clarke and Gorley 2006). As data from a localised survey is often spatially correlated, data for each sample was compared to Gibson *et*

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



*al.* (1994) separately. This removed the influence of spatial correlation when assigning a FCT. Classification was then undertaken using a group-average hierarchical clustering technique using the Bray-Curtis distance measure (as described above for plant community determination).

Where the sample tended to cluster with a grouping of different FCTs, samples were assessed separately to differentiate between FCTs. Ultimately the cluster analysis, as well as contextual information relating to the soils, landforms and known locations of FCTs within the region, was considered in the final determination of an FCT for vegetation within the survey area.

### 3.1.3.4 Threatened and priority ecological communities

Areas of native vegetation potentially representing a TEC were assessed against key diagnostic characteristics and, if available, size and/or vegetation condition thresholds provided in the following document:

- *Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community (TSSC 2016).*

### 3.1.3.5 Species accumulation curve

A species accumulation curve was plotted from sample data by generating a trendline (log) in Microsoft Excel. The trendline was forecast to locate the asymptote of the curve (the point at which the curve flattens), which provides an indication of amount of sampling that would be required before it can be assumed few species remain undetected. PRIMER v6 also offers a range of estimators to predict minimum species richness (Clarke and Gorley 2006). Both the Jackknife1 and Chao2 non-parametric estimators are reported, as these are known to perform well in comparison to simulated and real data sets and are also recommended for small sample sizes (Gotelli and Colwell 2011). Comparison between actual and estimated species accumulation assists in evaluating the adequacy of sampling effort.

## 3.2 Weed Assessment

### 3.2.1 Weed suites

Four weed suites were established (grassy/herbaceous/woody/bulbous). The weed suites were determined by grouping species according to their habit or life strategy on the basis that a common general control method could be applied to weeds within each weed suite (for example grasses using grass selective herbicide).

### 3.2.2 Sampling design

A sampling frame comprising a grid of 50 m sample units was overlaid across the survey area. Due to the linear nature of the survey area, the survey area was separated into the works area and the portion within Jandakot Regional Park to the east, to provide more accurate estimates of weed cover.

## Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



### 3.2.3 Field survey

A botanist from Emerge visited the survey area on 25 September, 9, 20 and 27 October 2020 to conduct the weed assessment. The site was traversed on foot and notes regarding weeds were recorded within the survey area.

'Foliage projective cover' (cover) of four weed suites (grassy/herbaceous/woody/bulbous) were recorded within each sample unit. The dominant weed species within each weed suite were recorded as the botanists and ecologists traversed the site. The following categories were used when recording weed cover:

- 0% (not present)
- >0-1%
- >1-5%
- >5-20%
- >20-50%
- >50%.

Point locations of the following weeds were recorded using a hand-held GPS unit:

- declared pests (see **Section 2.7.4**)
- WoNS (see **Section 2.7.4**)
- prominent isolated woody weeds or isolated plants that could be controlled to prevent spreading.

Photographs were taken of each weed suite, declared pest, WoNS, and prominent weeds recorded within the survey area.

### 3.2.4 Data analysis and mapping

The weed suites were identified by broadly grouping weed species by an appropriate control method. The appropriate control method for each species was determined from *Florabase* (Western Australian Herbarium 2018) and the APVMA Permit No. 13333.

The foliar projective cover recorded for each weed suite was mapped across the sampling frame on aerial photography. Point locations for declared pests, WoNS and prominent weeds were overlaid on the weed suite maps.

Priority areas for weed control were determined in consultation with the City who indicated that priority should be given to:

- individual woody weeds and declared pests (to prevent spreading).
- weeds located within high quality vegetation (such as vegetation within 'very good' condition).

### 3.3 Significant tree survey

All native trees  $\geq 500$  mm in diameter at breast height (DBH) were considered significant trees. A botanist and an environmental consultant recorded all significant native trees in the survey area. Each significant tree was individually identified, tagged and the attributes outlined in **Table 3** were

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



recorded. In addition, hollows that appeared potentially suitable for use by native fauna species from the ground were inspected by a zoologist using a pole-mounted camera. During the hollow inspection the internal dimensions of the hollow were confirmed, and an assessment was made for signs of use such as chew marks around the hollow entrance, nesting material, feathers or the presence of birds or other fauna within the hollow. Notes and photographs were taken of the hollow entrance and internal features to communicate the fauna values and usage of the hollow.

*Table 3: Attributes recorded for each significant tree in the works area*

Attribute	Description
Tag	Unique identifier on a metal tag nailed to each habitat tree
Image	Oblique photograph
GPS location	The location of each habitat tree recorded using a handheld GPS unit
Tree species	Species and common name (or stag if dead)
Diameter at breast height (DBH) (cm)	DBH measured at breast height (1.3 metres) using a diameter tape
Hollows present	Number of hollows
Hollows potentially suitable for breeding by a black cockatoo	Number of hollows potentially suitable for breeding by a black cockatoo

Significant trees were assessed to determine whether they provide habitat for threatened species of black cockatoo. Hollows that appeared potentially suitable for use by a black cockatoo during the internal hollow inspection were assigned to a category listed in **Table 4**.

*Table 4: Habitat tree categories*

Category	Specifications
Nest	The tree contains a hollow used by black cockatoos for breeding as confirmed by records of black cockatoos, their eggs or fledglings or other evidence of recent nesting activity by black cockatoos
Potential nest	The tree contains one or more hollows that are suitable for use by black cockatoos as breeding habitat as confirmed by internal hollow inspection <sup>^</sup> and evidence of use by an unidentified bird such as feathers, chew marks or nest material has been recorded within a hollow
Suitable hollow(s)	The tree contains one or more hollows that are suitable for use by black cockatoos as breeding habitat as confirmed by internal hollow inspection
Potentially suitable hollow(s)	The tree contains or is suspected to contain one or more hollows that have the potential to be suitable for use by black cockatoos when either viewed from the ground or following an internal hollow inspection that was inconclusive <sup>^</sup>
No suitable hollow(s)	The tree does not contain hollow(s) that have the potential to be suitable for use by black cockatoos when viewed from the ground <u>or</u> contains hollows that were determined to be unsuitable for use by black cockatoos by internal inspection

## Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



### 3.4 Baseline quadrat survey for future monitoring

After an initial site visit confirming the types of vegetation present within the survey area, monitoring locations were chosen to provide representative sites throughout the vegetation types present. Eleven 'baseline' monitoring locations were established within the 20 m buffer portion of Jandakot Regional Park to allow for pre- and post-monitoring of vegetation. Care was taken to avoid any additional disturbance to the Banksia Woodland Project quadrats located within Jandakot Regional Park, where were observed to be to the east of the 20 m buffer. The monitoring locations and parameters were approved by the City and DBCA prior to the field survey and are shown on **Figure 4**.

#### 3.4.1 Field survey

Two botanists from Emerge visited the survey area on 20 and 27 October 2020 to setup the baseline monitoring quadrats. These monitoring locations align with the flora and vegetation quadrats located within the Jandakot Regional Park portion of the survey area (as described in **Section 3.1.2**).

Each monitoring location comprised a 10 m x 10 m area and was permanently marked in the north-western corner with a metal stake. The parameters recorded within each quadrat include:

- flora species and origin (native/non-native)
- 'foliage projective cover' (FPC) for each flora species
- vegetation condition using the Keighery (1994) scale
- vegetation health
- signs of disturbance (e.g. rubbish, clearing, pest animals).

### 3.5 Infrastructure assessment

#### 3.5.1 Field survey

A botanist from Emerge visited the survey area on 25 September 2020 to conduct the infrastructure assessment. The survey area was traversed on foot and notes were made about the existing infrastructure. Infrastructure elements assessed during the survey included:

- pedestrian gates
- vehicular access gates
- fencing
- signage
- firebreaks
- tracks.

Photographs were taken during the field survey of infrastructure within the survey area.

#### 3.5.2 Data analysis and mapping

The location and condition of each infrastructure type in the survey area was mapped on aerial photography based on notes taken in the field and interpretation of the aerial photography.

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



## 3.6 Survey limitations

It is important to note the specific constraints imposed on surveys and the degree to which these may have limited survey outcomes.

### 3.6.1 Flora and Vegetation assessment

An evaluation of the survey methodology against standard constraints outlined in the EPA document *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016) is provided in **Table 5**.

Table 5: Evaluation of survey methodology against standard constraints outlined in EPA (2016)

Constraint	Degree of limitation	Details
Availability of contextual information	No limitation	The broad scale contextual information described in <b>Section 2</b> is adequate to place the survey area and vegetation in context.
	Limitation	Regarding assignment of FCTs, the authoritative Gibson <i>et al.</i> (1994) dataset was derived from a necessarily limited sample of vegetation from largely publicly owned land which is now more than 20 years out of date. Consequently, it is unknown to what degree official FCTs are appropriate reference to biodiverse vegetation across the Swan Coastal Plain. Furthermore, Gibson <i>et al.</i> (1994) collected data in the spring main flowering period and in many cases sampled plots multiple times to provide a complete species list.
Experience level of personnel	No limitation	This flora and vegetation assessment was undertaken by a qualified botanist with nine years of botanical experience in Western Australia. Technical review was undertaken by a principal environmental consultant with 18 years' experience in environmental science in Western Australia.
Suitability of timing	No limitation	The survey was conducted in September to November and thus within the main flowering season. Moderate to high rainfall was recorded from April to September 2020 in the months preceding the site visit. Therefore, it is likely that many plant species would have been in flower and/or visible at the time of survey. The survey timing was considered adequate to allow the detection of species for which seasonal timing is critical.
Temporal coverage	No limitation	Comprehensive flora and vegetation assessments can require multiple visits, at different times of year, and over a period of a number of years, to enable observation of all species present. The survey area was visited multiple times in September, October and November 2020. The November site visits provided an insight into the vegetation condition and composition at the end of the main flowering period. Therefore, according to the EPA guidelines this survey is considered to meet the requirements of a 'detailed' survey.
Spatial coverage and access	No limitation	Site coverage was comprehensive (track logged).
	No limitation	All parts of the site could be accessed as required.
Sampling intensity	Minor limitation	A total of 178 species were recorded, of which 149 were recorded from eleven sample locations and 29 were recorded opportunistically. Minimum species richness within site is estimated at between 181 (Jackknife1) and 201 (Chao2) species (refer species accumulation curve and estimates shown in <b>Plate 12</b> ). The number of species recorded in the site is close to that of the Jackknife1 estimate. On this basis, the survey effort was considered to be adequate to prepare a representative species inventory.

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Table 5: Evaluation of survey methodology against standard constraints outlined in EPA (2016) (continued)

Constraint	Degree of limitation	Details
Influence of disturbance	Minor limitation	Time since fire is greater than 30 years as interpreted from aerial imagery and therefore short-lived species more common after fire may not have been visible.
	No limitation	Historical ground disturbance was evident throughout much of the survey area, particularly within the works area. The disturbance history of the survey was considered when undertaking field sampling.
Adequacy of resources	No limitation	All resources required to perform the survey were available.

### 3.6.2 Weed assessment

Weed suites were determined by grouping species according to appropriate common control method (for example grasses using grass selective herbicide).

### 3.6.3 Significant tree and infrastructure locations

A handheld GPS unit was used to locate significant trees and infrastructure features. These units are not survey grade and generally have a degree of spatial error in the order of 3-5 m under normal conditions.



# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



## 4 Results

### 4.1 General site conditions

The works area is largely cleared and comprises non-native vegetation or bare ground. However, some patches of native species are also present. The remainder of the survey area that extends into the Jandakot Regional Park is largely comprised of intact vegetation albeit with a number of firebreaks and intersecting tracks.

### 4.2 Flora and vegetation

#### 4.2.1 Desktop assessment

##### 4.2.1.1 Flora

The database search results identified a total of 25 threatened and 63 priority flora species occurring or potentially occurring within a 10 km radius of the survey area. Information on these species including their habitat preferences and flowering period is provided in **Appendix B**.

Based on background information available for the survey area, eight threatened flora species and 33 priority flora species were identified as potentially occurring within the site as shown in **Table 6**.

Table 6: Conservation significant flora species with habitat preferences considered to potentially occur in the site

Species	Level of significance		Life strategy	Habitat	Flowering period
	State	EPBC Act			
<i>Austrostipa jacobsoniana</i>	CR	CR	P	Grey sandy clay.	Nov-Jan
<i>Grevillea thelemanniana</i>	CR	CR	P	Sand, sandy clay. Winter-wet low-lying flats.	May-Nov
<i>Synaphea</i> sp. Serpentine (G.R. Brand 103)	CR	CR	P	Seasonally damp areas, loam - sand.	Sep-Oct
<i>Caladenia huegelii</i>	CR	E	PG	Well-drained, deep sandy soils in lush undergrowth in a variety of moisture levels.	Sep-early Nov
<i>Calytrix breviseta</i> subsp. <i>breviseta</i>	CR	E	P	Seasonally wet sandy-clay soil on swampy flats	Oct-Nov
<i>Drakaea elastica</i>	CR	E	PG	Bare patches of sand within otherwise dense vegetation in low-lying areas alongside winter-wet swamps.	Late Sep-Oct/Nov, survey Jul-Aug

CR=critically endangered, E=endangered, V=vulnerable, P1-P4=Priority 1-Priority 4, P=perennial, PG=perennial geophyte.

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Table 6: Conservation significant flora species with habitat preferences considered to potentially occur in the site (continued)

Species	Level of significance		Life strategy	Habitat	Flowering period
	State	EPBC Act			
<i>Diuris purdiei</i>	EN	E	PG	Sand to sandy clay soils in areas subject to winter inundation.	Late Sept to mid-Oct
<i>Grevillea curviloba</i> subsp. <i>incurva</i>	EN	E	P	Sand, sandy loam. Winter-wet heath.	Aug-Sep
<i>Acacia lasiocarpa</i> var. <i>bracteolata</i> long peduncle variant (G.J. Keighery 5026)	P1	-	P	Grey or black sand over clay in winter wet areas.	May-Aug
<i>Bolboschoenus fluviatilis</i>	P1	-	P	Floodplain with grey/brown wet sand.	Nov
<i>Levenhookia preissii</i>	P1	-	A	Grey or black, peaty sand. Swamps	Sep-Dec/Jan
<i>Calectasia grandiflora</i>	P2	-	P	White, grey or yellow sand.	Jun-Nov
<i>Comesperma griffinii</i>	P2	-	A/P	Yellow or grey sand on plains.	Oct
<i>Comesperma rhadinocarpum</i>	P2	-	P	Sandy soils.	Oct-Nov
<i>Johnsonia pubescens</i> subsp. <i>cygnorum</i>	P2	-	P	Grey white yellow sands on flats and seasonally wet areas.	Sep
<i>Lepyrodia curvescens</i>	P2	-	P	Sand, laterite. Seasonally inundated swampland.	Sep-Nov
<i>Poranthera moorokatta</i>	P2	-	A	Sandy or clay soils. Dampland or low sandy dunes.	Oct or Feb
<i>Schoenus loliaceus</i>	P2	-	A	Sandy soils in winter-wet depressions.	Aug-Nov
<i>Stenanthemum sublineare</i>	P2	-	P	White sand on coastal plains.	Oct-Dec
<i>Thelymitra variegata</i>	P2	-	P	Sandy clay, sand, laterite.	Jun-Sep
<i>Asteridea gracilis</i>	P3	-	A	Sand, clay, gravelly soils.	Sep-Dec
<i>Babingtonia urbana</i>	P3	-	P	Grey sand, lateritic gravel.	Jan-Mar
<i>Byblis gigantea</i>	P3	-	P	Sandy-peat swamps. Seasonally wet areas.	Sep-Jan
<i>Cyathochaeta teretifolia</i>	P3	-	P	Grey sand, sandy clay in swamps and creek edges.	Oct-Jan
<i>Eryngium pinnatifidum</i> subsp. <i>palustre</i> (G.J. Keighery 13459)	P3	-	P	Grey brown sand or clay in winter wet flats.	Sep-Nov
<i>Haemodorum loratum</i>	P3	-	P	Grey or yellow sand, gravel.	Nov
<i>Isotropis cuneifolia</i> subsp. <i>glabra</i>	P3	-	P	Sand, clay loam in winter-wet flats.	Sep
<i>Jacksonia gracillima</i>	P3	-	P	Sand, often adjacent to winter wet areas	Sep-Dec

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Table 6: Conservation significant flora species with habitat preferences considered to potentially occur in the site (continued)

Species	Level of significance		Life strategy	Habitat	Flowering period
	State	EPBC Act			
<i>Isotropis cuneifolia</i> subsp. <i>glabra</i>	P3	-	P	Sand, clay loam in winter-wet flats.	Sep
<i>Jacksonia gracillima</i>	P3	-	P	Sand, often adjacent to winter wet areas	Sep-Dec
<i>Phlebocarya pilosissima</i> subsp. <i>pilosissima</i>	P3	-	P	White or grey sand, lateritic gravel.	Aug-Oct
<i>Schoenus benthamii</i>	P3	-	P	White, grey and, sandy clay in winter wet flats and swamps	Oct-Nov
<i>Schoenus pennisetis</i>	P3	-	A	Grey or peaty sand in swamps and winter-wet depressions.	Aug-Sep
<i>Stylidium aceratum</i>	P3	-	A	Sandy soils in swamp heathland.	Oct-Nov
<i>Stylidium paludicola</i>	P3	-	P	Peaty sand over clay. Winter wet habitats. Marri and Melaleuca woodland, Melaleuca shrubland	Oct-Dec
<i>Styphelia filifolia</i>	P3	-	P	Brown over pale yellow sand.	Feb-Apr
<i>Thysanotus anceps</i>	P3	-	P	White or grey sand, lateritic gravel, laterite.	Oct-Dec
<i>Drosera occidentalis</i>	P4	-	P	Flat, brown/white/yellow moist sand/clay/peat, often near swamps.	Oct-Dec/Jan
<i>Microtis quadrata</i>	P4	-	PG	Sand, loam or peat in winter wet areas	Oct-Dec
<i>Stylidium longitubum</i>	P4	-	A	Sandy clay, clay. Seasonal wetlands.	Oct-Dec
<i>Thysanotus glaucus</i>	P4	-	P	White, grey or yellow sand, sandy gravel.	Oct-Mar
<i>Tripterococcus</i> sp. <i>Brachylobus</i> (A.S. George 14234)	P4	-	P	Winter-wet areas on grey sand.	Oct-Feb
<i>Verticordia lindleyi</i> subsp. <i>lindleyi</i>	P4	-	P	Sand and sandy clay in winter wet areas.	May or Nov-Jan

CR=critically endangered, E=endangered, V=vulnerable, P1-P4=Priority 1-Priority 4, P=perennial, PG=perennial geophyte.

### 4.2.1.2 Vegetation

The database search results identified six TECs and four PECs occurring or potentially occurring within a 10 km radius of the site. Information on these communities is provided in **Appendix C**.

Based on geomorphology, soils and regional vegetation patterns, one TEC and three PECs were considered to have potential to occur in the survey area:

- 'Banksia woodlands of the Swan Coastal Plain' TEC which is listed as 'endangered' under EPBC Act.
- 'Banksia dominated woodlands of the Swan Coastal Plain IBRA region' PEC (P3).
- 'Low lying Banksia attenuata woodlands or shrublands' PEC (P3).

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



- 'Banksia ilicifolia woodlands' PEC (P3).

## 4.2.2 Species inventory

A total of 133 native and 45 non-native (weed) species were recorded within the survey area during the field survey, representing 47 families and 129 genera. The dominant families containing native taxa were Myrtaceae (17 native taxa and two weed taxa) and Fabaceae (11 native taxa and six weed taxa). The most common genus was *Lomandra* with seven taxa and *Acacia* and *Melaleuca* with five taxa each. Of the species recorded 149 were recorded in sample locations and 29 were recorded opportunistically.

A complete species list is provided in **Appendix D** and a species list by plant community matrix is provided in **Appendix E**.

## 4.2.3 Threatened and priority flora

No occurrences of threatened or priority flora species were recorded within the survey area.

The majority of the threatened and priority flora species identified in the desktop assessment (and detailed in **Table 6** and **Appendix B**) are not considered to occur in the site because they were not recorded during the field survey despite extensive survey in the main flowering period.

## 4.2.4 Locally and regionally significant flora

A number of locally or regionally significant flora species were recorded within the survey area based on their inclusion within Bush Forever. These species were:

- *Hensmania turbinata* - poorly conserved south of the river, significant populations (Government of WA 1980)
- *Gonocarpus cordiger* - significant populations (Government of WA 2000b)
- *Platysace juncea* - poorly reserved (Government of WA 2000b)
- *Styphelia xerophylla* (previously named *Astroloma xerophyllum*)

## 4.2.5 Declared pests

One species, *\*Zantedeschia aethiopica* (arum lily) listed as a declared pest (C3) pursuant to the BAM Act, was recorded within the survey area. A small individual was recorded near Q7 within the Jandakot Regional Park, as shown on Figure 10: Weed Suite 4 - Bulbous weeds.

No weeds of national significance (WoNS) were recorded.

## 4.2.6 Plant communities

Four plant communities were identified within the survey area. The remainder of the survey area (2.032ha) (1.2539 ha in the works area) contains non-native vegetation with bare soil or weeds.

A description and the area of each plant community is provided in **Table 7** and representative photographs of each are provided in **Plate 1** to **Plate 11**. The location of each plant community is shown in **Figure 4**. Plant community **BaBm** exists across the south-western portion of the works area and survey area and in a small pocket in the northern most portion of the works area and extends

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



over 0.4738 ha of the survey area (0.1166 ha in the works area). Plant community **AcEaPc** occurs in a small portion of the northern corner of the Jandakot Regional Park and a minute area (0.0003 ha) was recorded within the works area. This community extends over 0.1208 ha of the survey area. Plant community **MpAf** is present in the southern portion of the survey area and extends over 0.7191 (0.1881 ha in the works area). Plant community **AfBKg** extends over the majority of the centre of the survey area and covers 1.6635 ha (0.3931 ha in the works area).

A matrix of species recorded within each plant community is provided in **Appendix E** and raw sample data in **Appendix F**.

Table 7: Description and extent of plant communities identified within the works area and survey area

Plant community	Description	Area (ha)	
		Works area	Survey area
<b>BaBm</b>	Open woodland of <i>Banksia</i> spp., <i>Eucalyptus tottiana</i> and <i>Allocasuarina fraseriana</i> over tall open shrubland <i>Adenanthos cygnorum</i> over open shrubland to shrubland of <i>Macrozamia fraseri</i> , <i>Eremaea pauciflora</i> subsp. <i>pauciflora</i> and <i>Acacia pulchella</i> var. <i>glaberrima</i> over forbland to closed forbland of <i>Dasypogon bromeliifolius</i> , <i>Burchardia congesta</i> , <i>Anigozanthos manglesii</i> , <i>Phlebocarya</i> sp., <i>*Ursinia anthemoides</i> and <i>*Gladiolus caryophyllaceus</i> over open tussock grassland ( <b>Plate 1– Plate 3</b> ).	0.1166	0.4738
<b>AcEaPc</b>	Tall open shrubland <i>Adenanthos cygnorum</i> over shrubland of <i>Eremaea asterocarpa</i> subsp. <i>asterocarpa</i> , <i>Lechenaultia floribunda</i> and <i>Acacia pulchella</i> var. <i>glaberrima</i> over forbland to closed forbland of <i>Phlebocarya ciliata</i> , <i>Dasypogon bromeliifolius</i> , <i>Burchardia congesta</i> , <i>Patersonia occidentalis</i> , <i>*Ursinia anthemoides</i> and <i>*Gladiolus caryophyllaceus</i> over open tussock ( <b>Plate 4</b> ).	0.0003	0.1208
<b>MpAf</b>	Open woodland to woodland of <i>Melaleuca preissiana</i> , <i>Allocasuarina fraseriana</i> and <i>Nuytsia floribunda</i> over tall shrubland to closed shrubland of <i>Adenanthos cygnorum</i> and <i>Regelia inops</i> over shrubland to closed shrubland of <i>Xanthorrhoea</i> spp. and <i>Hypocalymma angustifolium</i> and vineland of <i>Cassytha flava</i> over forbland of <i>Podotheca gnaphalioides</i> and <i>*Gladiolus caryophyllaceus</i> , open rush/sedgeland of <i>Schoenus efolius</i> and <i>Lyginia barbata</i> and open to closed tussock grassland ( <b>Plate 5 and Plate 6</b> ).	0.1881	0.7191
<b>AfBKg</b>	Open woodland to woodland of <i>Allocasuarina fraseriana</i> and <i>Banksia</i> spp. over tall shrubland to closed shrubland of <i>Kunzea glabrescens</i> , <i>Adenanthos cygnorum</i> , <i>Melaleuca thymoides</i> and <i>Jacksonia furcellata</i> over open forbland to forbland of <i>Dasypogon bromeliifolius</i> , <i>Burchardia congesta</i> , <i>*Ursinia anthemoides</i> , <i>*Gladiolus caryophyllaceus</i> and <i>*Hypochaeris glabra</i> , open rushland to rushland of <i>Desmodium flexuosus</i> and sparse to closed tussock grassland ( <b>Plate 7 - Plate 9</b> ).	0.3931	1.6635
<b>Cleared</b>	Tracks and other disturbed areas with limited native species cover, planted shrubs and open to closed forblands of <i>*Arctotheca calendula</i> and <i>*Oxalis pes-caprae</i> and open to closed tussock grassland of <i>*Ehrharta calycina</i> , <i>*Eragrostis curvula</i> , <i>*Avena barbata</i> and <i>*Briza maxima</i> ( <b>Plate 10 and Plate 11</b> ).	1.2539	2.032
<b>TOTAL AREA</b>		1.9521	5.0092



# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Plate 1: Plant community **BaBm** in 'degraded' condition within the north eastern extent of the works area.



Plate 2: Plant community **BaBm** in 'good' condition within the south western extent of the works area.



# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Plate 3: Plant Community **BaBm** in 'very good' condition within Jandakot Regional Park.



Plate 4: Plant community **AcEaPc** in 'very good' condition within Jandakot Regional Park.



# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Plate 5: Plant community **MpAf** in 'degraded' condition within the works area.



Plate 6: Plant community **MpAf** in 'very good' condition within Jandakot Regional Park.



# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Plate 7: Plant community **AfBKg** in 'degraded' condition within the works area.



Plate 8: Plant community **AfBKg** in 'good' condition within the works area.



# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Plate 9: Plant community **AfBKg** in 'very good' condition within Jandakot Regional Park.



Plate 10: Cleared vegetation in 'completely degraded' condition within the works area.

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Plate 11: Cleared vegetation in 'completely degraded' condition within Jandakot Regional Park. Note presence of planted *Melaleuca lanceolata*.

### 4.2.7 Vegetation condition

Vegetation condition within the works area ranged from 'completely degraded' to 'very good' condition. The 'very good' condition vegetation within the works area was adjacent to a portion of the Jandakot Regional Park where intact vegetation abutted up to the boundary of the works area, with the firebreak located approximately 3-5 m into the Jandakot Regional Park. These areas tended to have fewer weeds and higher native species diversity than other areas of vegetation within the works area in 'good' and 'degraded' condition.

The most intact native vegetation was located in the eastern portion of the survey area within Jandakot Regional Park. Vegetation mapped as being in 'excellent' and 'very good' condition retained the structure expected of native woodland communities and have moderate to high native species diversity. However, some past disturbance and edge effects are also evident in these areas through the presence of some weed species. Some areas of the **BaBm** and **AfBkg** vegetation within the Jandakot Regional Park was in 'good' and 'degraded' condition due to partial clearing and higher weed loads.

Remaining areas in the works area and the survey area are in 'completely degraded' condition and consist of non-native species such as pasture grasses, herbs and planted/self-seeded trees and shrubs (particularly *\*Acacia longifolia* and *\*Chamaelucium uncinatum* (Geraldton wax)). Sandy tracks within the survey area were also mapped as being in 'completely degraded' condition.

The extent of vegetation by condition category is detailed in **Table 8** and shown in **Figure 5**.



# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Table 8: Extent of vegetation condition categories within the works area and survey area

Condition category (Keighery 1994)	Size (ha)	
	Works area	Survey area
Pristine	0	0
Excellent	0.0003	0.0809
Very good	0.2374	1.8966
Good	0.1816	0.4267
Degraded	0.2788	0.5997
Completely degraded	1.2539	2.032

### 4.2.8 Floristic community types

Plant communities **BaBm** and **AcEaPc** were considered most likely to represent FCT 23a – ‘Central *Banksia attenuata* – *B. menziesii* woodlands’. This FCT is listed as ‘well reserved’ and ‘low risk’ by Gibson *et al.* (1994). Samples within these communities also tended to show high similarity to FCT 21c. Within plant community **BaBm**, Sample Q9 clustered with FCT 23a with 50% similarity. Sample Q12 clustered with FCT 21c with 50% similarity but also showed high similarity (49%) with FCT 23a site WHITE-1. Sample Q13 clustered with multiple FCTs but showed highest similarity to sites within FCT 21c and FCT 23a. Within plant community **AcEaPc**, sample Q4 clustered with FCT 21c with 37% similarity but showed highest similarity to individual sites from FCT 23a (**Table 9**). Sample Q11 clustered to a number of FCTs but again showed highest similarity to sites from FCT 23a with 48-51% similarity (**Table 9**).

Plant communities **MpAf** and **AfBkG** were considered most likely to represent FCT 21c – ‘Low lying *Banksia attenuata* woodlands or shrublands’. This FCT is listed as ‘well reserved’ and ‘susceptible’ by Gibson *et al.* (1994). Samples within these communities also tended to show high similarity to FCT 23a and 21a. Within plant community **MpAf**, samples Q8 and Q14 both grouped with FCT 21c in the cluster analysis with 32-34% similarity (**Table 9**). Sample Q10 grouped with sites representing FCTs 21c and FCT 5 in the cluster analysis with 21% similarity and showed highest similarity to sites from FCT 23a (**Table 9**). Within plant community **AfBkG**, sample Q6 grouped with sites representing FCTs 21c with 49% similarity. Sample Q5 grouped with sites representing FCTs 21a with 50% similarity but also showed high similarity (53%) to sites representing FCT 21c.

The relevant portions of the cluster dendrograms showing samples are provided in **Appendix G**.

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Table 9: Plant community and likely FCT represented within the survey area for each sample.

Plant community	Sample unit	Most similar Gibson <i>et al.</i> (1994) sites	Similarity (%)	Most likely floristic community type (FCT)	Reservation and conservation status (Gibson <i>et al.</i> 1994)
AcEaPc	Q4^	WHITE-1 (FCT 23a)	51	FCT 23a: Central <i>Banksia attenuata</i> – <i>B. menziesii</i> woodlands	Well reserved Low risk
		HURST01 (FCT 23a)	48		
		LOW07 (FCT 21c)	45		
	Q11^	WHITE-1 (FCT 23a)	48		
		YULE-1 (FCT 23a)	42		
		BULL-3 (FCT 23a)	41		
		DEJONG-C (FCT 21c)	40		
	BaBm	Q9	WHITE-1 (FCT 23a)		
HURST03 (FCT 23a)			49		
Q12^		FL-5 (FCT 21c)	50		
		FL-6 (FCT 21c)	49		
		HYMUS03 (FCT 21c)	49		
		WHITE-1 (FCT 23a)	49		
Q13^		FL-6 (FCT 21c)	52		
		WHITE-1 (FCT 23a)	51		
MpAf	Q8	MODO-4 (FCT 21c)	34	FCT 21c: Low-lying <i>Banksia attenuata</i> woodlands or shrublands	Well reserved Susceptible
	Q10^	HURST01 (FCT 23a)	33		
		YULE-1 (FCT 23a)	32		
	Q14	MODO-4 (FCT 21c)	32		
		PLINE-7 (FCT 21c)	32		
AfBKg	Q5^	NINE-2 (FCT 21a)	55		
		LOW07 (FCT 21c)	53		
	Q6	FL-5 (FCT 21c)	49		
		FL-6 (FCT 21c)	49		
	Q7^	AUSTRA-1 (FCT 21a)	38		
		MODO-5 (FCT 23a)	38		

Note: ^ shows highest percent similarity to individual Gibson *et al.* (1994) samples rather than similarity to a cluster of samples.

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



## 4.2.9 Threatened and priority ecological communities

FCT 23a and FCT 21c are both associated with the Commonwealth 'banksia woodlands of the Swan Coastal Plain' TEC (herein referred to as the 'banksia woodland TEC'), and the State 'banksia woodlands of the Swan Coastal Plain' PEC (herein referred to as the 'banksia woodland PEC'). FCT 21c is also listed separately as a PEC (P3).

The structure and composition of all plant communities indicates that they have the potential to represent the 'banksia woodland TEC'. This TEC is listed as 'endangered' under the EPBC Act. Whether a patch of vegetation is considered to represent the banksia woodland TEC depends on a number of diagnostic criteria including geographic location, soils, landform, structure, composition, condition and patch size (DoEE 2016).

As outlined in **Table 10**, the 0.6981 ha of **BaBm**, **AcEaPc**, **MpAf** and **AfKgB** vegetation within the works area itself does not independently satisfy the criteria to be considered as a patch of the 'banksia woodland TEC'. However, as the vegetation in the works area is contiguous with the adjoining 2.9772 ha of vegetation within the survey area as well as additional banksia woodland vegetation outside of the survey area, all of the intact plant communities within the works area satisfy the criteria to be considered as part of a larger patch of the 'banksia woodland TEC'. The patch is approximately 170 ha in size.

Table 10: Criteria for determining presence of Banksia Woodlands of the Swan Coastal Plain TEC adapted from (TSSC 2016)

Criteria	Requirements for meeting criteria	Works area implications	Survey area implications
1. Must meet key diagnostic characteristics	A variety of factors relating to: <ul style="list-style-type: none"> <li>Location</li> <li>Soils</li> <li>Structure</li> <li>Composition</li> </ul>	<ul style="list-style-type: none"> <li>The works area meets location and soils criteria.</li> <li>The <b>BaBm</b> and <b>AfKgB</b> vegetation includes the key diagnostic feature of a tree layer of <i>Banksia attenuata</i>, <i>Banksia menziesii</i> and <i>Banksia ilicifolia</i>.</li> <li>The <b>MpAf</b> vegetation within the works area has significantly lower cover of <i>Banksia</i> spp. But as the threshold of <i>Banksia</i> spp. cover for the TEC is very low (2%), are also considered to include this diagnostic feature.</li> <li>The vegetation within the works area also meets structure and composition criterion. FCT 23a and FCT 21c are identified as FCTs comprising the banksia woodland TEC.</li> </ul>	<ul style="list-style-type: none"> <li>Survey area meets location and soils criteria.</li> <li>The <b>BaBm</b> and <b>AfKgB</b> vegetation includes the key diagnostic feature of a tree layer of <i>Banksia attenuata</i>, <i>Banksia menziesii</i> and <i>Banksia ilicifolia</i>.</li> <li>The <b>AcEaPc</b> and <b>MpAf</b> vegetation has significantly lower cover of <i>Banksia</i> spp. But as the threshold of <i>Banksia</i> spp. cover for the TEC is very low (2%), are also considered to include this diagnostic feature.</li> <li>The vegetation within the survey area also meets structure and composition criterion. FCT 23a and FCT 21c are identified as FCTs comprising the banksia woodland TEC.</li> </ul>



# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Table 10: Criteria for determining presence of Banksia Woodlands of the Swan Coastal Plain TEC adapted from (TSSC 2016) (continued)

Criteria	Requirements for meeting criteria	Works area implications	Survey area implications
2. Must meet condition thresholds	<ul style="list-style-type: none"> <li>A patch should at least meet the 'good' condition category (see <b>Table 1</b>)</li> </ul>	<ul style="list-style-type: none"> <li>The vegetation is present in 'excellent', 'very good', 'good' and 'degraded' condition, which meets this criterion. The conservation advice indicates that a single patch may include areas of variable condition, meaning parts of the vegetation in 'degraded' condition may still be considered the TEC.</li> </ul>	<ul style="list-style-type: none"> <li>The vegetation is present in 'excellent', 'very good', 'good' and 'degraded' condition, which meets this criterion. The conservation advice indicates that a single patch may include areas of variable condition, meaning parts of the vegetation in 'degraded' condition may still be considered the TEC.</li> </ul>
3. Must meet minimum patch size	<p>Minimum size of patch:</p> <ul style="list-style-type: none"> <li>Pristine=no minimum size</li> <li>Excellent=0.5 ha</li> <li>Very Good=1 ha</li> <li>Good=2 ha</li> </ul>	<ul style="list-style-type: none"> <li>The vegetation in 'excellent' condition comprises 0.0003 ha and does <u>not</u> independently meet this criterion.</li> <li>The vegetation in 'very good' condition comprises 0.2374 ha and does <u>not</u> independently meet this criterion.</li> <li>The vegetation in 'good' condition comprises 0.1816 ha and does <u>not</u> independently meet this criterion.</li> <li>The adjoining vegetation in 'degraded' condition within the works area and all the vegetation within the adjacent Jandakot Regional Park portion of the survey area would be viewed as contiguous and part of the same patch. Therefore whilst the mapped 0.6981 ha of TEC vegetation within the works area does <u>not</u> independently comprise a patch of the TEC it forms part of a large patch within the wider local area.</li> </ul>	<ul style="list-style-type: none"> <li>The vegetation in 'excellent' condition comprises 0.0809 ha and does <u>not</u> independently meet this criterion.</li> <li>The vegetation in 'very good' condition comprises 1.8699 ha and does independently meet this criterion.</li> <li>The vegetation in 'good' condition comprises 0.4267 ha and does <u>not</u> independently meet this criterion.</li> <li>The adjoining vegetation in 'degraded' condition would be viewed as contiguous and part of the same patch. Therefore the mapped 2.9772 ha of vegetation does comprise a patch of the TEC.</li> </ul>

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Table 10: Criteria for determining presence of *Banksia* Woodlands of the Swan Coastal Plain TEC adapted from (TSSC 2016) (continued)

Criteria	Requirements for meeting criteria	Works area implications	Survey area implications
4. Must incorporate surrounding context	<ul style="list-style-type: none"> <li>Breaks (e.g. tracks) &lt; 30 m do not separate vegetation into separate patches</li> <li>Buffer zones may apply (20-50 m recommended from patch edge)</li> <li>The site should be thoroughly sampled (2 surveys in same spring).</li> <li>Survey timing should be appropriate.</li> <li>Surrounding environment should be considered (e.g. connectivity, conservation values, fauna habitat)</li> </ul>	<ul style="list-style-type: none"> <li>Small scale tracks (&lt;30 m wide) exist within the patch. Along the clearing permit area some gaps more than 30m wide exist but all are within 30 m of the vegetation within the Jandakot Regional Park.</li> <li>Land surrounding the patch is a combination of residential development and native vegetation.</li> <li>This survey was conducted in September and October (within the main flowering season)</li> <li>For a detailed level survey, the survey timing is appropriate.</li> <li>Intact native vegetation that is likely to meet criteria as banksia woodland exists on the western side of Warton Road and further within the Jandakot Regional Park. On this basis the patch forms part of a much larger patch (approximately 170 ha) within the wider local area.</li> </ul>	<ul style="list-style-type: none"> <li>Small scale tracks (&lt;30 m wide) exist within the patch.</li> <li>Land surrounding the patch is a combination of residential development and native vegetation.</li> <li>This survey was conducted in September and October (within the main flowering season)</li> <li>For a detailed level survey, the survey timing is appropriate.</li> <li>Intact native vegetation that is likely to meet criteria as banksia woodland exists on the western side of Warton Road and further within the Jandakot Regional Park. On this basis the patch forms part of a much larger patch (approximately 170 ha) within the wider local area.</li> </ul>
Result	The survey area supports 2.9772 ha of the banksia woodland of the Swan Coastal Plain TEC, of which 0.6981 is located within the works area.		

At the State level, the same thresholds are applicable for the 'banksia woodlands of the Swan Coastal Plain' PEC (P3) as the Commonwealth TEC. As such, 2.9772 ha of the vegetation within the survey area and 0.6981 ha within the works area is also considered to represent the State 'banksia woodlands of the Swan Coastal Plain' PEC. The area of the banksia woodland PEC within the site is outlined in **Figure 6**.

There is no conservation advice for the State listed 'low-lying *Banksia attenuata* shrublands and woodlands' (PEC). However, DBCA has historically applied good condition as a threshold for the identification of PEC vegetation. On this basis, 0.3352 ha of the PEC exists within the works area and 1.8287 ha is present within the survey area.

No other TECs or PECs occur within the survey area.

#### 4.2.10 Species richness and sampling adequacy

A total of 121 species were recorded from 11 samples. A species accumulation curve derived from sample data is presented in **Plate 12**. After 11 samples the curve is still increasing but is starting to

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale

reach its asymptote. This indicates that a small proportion of species likely remain undetected by sampling.

Species richness was estimated in PRIMER v6 to be between 181 (Jackknife1) and 201 (Chao2). Based on the trend of the species accumulation curve approximately 30 to 40 samples would be required to capture that many species. Including the 29 additional species recorded opportunistically, a total of 178 species was recorded in the site. This indicates that between 88 and 98% of the estimated 181-201 species in the site were recorded. Considering the degraded nature of a large portion of the works area particularly and the time spent sampling and searching the vegetation, the survey effort was considered to be adequate to prepare a representative species inventory.

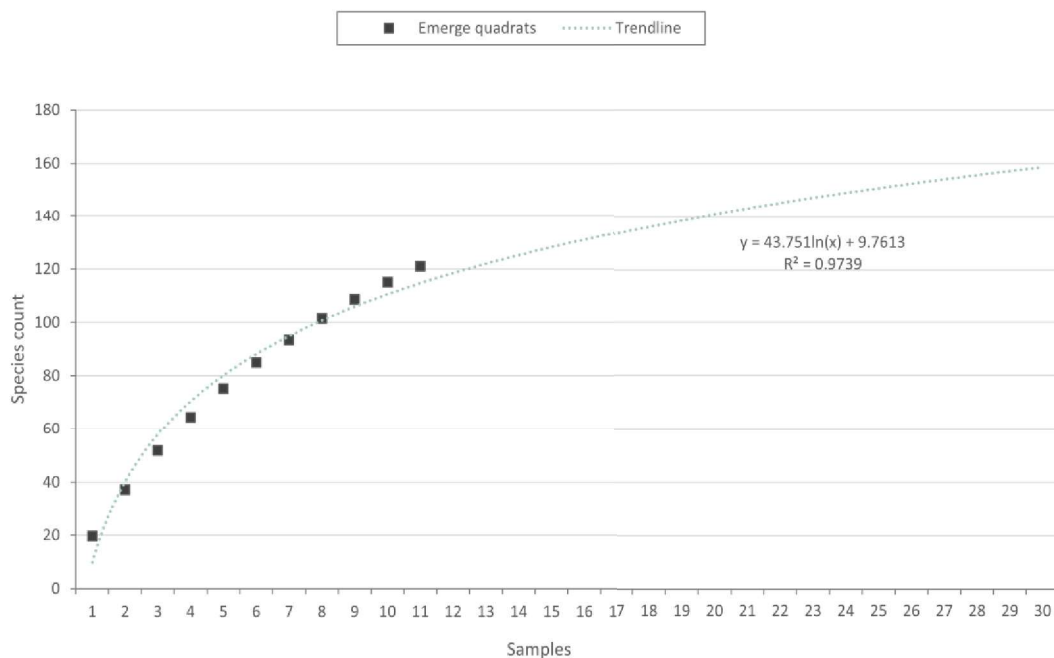


Plate 12: Species accumulation curve derived from sample data ( $y = 43.751\ln(x) + 9.7613$   
 $R^2 = 0.9739$ )

## 4.3 Weeds

### 4.3.1 Weed suites

Four weed suites were identified and the cover of each was recorded across both the works area and the survey area, as described in **Table 11** and shown in **Figure 7** to **Figure 10**.

Weed Suite 1 (annual and perennial grasses) was most dominant within the works area and the more disturbed areas within the Jandakot Regional Park. These areas generally had cover of weed suite 1 of over 20%. The more intact vegetation within the Jandakot Regional Park tended to comprise lower cover of weed suite 1 (0-5%). Evidence of recent mowing throughout the works area is likely to have limited the spread of weeds into the Jandakot Regional Park to some extent.

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



The distribution of Weed Suite 2 (herbaceous weeds) was similar to Weed Suite 1, being located at higher cover in the works area, with some areas of cover over 20%. The more intact vegetation within the Jandakot Regional Park portion of the survey area tended to comprise lower cover of Weed Suite 1 (1-5%).

Weed Suite 3 (woody weeds) was also recorded primarily throughout the works area, with some self-seeded individuals spreading into the Jandakot Regional Park. One portion of the Jandakot Regional Park had numerous planted *\*Melaleuca lanceolata* shrubs present (**Plate 11**).

Cover of Weed Suite 4 (bulbous weeds) was generally low over the works area and the survey area with occurrences comprising less than 5% of each sample unit. One small area within the Jandakot Regional Park contained a higher cover (5-20% cover) of bulbous weeds (primarily *\*Ixia maculata*) as shown in **Plate 16** and on **Figure 10**. As discussed above, this area also contained planted *\*Melaleuca lanceolata* shrubs and was generally more disturbed than the adjacent vegetation (**Plate 11**).

Table 11: Descriptions of weed suites identified within the works area and survey area

Weed suite	Dominant species
1 – annual and perennial grasses ( <b>Plate 13</b> )	<i>*Arctotheca calendula</i> , <i>*Avena</i> spp., <i>*Briza</i> spp., <i>*Bromus diandrus</i> , <i>*Cynodon dactylon</i> , <i>*Eragrostis curvula</i> , <i>*Ehrharta</i> spp, <i>*Lagurus ovatus</i> , <i>*Vulpia bromoides</i> .
2 – herbaceous weeds ( <b>Plate 14</b> )	<i>*Erodium botrys</i> , <i>*Euphorbia terracina</i> , <i>*Fumaria capreolata</i> , <i>*Hypochaeris</i> spp., <i>*Lysimachia arvensis</i> , <i>*Medicago polymorpha</i> , <i>*Solanum nigrum</i> , <i>*Trifolium</i> spp., <i>*Ursinia anthemoides</i>
3 - woody weeds ( <b>Plate 15</b> )	<i>*Acacia longifolia</i> , <i>*Chamelaucium uncinatum</i> , <i>*Melaleuca lanceolata</i> , <i>*Olea europaea</i>
4 – bulbous weeds ( <b>Plate 16</b> )	<i>*Freesia alba × leichtlinii</i> , <i>*Gladiolus</i> spp., <i>*Ixia maculata</i> , <i>*Oxalis pes-caprae</i> , <i>*Romulea rosea</i> , <i>*Zantedeschia aethiopica</i>



# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



*Plate 13: Example within works area of high cover of weed suite 1 – annual and perennial grass species*



*Plate 14: Example within works area of high cover of weed suite 2 – herbaceous weed species.*



# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Plate 15: Example of area with weed suite 3 – woody weeds (*Chamelaucium uncinatum*) both within the works area (left) and spreading into Jandakot Regional Park (right).



Plate 16: Area of predominantly non-native vegetation within Jandakot Regional Park with high cover of Suite 4 - bulbous weeds (particularly *Ixia maculata*).



## Flora and Vegetation Survey and Monitoring Report

### Proposed Warton Road Duplication, Canning Vale



#### 4.3.2 Significant and prominent weeds

One species, *\*Zantedeschia aethiopica* (arum lily) listed as a declared pest (C3) pursuant to the BAM Act, was recorded near Q7 within the Jandakot Regional Park portion of the Jandakot Regional Park (Figure 10).

No weeds of national significance (WoNS) were recorded.

#### 4.3.3 Priority weed control areas

Priority areas for weed control comprise the multiple locations of woody weed *\*Chamelaucium uncinatum* as well as the patch of planted *Melaleuca lanceolata* within Jandakot Regional Park (shown on Figure 9) and the area of high bulbous weed cover within Jandakot Regional Park (shown on Figure 10).

#### 4.4 Significant trees

A total of 12 significant trees (native trees over 500 mm DBH) were located within the works area, comprising nine *Allocasuarina fraseriana*, one *Eucalyptus todtiana*, one *Banksia ilicifolia* and one stag.

A further 25 significant trees were recorded in the Jandakot Regional Park portion of the survey area, comprising five *Eucalyptus marginata*, two *Eucalyptus todtiana*, nine *Allocasuarina fraseriana*, five *Melaleuca preissiana*, one *Nuytsia floribunda*, two *Banksia attenuata* and one stag.

An internal inspection of hollows in two significant trees within the works area was undertaken as they were considered potentially suitable for use by black cockatoos based on the initial inspection from ground level. Of these trees, stag tree ID 63 was determined to contain a hollow that had sufficient height, opening and floor space, but that was not deep enough to support breeding (Plate 17). The hollow in this tree was therefore classed as unsuitable. The remaining trees did not contain any hollows suitable for use by black cockatoos. The significant trees are shown on Figure 6 and details are provided in Appendix H.



Plate 17: Hollow inspection photographs for tree ID 63 (stag), showing external hollow (left) and internal view (right). The hollow is considered to be too shallow for breeding purposes for black cockatoo species



# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



## 4.5 Baseline quadrat survey

Three monitoring locations were set up for each plant community within the Jandakot Regional Park portion of the survey area, with the exception of plant community **AcEaPc**, which occupied a small area and thus two monitoring locations were established for this community. The monitoring locations are shown on **Figure 4**. All recorded data for the monitoring locations is included in **Appendix I** and the plant community, vegetation condition, vegetation health and signs of disturbance are also summarised in **Table 12**.

All of the 11 monitoring locations comprised relatively healthy vegetation. Tree deaths did not appear to be recent but were common across most of the monitoring locations. However, juvenile *Banksia* spp. seedlings and saplings were also commonly observed. As *Banksia* spp. are particularly susceptible to *Phytophthora* dieback, the presence of these species indicates that dieback is unlikely to be actively present throughout the vegetation.

Small amounts of rubbish were recorded in and around a number of monitoring locations. As all monitoring locations are located within the 20 m edge of the Jandakot Regional Park, all are closely adjacent to access tracks and adjacent clearing. Rabbit diggings were also commonly observed throughout the monitoring locations.

Table 12: Monitoring parameters recorded for baseline quadrats.

Monitoring location ID	Plant community	Vegetation condition	Vegetation health	Signs of disturbance		
				Rubbish	Clearing	Pest animals
ML1 (Q4)	AcEaPc	Very good	Good. Some old tree senescence.	Present in low densities (cans)	No. Adjacent to track/firebreak	Evidence of rabbit digging
ML2 (Q5)	AfBKg	Very good	Good. <i>Kunzea glabrescens</i> and <i>Banksia</i> spp. senescence but vegetation healthy	Absent	No. Adjacent to track/firebreak	Evidence of rabbit digging
ML3 (Q6)	AfBKg	Very good	Moderate. Senescent <i>Banksia</i> spp. but juveniles observed. Higher weed cover than surrounding vegetation.	Present in low densities (bags)	Partial clearing in the southern portion of the quadrat. Adjacent to track/firebreak	Evidence of rabbit digging
ML4 (Q7)	AfBKg	Very good	Good. Some old tree senescence	Absent	No. Adjacent to track/firebreak	Evidence of rabbit digging
ML5 (Q8)	MpAf	Very good	Good	Absent	No. Adjacent to track/firebreak	Evidence of rabbit digging

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale

Table 12: Monitoring parameters recorded for baseline quadrats (cont.)

Monitoring location ID	Plant community	Vegetation condition	Vegetation health	Signs of disturbance		
				Rubbish	Clearing	Pest animals
ML6 (Q9)	BaBm	Very good	Good	Absent	No. Adjacent to track/firebreak	Evidence of rabbit digging
ML7 (Q10)	MpAf	Very good	Good. Some dead shrubs	Absent	No. Adjacent to track/firebreak	Evidence of rabbit digging
ML8 (Q11)	AcEaPc	Very good	Good	Present in low densities	No. Adjacent to track/firebreak	Evidence of rabbit digging
ML9 (Q12)	BaBm	Very good	Moderate	Absent	No. Adjacent to track/firebreak	Evidence of rabbit digging
ML10 (Q13)	BaBm	Very good	Good	Absent	No. Adjacent to track/firebreak	Evidence of rabbit digging
ML11 (Q14)	MpAf	Very good	Good	Present in low densities (bottles)	No. Adjacent to track/firebreak	Evidence of rabbit digging

## 4.6 Infrastructure

The infrastructure identified during the survey included gates, signage, power poles, survey marks and Telstra pits. Examples of these infrastructure features are provided in **Plate 18** to **Plate 21**. These features are shown on **Figure 11**, along with the design features for the road duplication.



Plate 18: Jandakot Regional Park vehicular and pedestrian access location in the central portion of the survey area



Plate 19: Telstra pit

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



*Plate 20: Jandakot Regional Park signage*



*Plate 21: Groundwater monitoring bore*

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



## 5 Discussion

The works area has been subject to intensive disturbance in the form of partial clearing and some changes to the landform through the construction of Warton Road. The vegetation within the works area has been modified by the past disturbance and approximately 64% of the works area is in completely degraded condition. Four plant communities are present in small patches within the works area comprising 0.6981 ha, in either very good (12.2%), good (9.3%) or degraded (14.3%) condition.

The most intact native vegetation occurs in the eastern portion of the survey area within the Jandakot Regional Park. Most of the vegetation within the Jandakot Regional Park is in excellent or very good (1.95 ha) condition, but areas of good (0.43 ha) and degraded (0.6 ha) are also present.

### 5.1 Threatened and priority flora

No threatened or priority flora species were recorded within the site. The absence of the larger perennial species that have potential to occur such as *Grevillea thelemanniana*, *Conospermum undulatum* and *Babingtonia urbana* was relatively easy to confirm. However, due to their size and seasonal lifeform, smaller annual or geophytic species such as *Caladenia huegelii*, *Drakaea elastica*, *D. micrantha*, *Diuris purdiei*, *Poranthera moorokatta* and *Thelymitra variegata* can be more difficult to detect.

The survey was undertaken in the main flowering season for these species and thus the majority of orchid species would likely have been visible at the time of the survey. Moreover, multiple transects were walked over areas of potential habitat for this species. Eight other orchid species were recorded including *Caladenia paludosa* and *Caladenia longicauda* subsp. *calcigena*, indicating survey timing and survey intensity were sufficient to record orchid species. There is a historical record of *Caladenia huegelii* on the western side of Warton Road (outside of the survey area) within the DBCA threatened flora database. However, a flora and vegetation survey of this area undertaken by Ecoscape in 2016 did not record *C. huegelii* and noted that at the location of the DBCA record, *C. arenicola* was observed, placing in question the original identification of *C. huegelii* at this location (Ecoscape 2016). Morphologically, *C. huegelii* differs from *C. paludosa* and *C. arenicola* in having long, splitting fringe segments on the labellum up to 15 mm long (Brundrett 2014). None of the *Caladenia* spp. recorded within the survey area are consistent with this characteristic.

One orchid species, *Diuris purdiei*, only tends to flower after summer fire. Given the survey area has not been burnt recently, it was not possible to confirm if this species is absent from the area. However, as *D. purdiei* tends to occur on grey-black sand in winter wet swamps (Western Australian Herbarium 2020), if present, this species would be more likely to occur closer to Harrisdale Swamp, and conversely unlikely to occur within the proposed works area.

### 5.2 Vegetation condition

Assigning condition using a categorical scale is always most difficult when vegetation qualities are close to the boundary between two categories. Categorical schemes may also invariably yield

## Flora and Vegetation Survey and Monitoring Report

### Proposed Warton Road Duplication, Canning Vale



different results when applied by different assessors, because of differences in skill levels or personal bias.

A vegetation condition score has the greatest implications when the condition of vegetation is close to the boundary between 'good' and 'degraded'. This is because good condition is typically accepted as the threshold for conservation significance, while 'degraded' condition implies a low conservation requirement. Separating these two condition categories is further complicated by the fact that good condition is more correctly understood to mean 'average' condition. Applying the Keighery (1994) condition scale good condition vegetation can be expected to be significantly altered, with very obvious disturbance and the presence of aggressive weeds at high density. Therefore, good does not literally mean "good" as the label implies.

The method applied to assess vegetation condition was robust, as it combined the standard qualitative, categorical scheme of Keighery (1994), with the additional indicators for diversity and weed cover outlined in DoEE (2016).

### 5.3 Floristic community type assignment

The results of the FCT cluster analysis were equivocal, with the samples within all plant communities tending to cluster with and show high similarity to more than one FCT. Plant communities **BaBm** and **AcEaPc** are considered most likely to represent FCT 23a and plant communities **AfBKg** and **MpAf** are considered to most likely represent FCT 21c. However, some samples from plant communities **BaBm** and **AcEaPc** clustered with FCT 21c and some samples from plant communities **AfBKg** and **MpAf** also clustered with or showed highest similarity with FCT 23a. The survey areas' position upslope from Harrisdale Swamp and on the periphery of UFI 7209 indicates that the survey area could be somewhat transitional between FCT 23a and FCT 21c. A number of species that were recorded throughout the **BaBm** and **AcEaPc** vegetation are indicative of a relatively low-lying habitat. These include *Banksia ilicifolia*, *Regelia inops*, *Melaleuca thymoides* and *Schoenus curvifolius* (DBCA 2019). Moreover, the survey area is present along the western edge of the vegetation, sampling further into the Jandakot Regional Park and the UFI 7209 wetland is likely to have yielded more conclusive results. Despite the variable results of the FCT assessment, most samples either clustered with or showed highest similarity to sites comprising FCT 21c and FCT 23a, thus it is conclusive that these two FCTs are present and accurately represent the vegetation.

### 5.4 Threatened and priority ecological communities

Due to the presence of *Banksia attenuata*, *B. menziesii* and *B. ilicifolia* on deep sands, the vegetation within the survey area is considered to represent the State listed PEC 'Banksia dominated woodlands of the Swan Coastal Plain IBRA region'. In addition, plant communities **AfBKg** and **MpAf** were also considered to represent the State listed PEC 'Low lying Banksia attenuata woodlands and shrublands'. Conservation advice for PECs is less specific than that for TECs, but it is likely that only the areas of vegetation in good or better condition would be considered to represent these PECs.

With regard to the Commonwealth banksia woodlands TEC, the **BaBm** and **AfBKg** vegetation includes the key diagnostic feature of a tree layer of *Banksia attenuata* and *B. menziesii*. Whilst these *Banksia* species do not form a dominant part of the **MpAf** and **AcEaPc** plant communities, these species are



# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



still present in low densities. On the basis that the banksia woodland TEC conservation advice (DoEE 2016) considers over 2% cover to be sufficient to form part of the TEC, these communities are also considered to include this tree layer of *Banksia* spp.

All plant communities showed high similarity (32-51%) with two FCTs (FCT 21c and FCT 23a) that are both regional FCTs identified in the banksia woodland TEC conservation advice (DoEE 2016). However, to be considered the banksia woodland TEC a patch of banksia vegetation must also meet thresholds for condition and minimum patch size (refer to **Table 1**). The conservation advice states that a patch may include areas of variable condition and that the condition that is most representative should be used to assign overall condition of a patch.

Within the survey area, 0.08 ha was mapped as excellent, 1.87 ha was mapped as very good and 0.43 ha was mapped as good, while 0.6 ha was mapped as degraded. As there are no breaks of 30 m or more to separate the areas of varying condition, these areas were understood as a single patch. Given that the vegetation in the survey area is largely in very good condition, the whole patch was assessed as being in very good condition. The DoEE (2016) conservation advice states that a patch of banksia woodland vegetation in very good condition must be greater than 1 ha in size for it to be considered the TEC. Therefore, the vegetation within the survey area does meet the minimum patch size threshold.

Vegetation likely to comprise 'banksia woodland' is also present to the east and west of the survey area. The vegetation to the east is contiguous with the survey area. The Warton Road reserve and firebreaks on either side of the road reserve separate the vegetation to the west of the road from that within the Jandakot Regional Park by over 30 m. However, the small patches of vegetation within the road reserve act to connect these two larger patches of vegetation. Thus, vegetation within the survey area is part of a contiguous patch of banksia woodland that extends over approximately 170 ha.

## 5.5 Weeds

Generally, weed levels are considerably lower within the Jandakot Regional Park portion of the survey area compared to the works area.

The declared pest species *\*Zantedeschia aethiopica* (arum lily) was recorded in the site is listed in the s22(2) exempt keeping category and so management of this plant is not a legislated requirement.

## 5.6 Monitoring baseline

The baseline quadrat data shows the vegetation within the Jandakot Regional Park is currently subject to a low to moderate level of disturbance to the vegetation, with some weed and minor rubbish incursion (refer **Section 4.5**).

## 5.7 Post-development monitoring program

Post-development monitoring of the quadrats established within the Regional Park is proposed to occur biannually for a period of three years post development. The parameters to be monitored are as outlined in **Section 3.4**.

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



## 5.7.1 Goals and Objectives

An overarching goal of the Warton Road duplication project is that it does not negatively impact the vegetation within the adjacent portion of Jandakot Regional Park. A number of specific objectives have been identified to enable the evaluation of this goal as outlined in **Table 13**.

Table 13: Warton Road duplication project goals and objectives

Goal	Objective
1) Ensure that the Warton Road duplication project does not negatively impact the vegetation within the adjacent portion of Jandakot Regional Park	1a) No decrease in native species cover attributable to the Warton Road duplication project
	1b) No increase in weed cover post-development attributable to the Warton Road duplication project
	1c) No decline in vegetation health attributable to the Warton Road duplication project
	1d) No decline in vegetation condition attributable to the Warton Road duplication project
	1e) No increase in the incidence of rubbish attributable to the Warton Road duplication project

## 5.7.2 Program

The City of Gosnells have committed to monitor the vegetation within the Jandakot Regional Park portion of the survey area for three years post-construction. Monitoring will be completed biannually in spring and in autumn.

The City of Gosnells and DBCA agreed to the monitoring of the following parameters prior to conducting the pre-development monitoring event. These same parameters will be monitored post-development.

- flora species and origin (native/non-native)
- 'foliage projective cover' (FPC) for each flora species
- vegetation condition using the Keighery (1994) scale
- vegetation health
- signs of disturbance (e.g. rubbish, clearing, pest animals).

The methodology and results of the pre-development monitoring event are provided in **Section 3.4** and **Section 4.5** respectively.

## 5.7.3 Evaluation

Quadrat data will be compared to the monitoring baseline and outcomes will be reported for each objective by comparison of mean values. If an objective has not been met further evaluation will be made as to whether a change can be attributed to the Warton Road duplication project.

## 5.7.4 Contingency

If monitoring indicates that the objectives are not being met, contingency actions may be required. Examples of potential circumstances and contingency actions are provided in **Table 14**.



# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



Table 14: Examples of circumstances and potential contingency actions

Circumstance	Potential contingency action
Loss of native species cover	Liaise with DBCA and WAPC
	Undertake infill planting
Decline in vegetation health	Liaise with DBCA and WAPC
	Increase frequency of weed control
	Consider other appropriate weed control treatments (i.e. different herbicide to target specific weed species)
Decline in vegetation condition	Liaise with DBCA and WAPC
	Increase frequency of weed control
	Undertake infill planting
Increase in weed cover	Liaise with DBCA and WAPC
	Increase frequency of weed control
	Consider other appropriate weed control treatments (i.e. different herbicide to target specific weed species)
Increase in rubbish occurrences	Liaise with DBCA and WAPC
	Increase frequency of rubbish removal

### 5.7.5 Reporting

A report will be prepared after each monitoring event and submitted to the City of Gosnells and DBCA. This report should document the following to inform whether any contingency actions are required:

- the results and outcomes of the monitoring event
- compare these results to the pre-construction monitoring results and past monitoring events
- evaluate the results against the goal and objectives specified in **Table 13**.

# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



## 6 Conclusions

The best condition vegetation occurs in the eastern portion of the survey area in association with the Jandakot Regional Park. Some small patches of relatively intact vegetation are also present in the works area. However, the majority of the works area contains tracks, bare ground and scattered native trees and shrubs over non-native grasses and herbs and was mapped as being in 'completely degraded' condition.

No threatened or priority flora species were recorded within the works area or the survey area. A number of locally or regionally significant species were recorded, including *Hensmania turbinata*, *Gonocarpus cordiger*, *Platysace juncea* and *Styphelia xerophylla*.

Plant communities **BaBm** and **AcEaPc** were considered to represent FCT 23a. Plant communities **AfBKg** and **MpAf** were considered to represent FCT 21c. Both FCT 23a and FCT 21c are included within the Commonwealth 'banksia woodlands of the Swan Coastal Plain' 'threatened ecological community' (TEC) and the State listed 'priority ecological community' (PEC) 'banksia dominated woodlands of the Swan Coastal Plain IBRA region' (P3). FCT 21c is also separately listed at the State level as a PEC ('lower lying *Banksia attenuata* woodlands and shrublands'). As such, 0.6981 ha of the Commonwealth TEC and State PEC and 0.3352 ha of FCT 21c PEC is present within the works area.

Four weed suites were identified within the site along with one declared pest and two significant woody weeds. Priority areas for weed control are proposed based on the location of woody weeds within the Jandakot Regional Park and the area of high bulbous weed cover within the Jandakot Regional Park.

A total of 12 significant trees were identified within the works area. None of these trees contained hollows suitable for breeding by threatened species of black cockatoo.

Eleven baseline quadrats were established to inform future monitoring post-disturbance. The quadrat data shows the vegetation within the Jandakot Regional Park is currently subject to a low level of disturbance to the vegetation, with some weed and minor rubbish incursion.

The infrastructure currently present within the survey area are generally in good condition.

# Flora and Vegetation Survey and Monitoring Report

## Proposed Warton Road Duplication, Canning Vale



## 7 References

### 7.1 General references

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# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



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Proposed Warton Road Duplication, Canning Vale



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# Flora and Vegetation Survey and Monitoring Report

Proposed Warton Road Duplication, Canning Vale



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# Figures



*Figure 1: Site Location*

*Figure 2: Soils and Topography*

*Figure 3: Environmental Features*

*Figure 4: Plant Communities*

*Figure 5: Vegetation Condition*

*Figure 6: Conservation Significant Vegetation*

*Figure 7: Weed Suite 1 - Annual and Perennial Grasses*

*Figure 8: Weed Suite 2 - Herbaceous weeds*

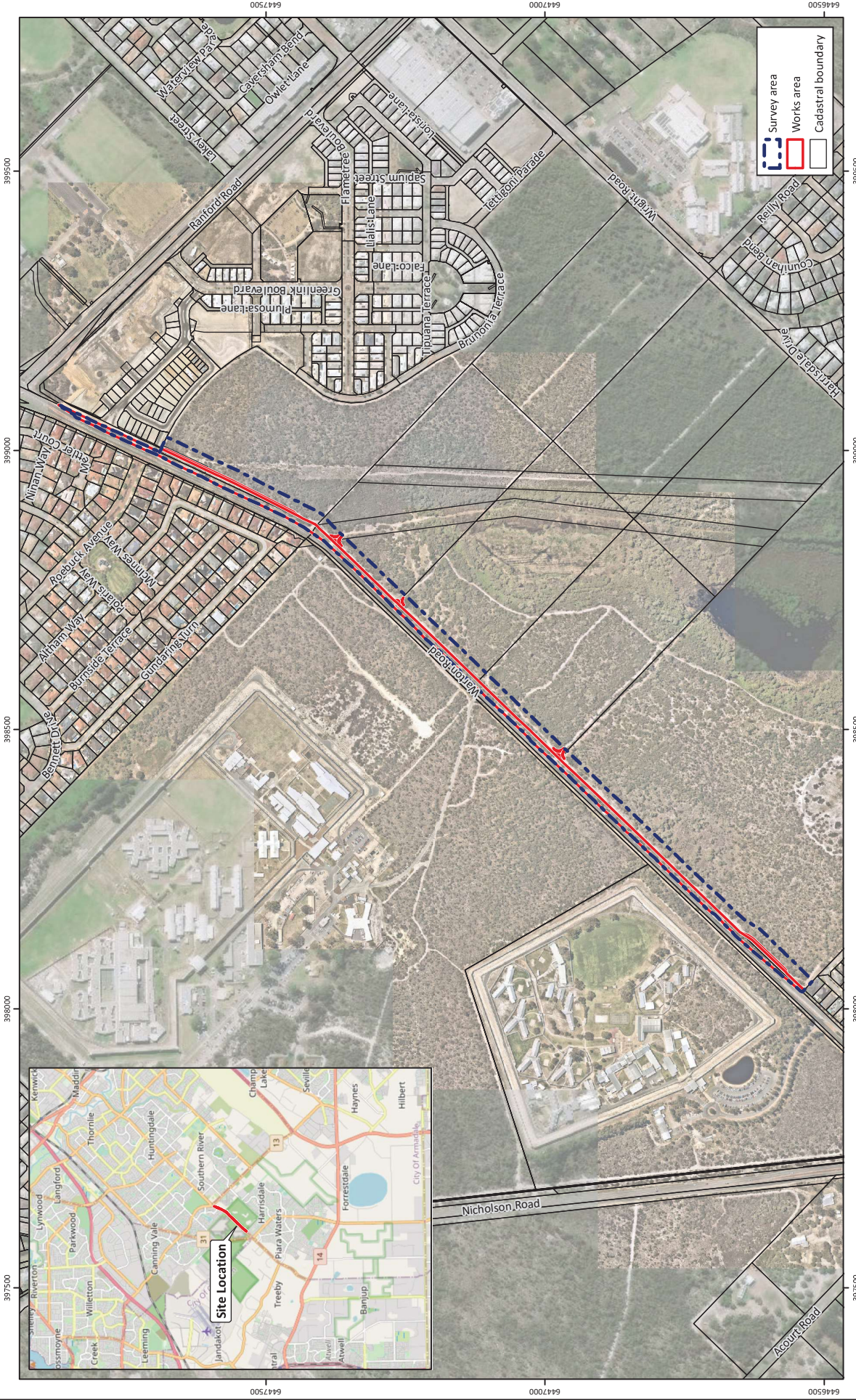
*Figure 9: Weed Suite 3 - Woody weeds*

*Figure 10: Weed Suite 4 - Bulbous weeds*

*Figure 11: Infrastructure*







**Figure 1: Site Location**

**Project:** Flora and Vegetation Survey and Monitoring Report  
Proposed Warton Road Duplication, Canning Vale

**Client:** City of Gosnells

**Plan Number:** EP20-099(01)-F04  
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**Checked:** SKP  
**Approved:** TAA  
**Date:** 5/02/21

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GDA 1994 MGA Zone 50

**Metres**  
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**N**

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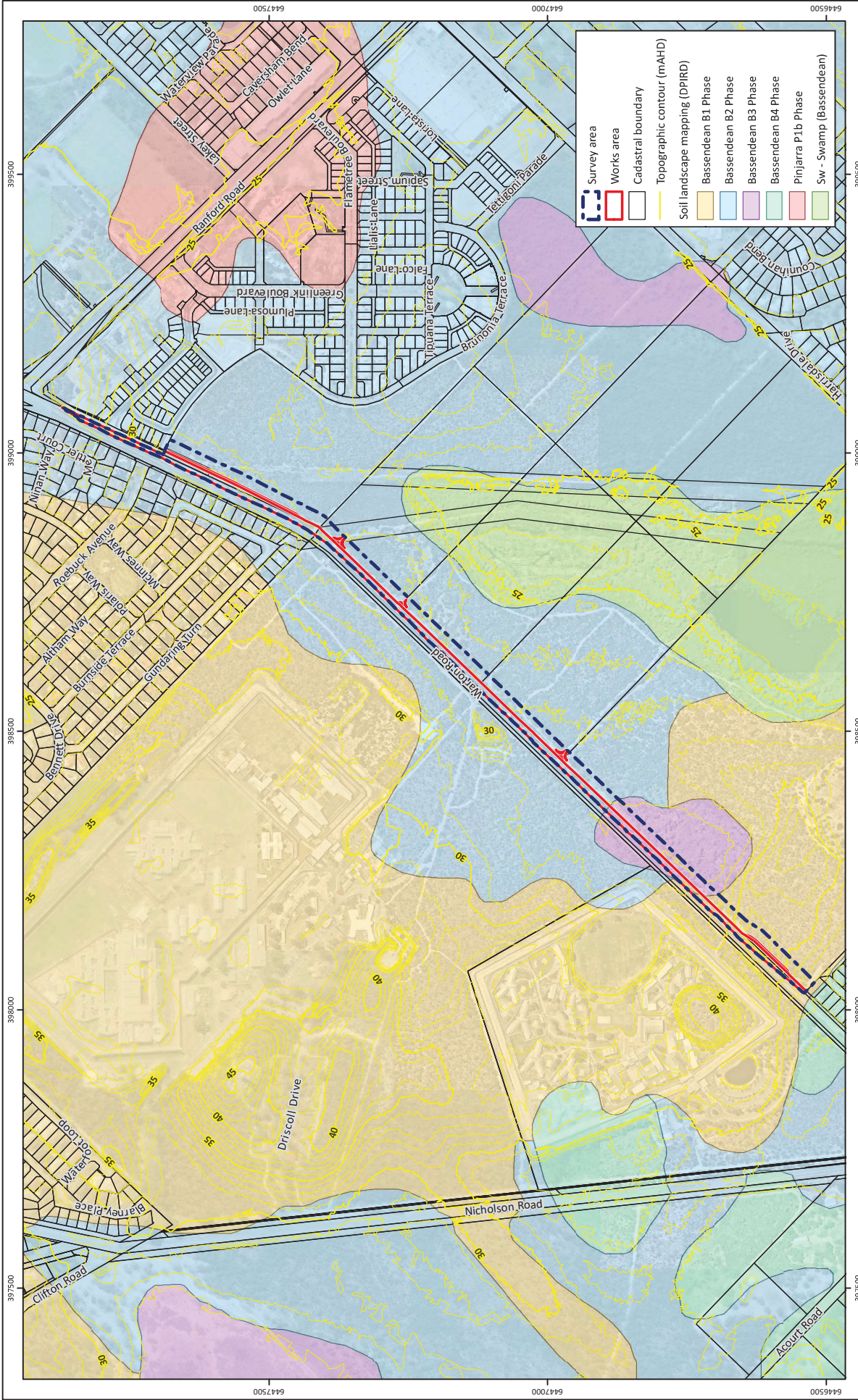




**Figure 2: Soils and Topography**

**Project:** Flora and Vegetation Survey and Monitoring Report  
Proposed Warton Road Duplication, Canning Vale  
**Client:** City of Gosnells

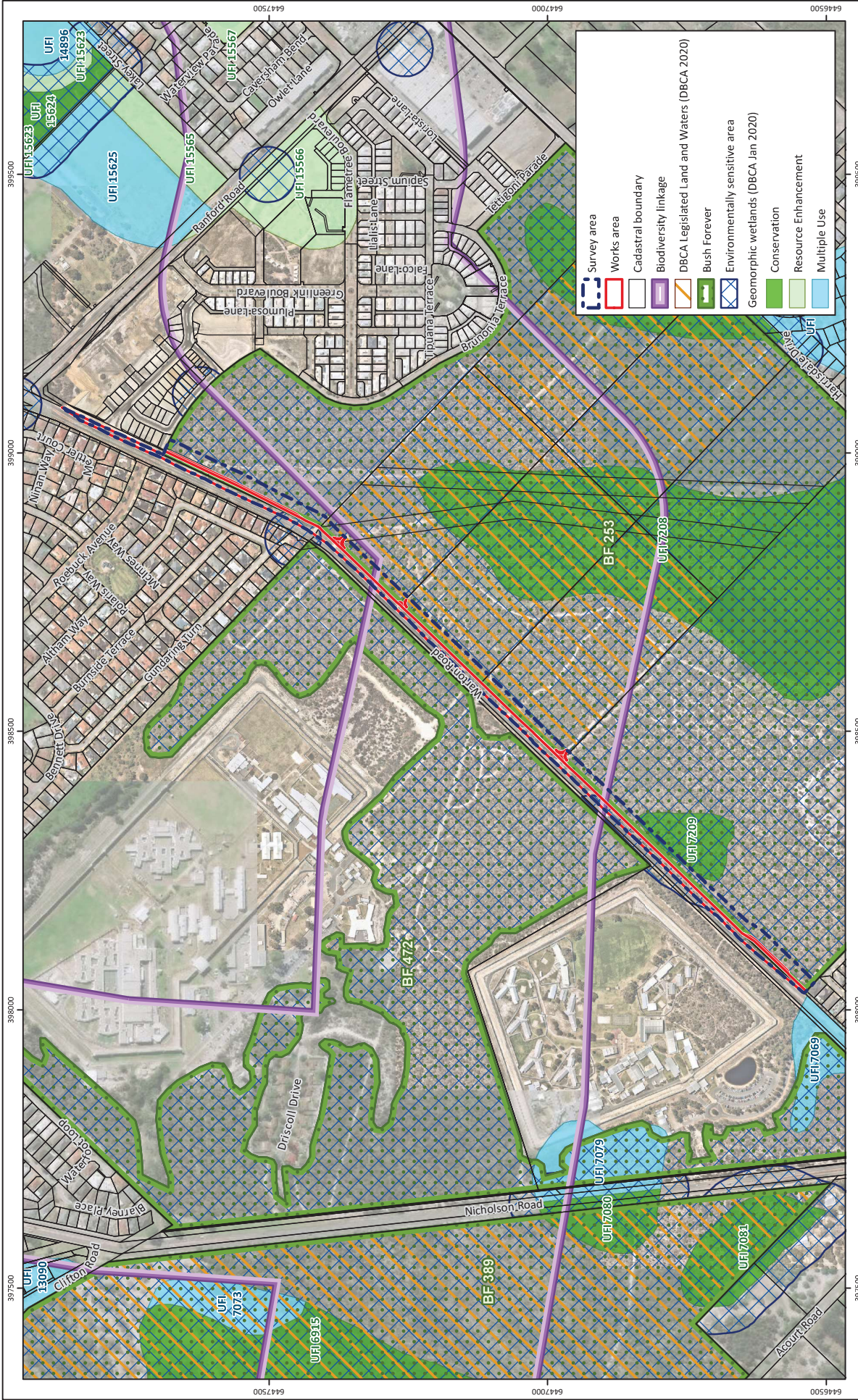
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**Figure 3: Environmental Features**

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**Date:** 24/02/2020  
**Checked:** SKP  
**Approved:** TAA  
**Date:** 24/02/21



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 GDA 1994 MGA Zone 50



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Scale: 1:1,500@A4  
GDA 1994 MGA Zone 50

**Plan Number:** EP20-099(01)-F07  
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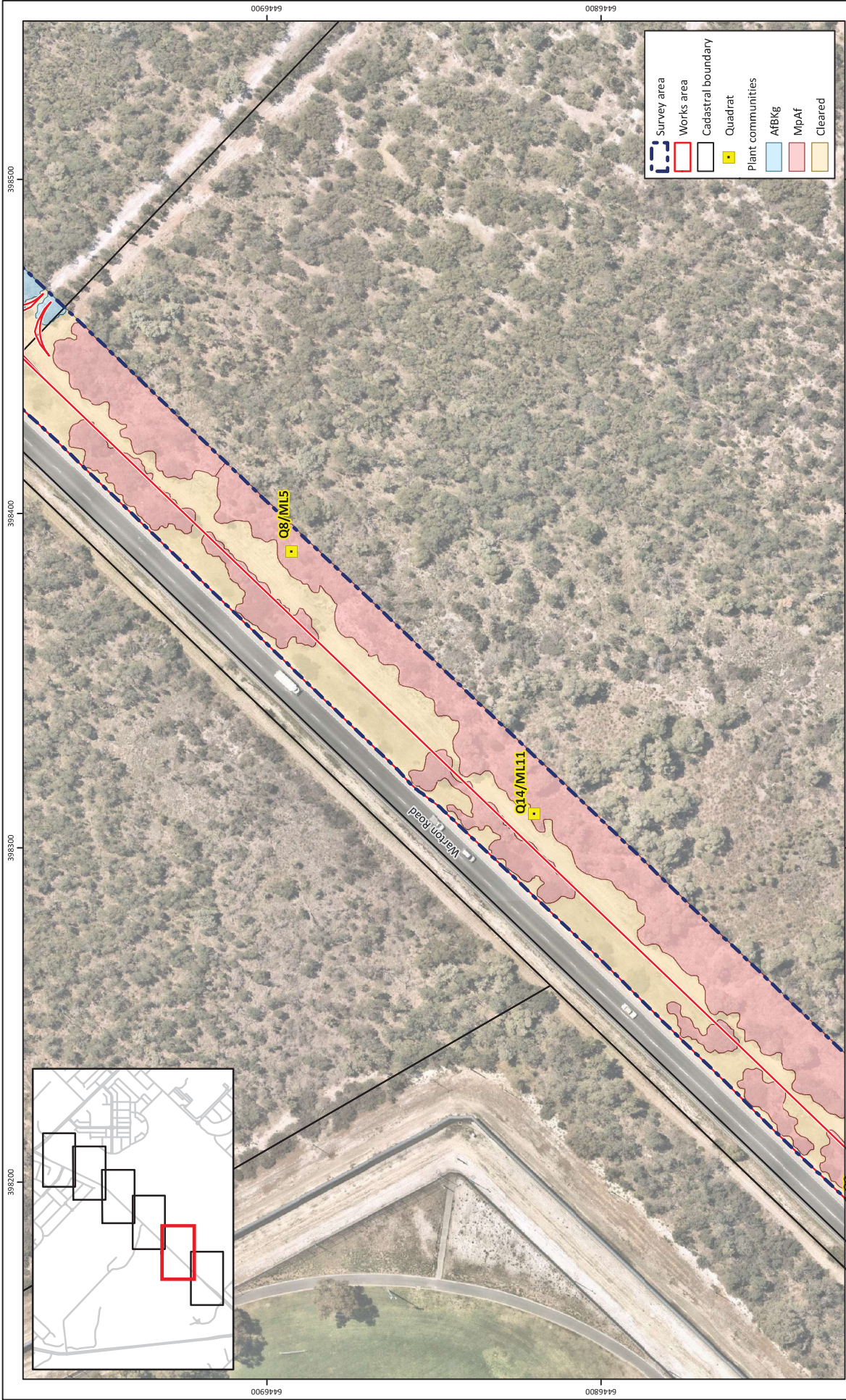
**Figure 4: Plant Communities - Map 1 of 6**

**Project:** Flora and Vegetation Survey and Monitoring Report  
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**Client:** City of Gosnells

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- Survey area
- Works area
- Cadastral boundary
- Quadrat
- Plant communities
- AtBkg
- MpAf
- Cleared



0 25 50  
Metres  
Scale: 1:1,500@A4  
GDA 1994 MGA Zone 50

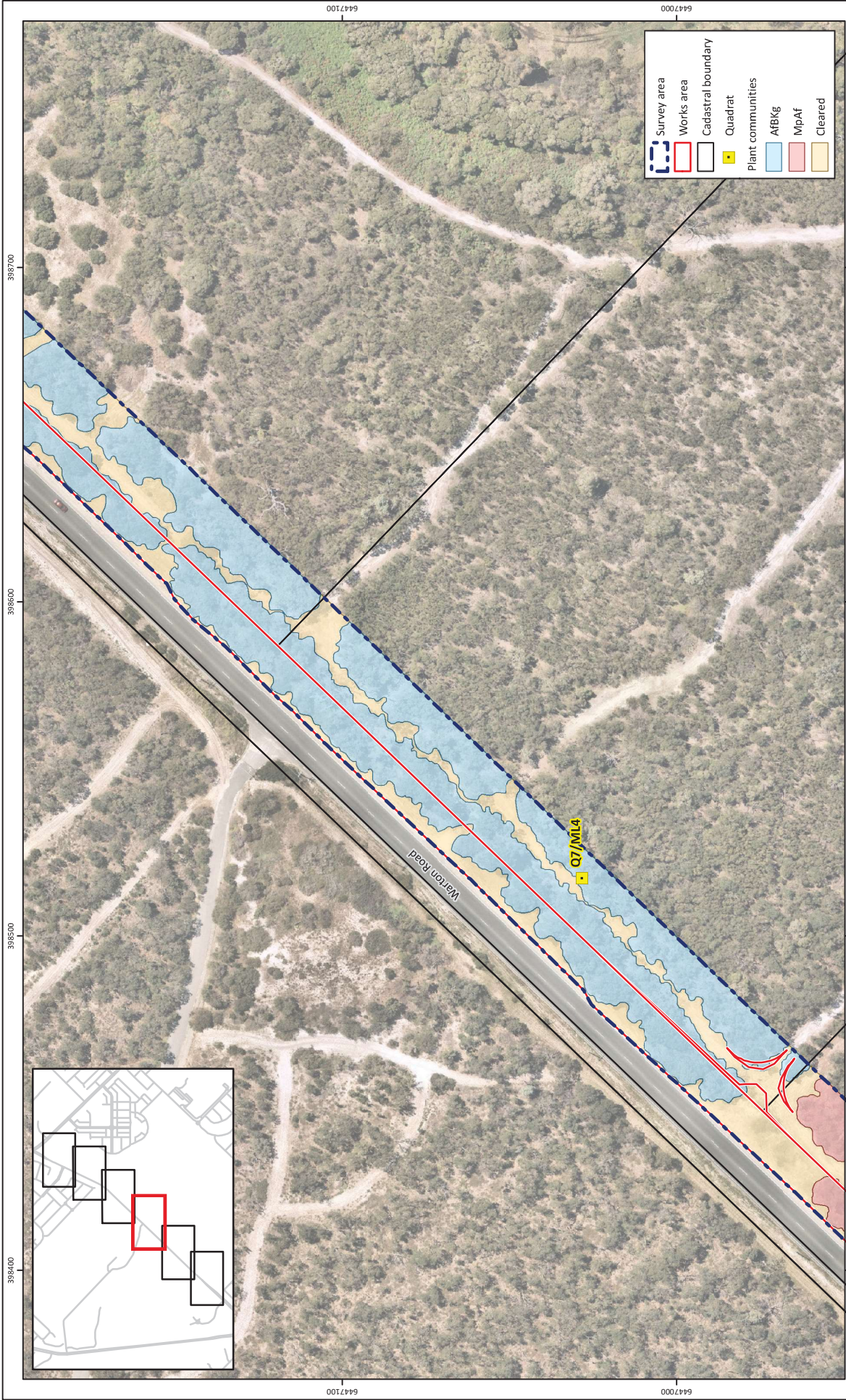
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**Figure 4: Plant Communities - Map 2 of 6**

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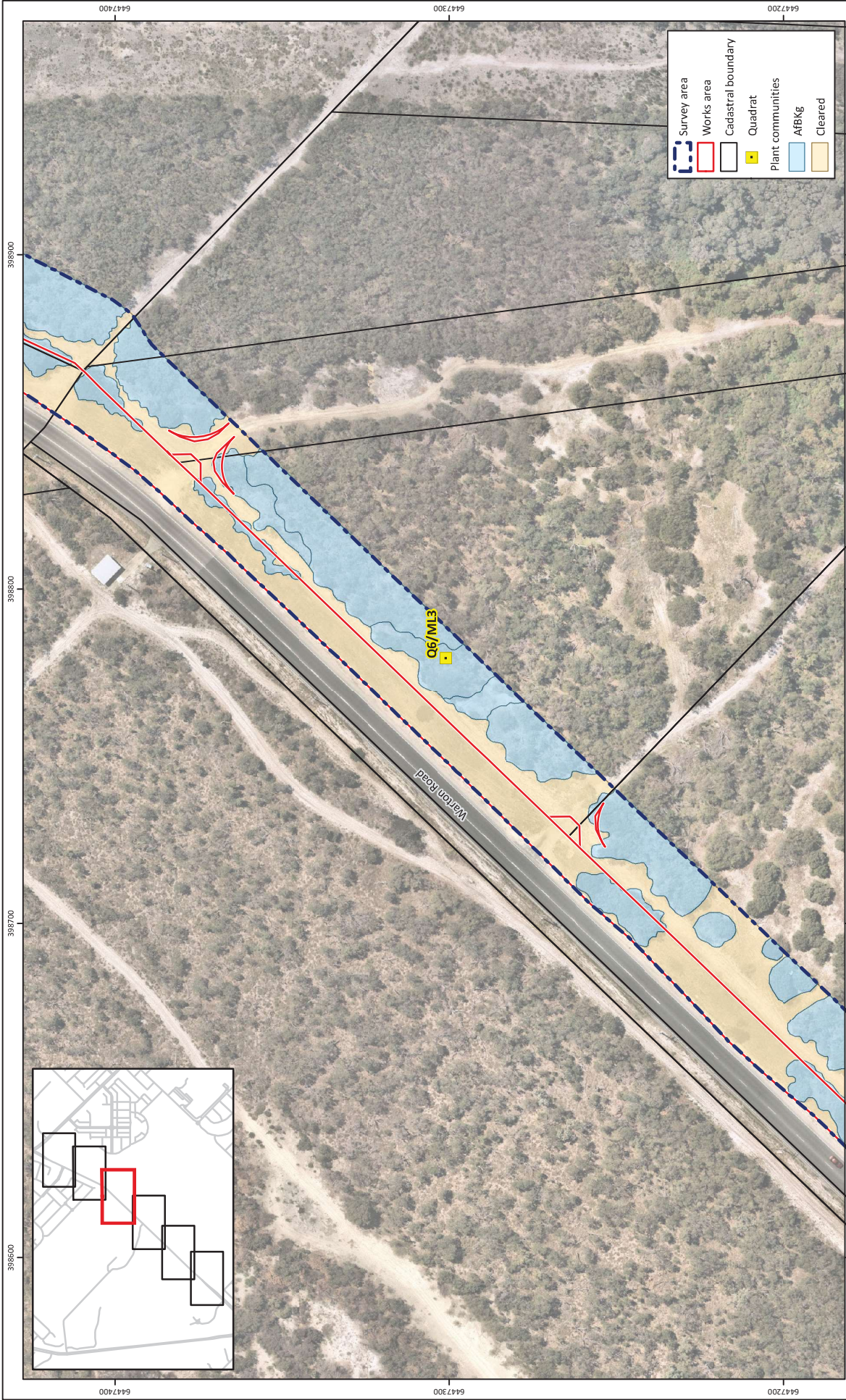
**Figure 4: Plant Communities - Map 3 of 6**

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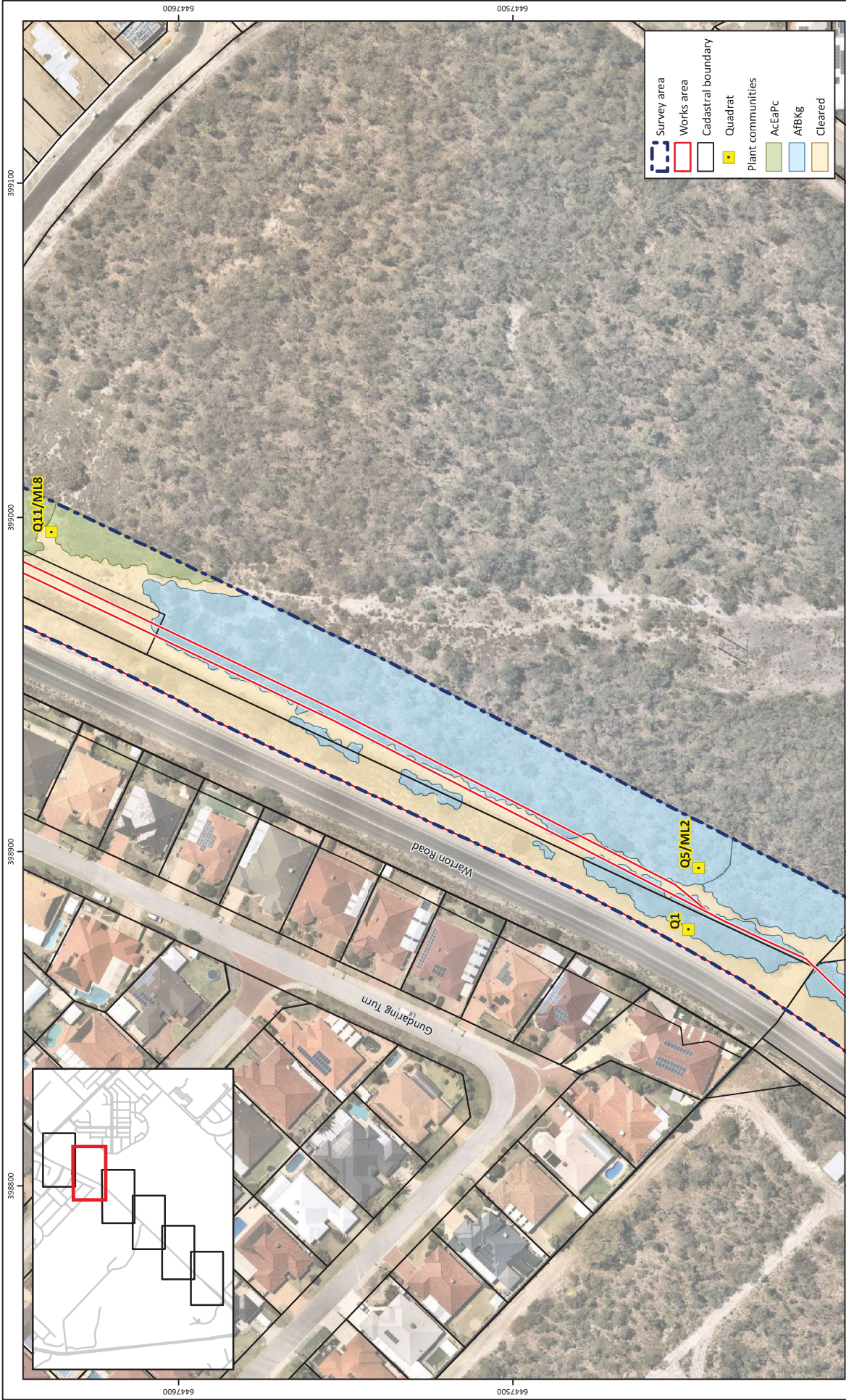
**Figure 4: Plant Communities - Map 4 of 6**

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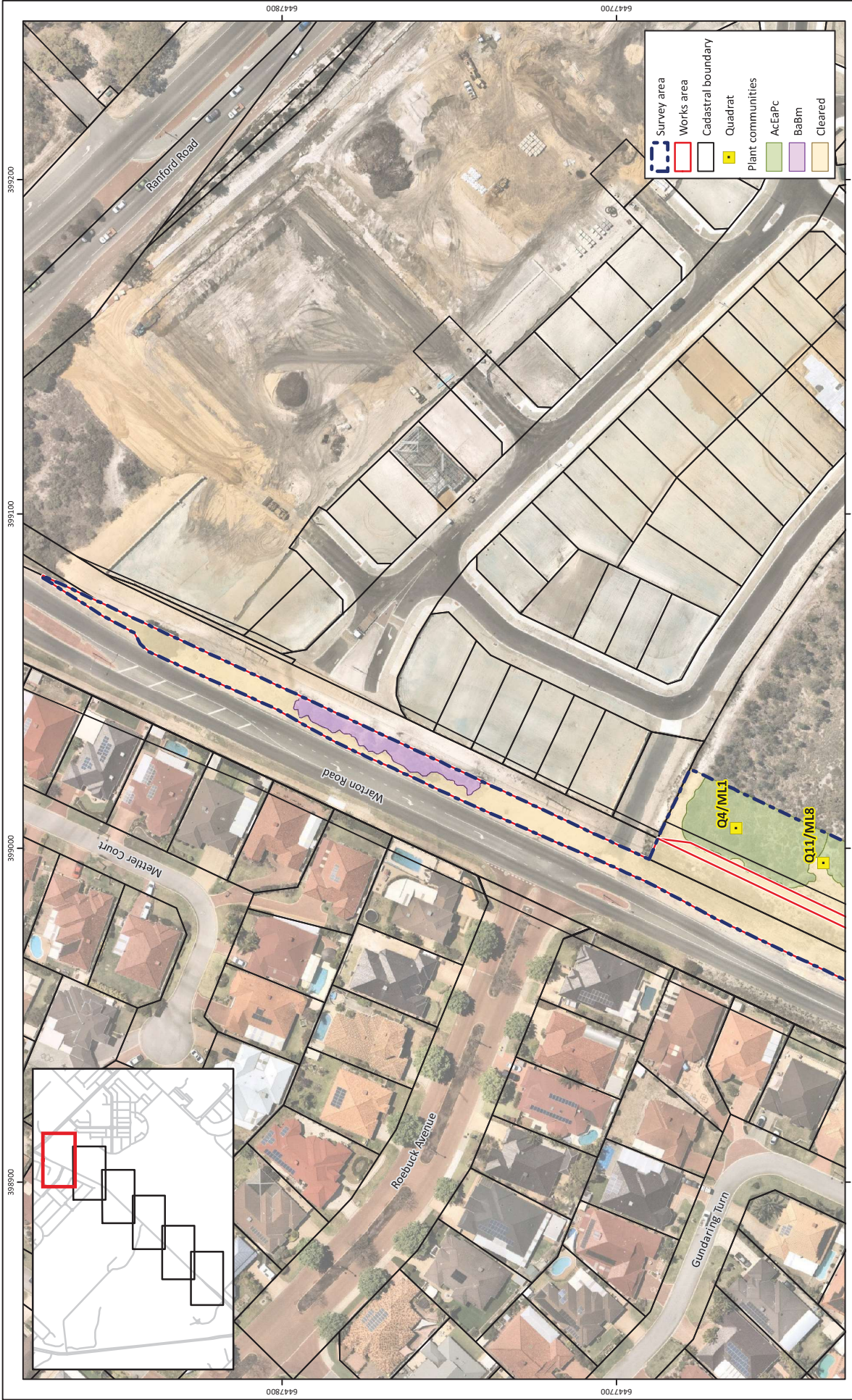
**Figure 4: Plant Communities - Map 5 of 6**

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**Figure 4: Plant Communities - Map 6 of 6**

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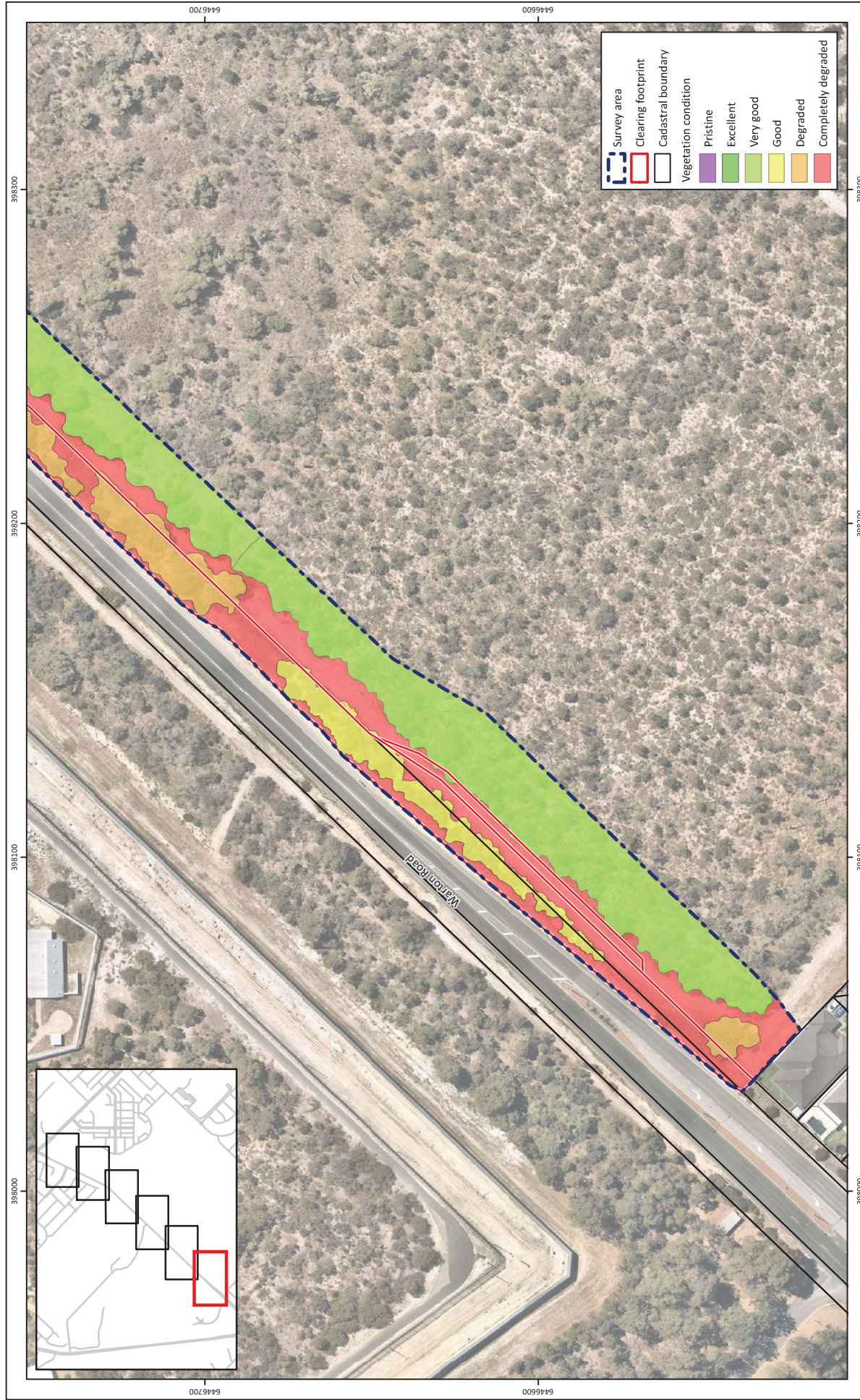
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GDA 1994 MGA Zone 50

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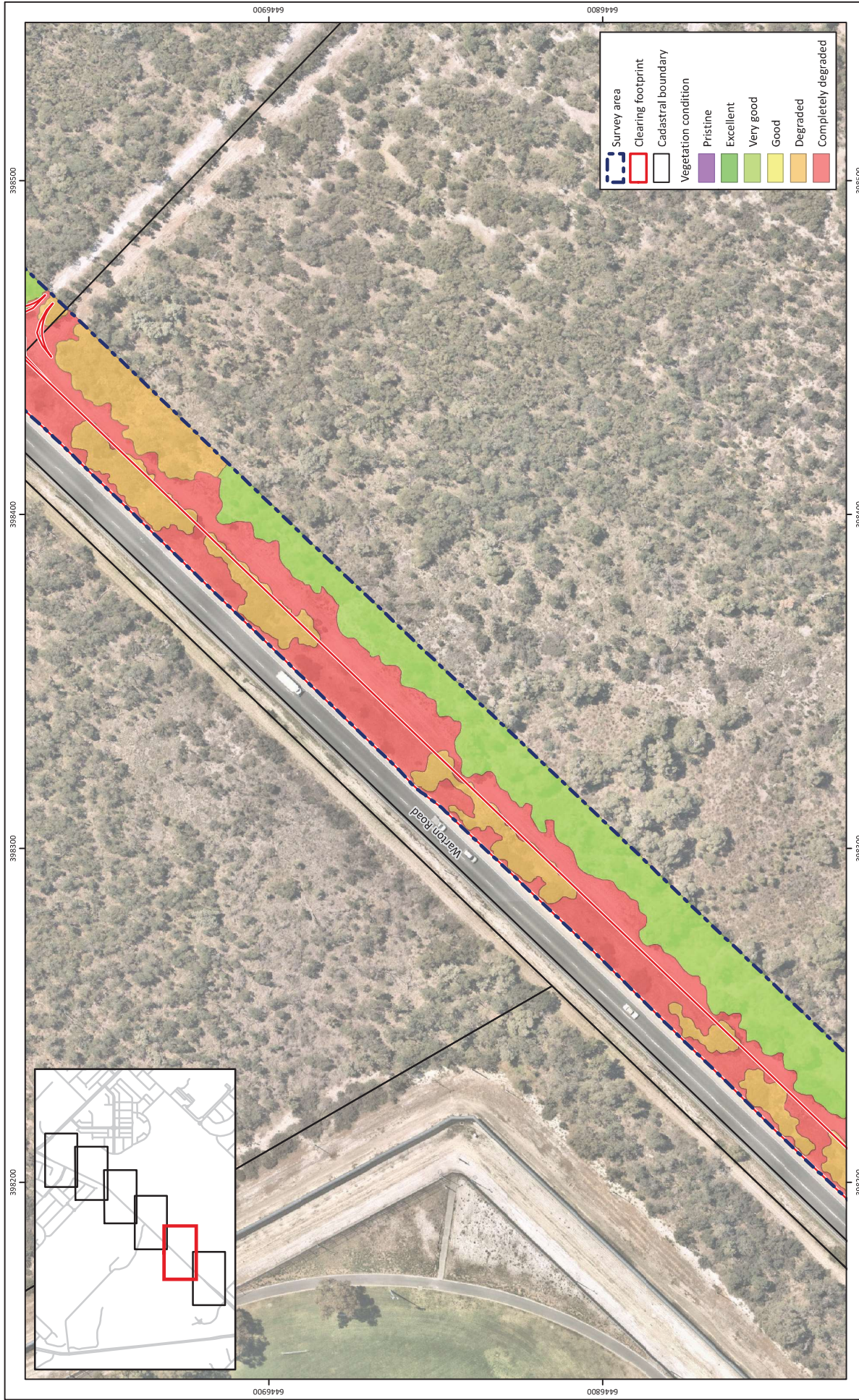
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**Figure 5: Vegetation Condition - Map 1 of 6**

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**Figure 5: Vegetation Condition - Map 2 of 6**

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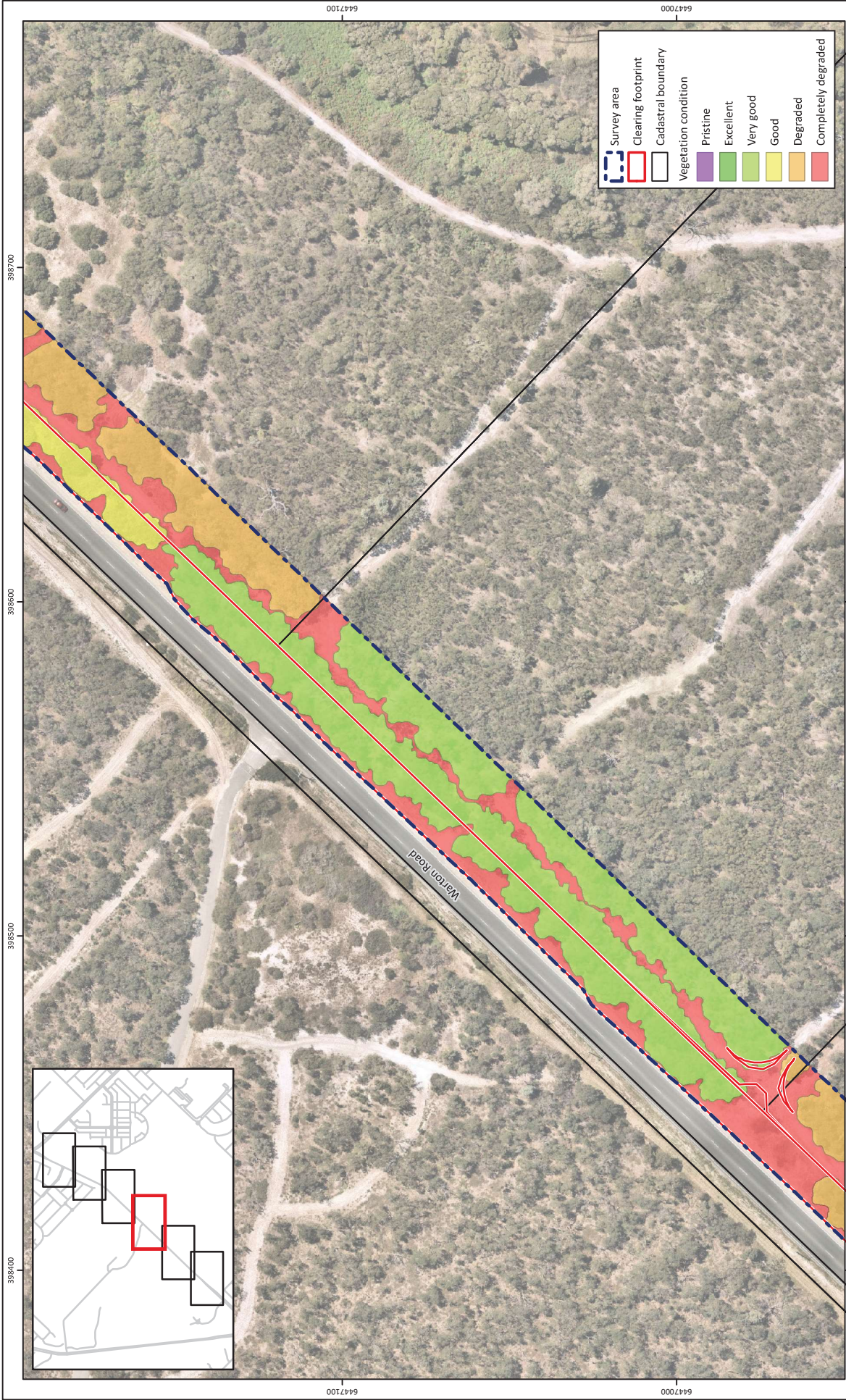
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**Figure 5: Vegetation Condition - Map 3 of 6**

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**Date:** 5/02/2021

**Project:** Flora and Vegetation Survey and Monitoring Report  
Proposed Warton Road Duplication, Canning Vale

**Client:** City of Gosnells

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Metres

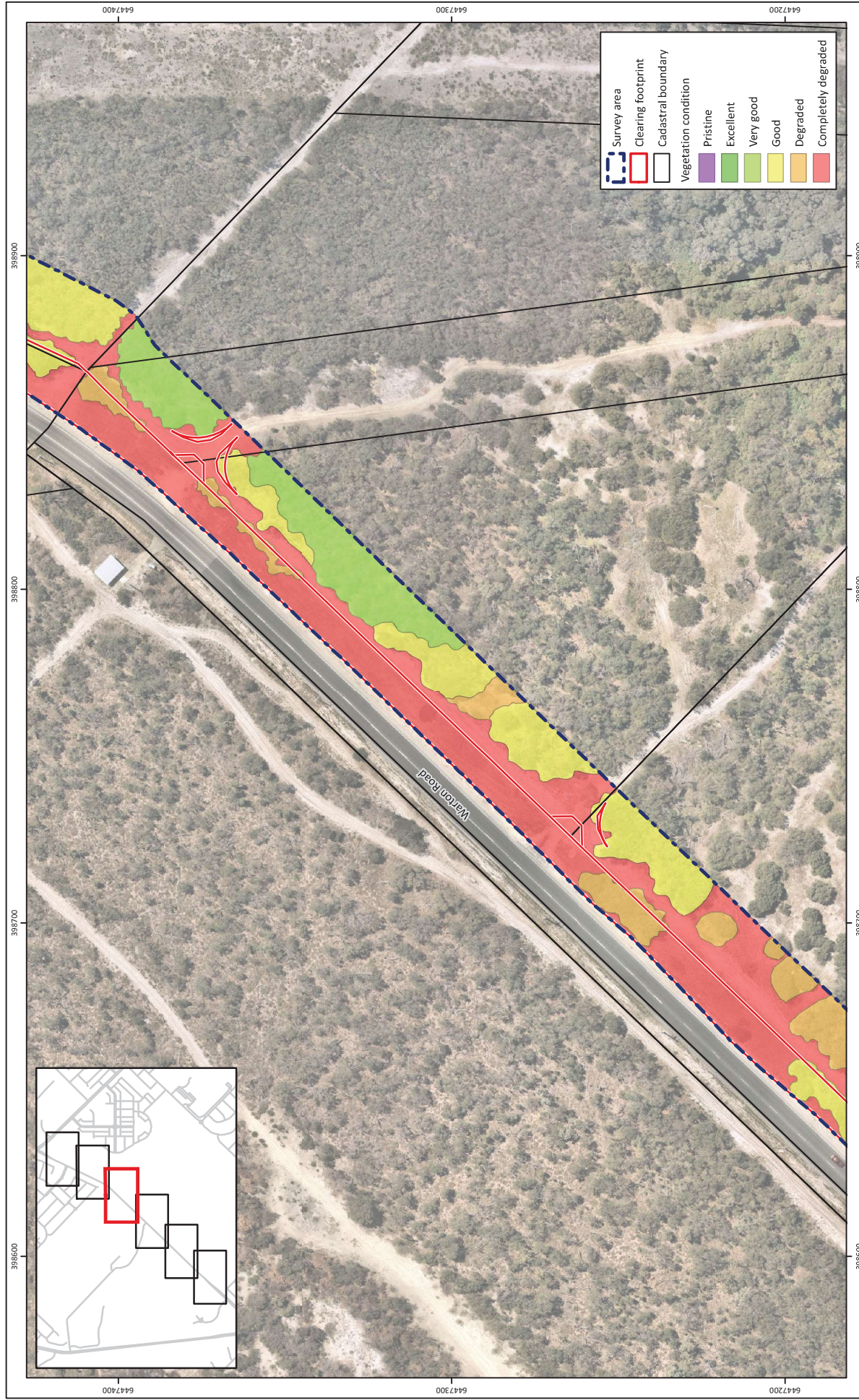
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**Legend:**

- Survey area
- Clearing footprint
- Cadastral boundary
- Vegetation condition
  - Pristine
  - Excellent
  - Very good
  - Good
  - Degraded
  - Completely degraded

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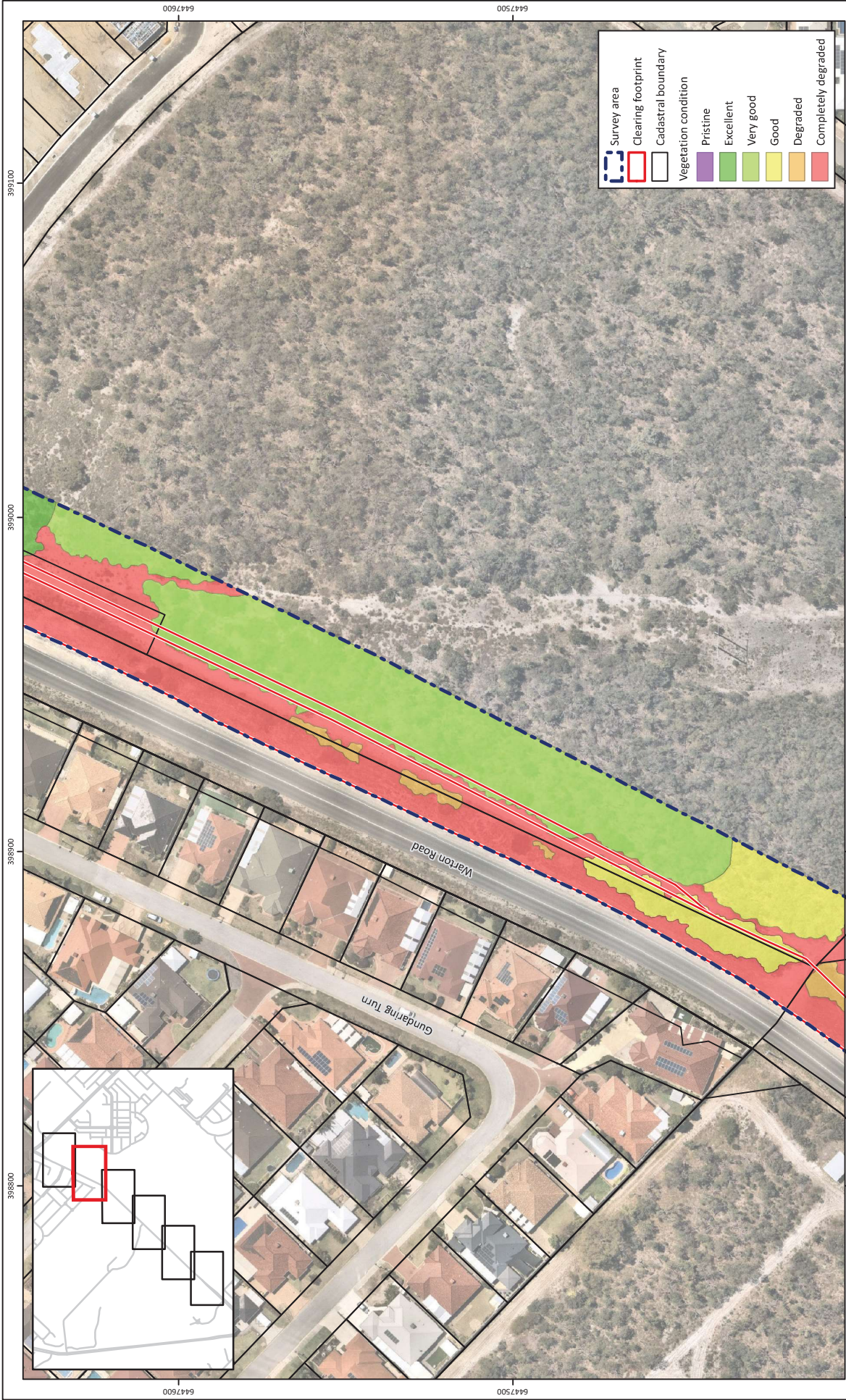


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**Figure 5: Vegetation Condition - Map 4 of 6**

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**Figure 5: Vegetation Condition - Map 5 of 6**

**Project:** Flora and Vegetation Survey and Monitoring Report  
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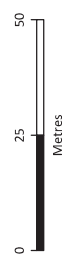
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	Survey area
	Clearing footprint
	Cadastral boundary
Vegetation condition	
	Pristine
	Excellent
	Very good
	Good
	Degraded
	Completely degraded



Scale: 1:1,500@A4  
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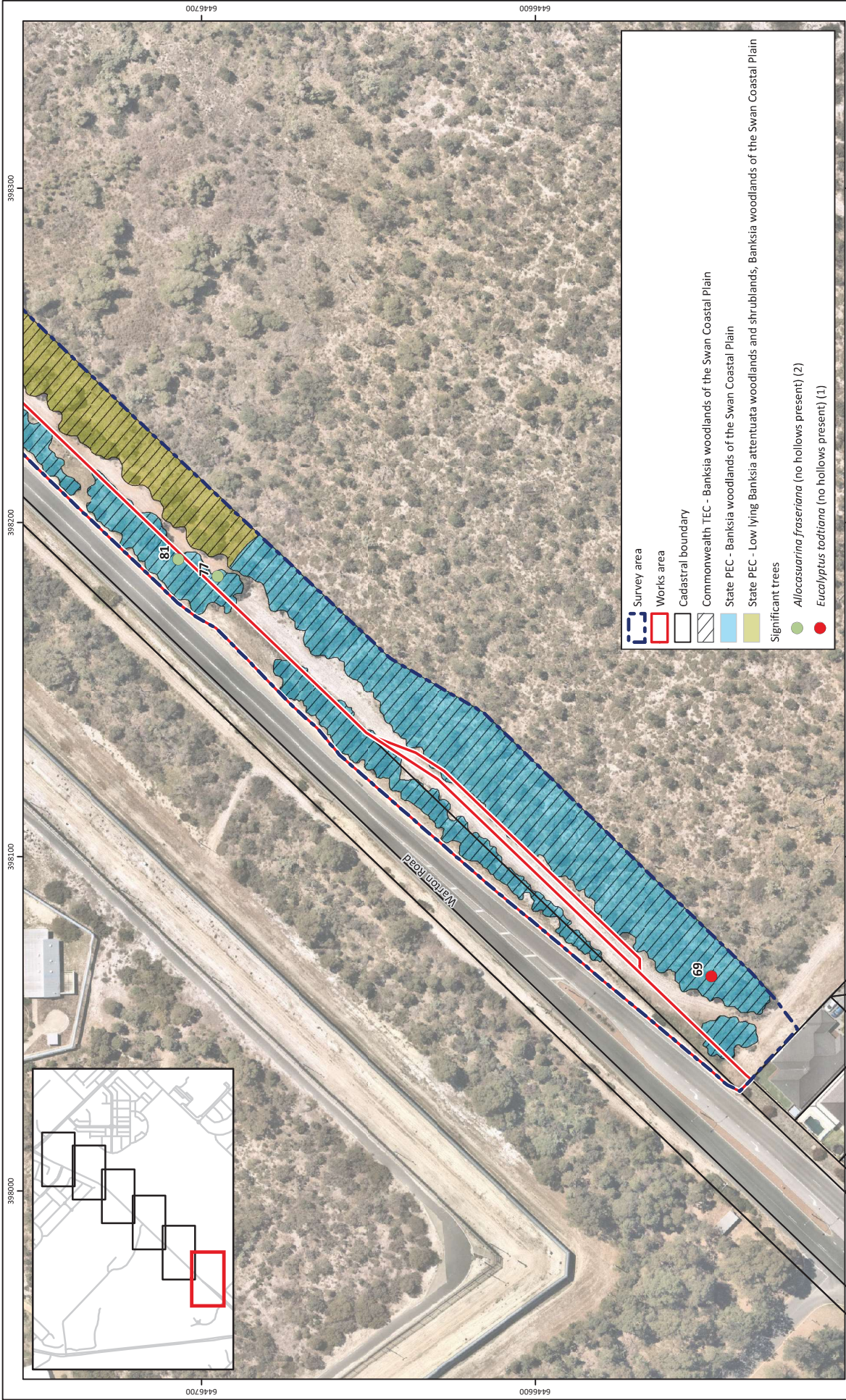
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**Figure 5: Vegetation Condition - Map 6 of 6**

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**Figure 6: Conservation Significant Vegetation - Map 1 of 6**

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**Client:** City of Gosnells

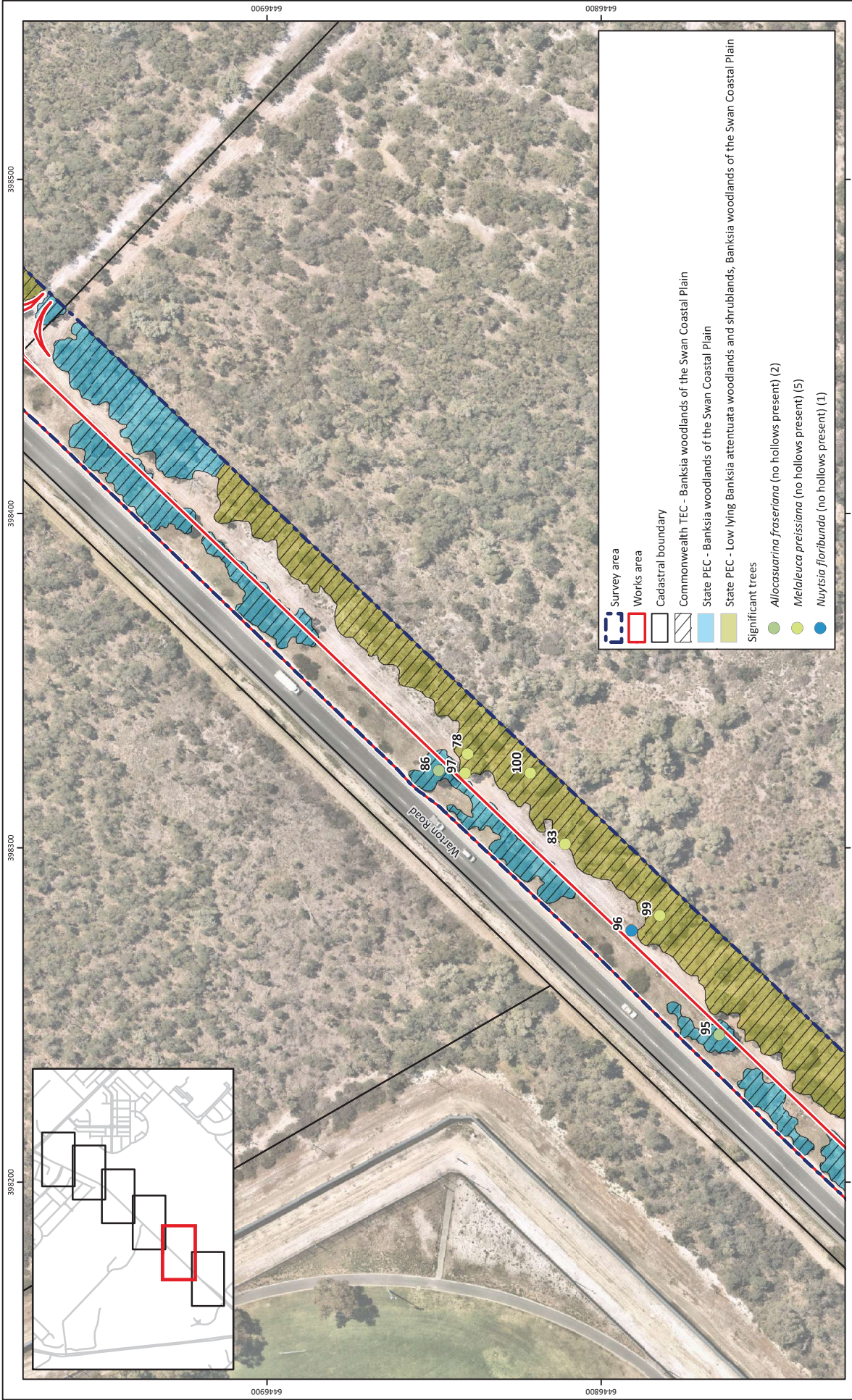
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Scale: 1:1,500@A4  
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Plan Number: EP20-099(01)-F09  
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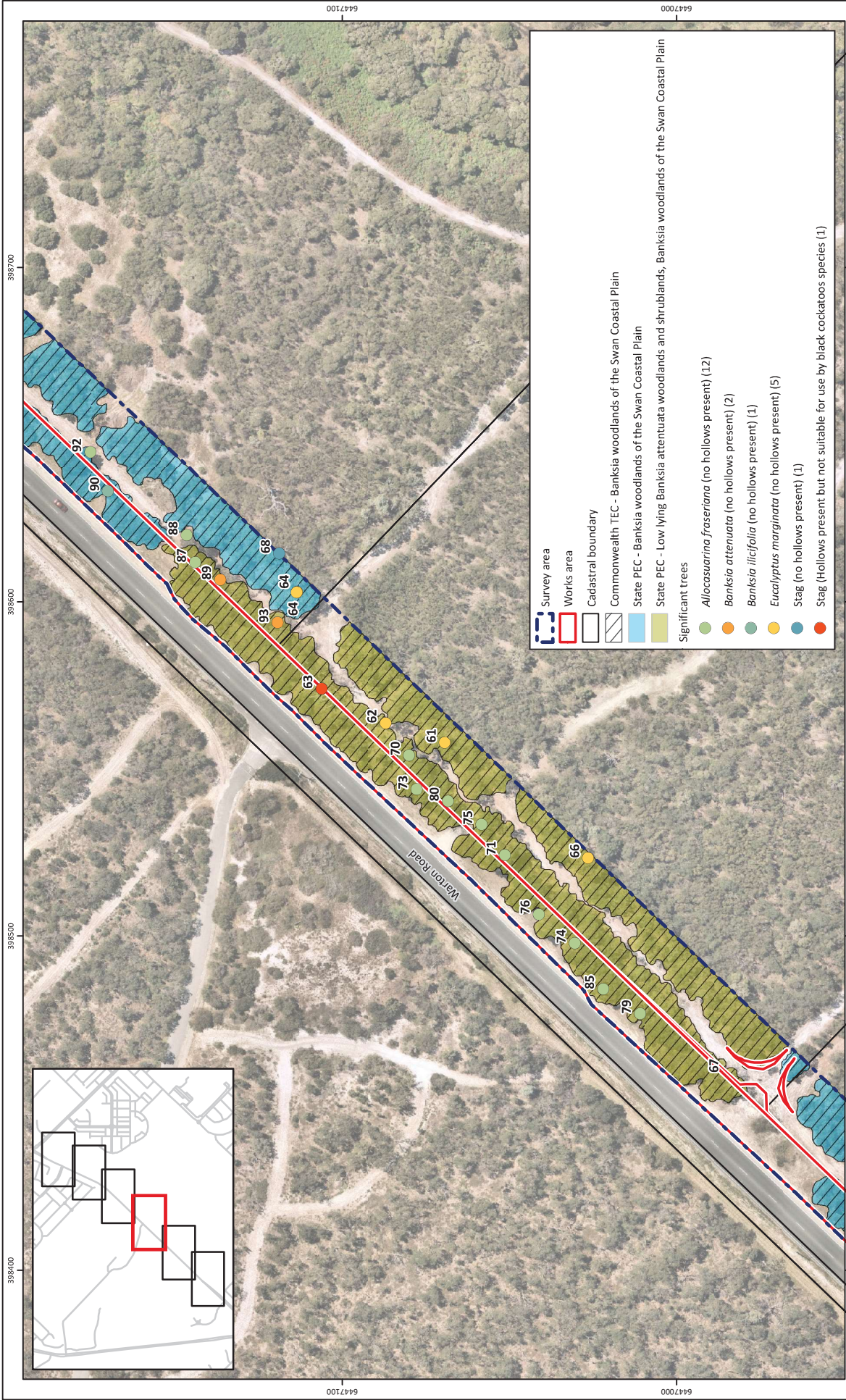
**Figure 6: Conservation Significant Vegetation - Map 2 of 6**

**Project:** Flora and Vegetation Survey and Monitoring Report  
Proposed Warton Road Duplication, Canning Vale

**Client:** City of Gosnells

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**Figure 6: Conservation Significant Vegetation - Map 3 of 6**

**Plan Number:** EP20-099(01)-F09  
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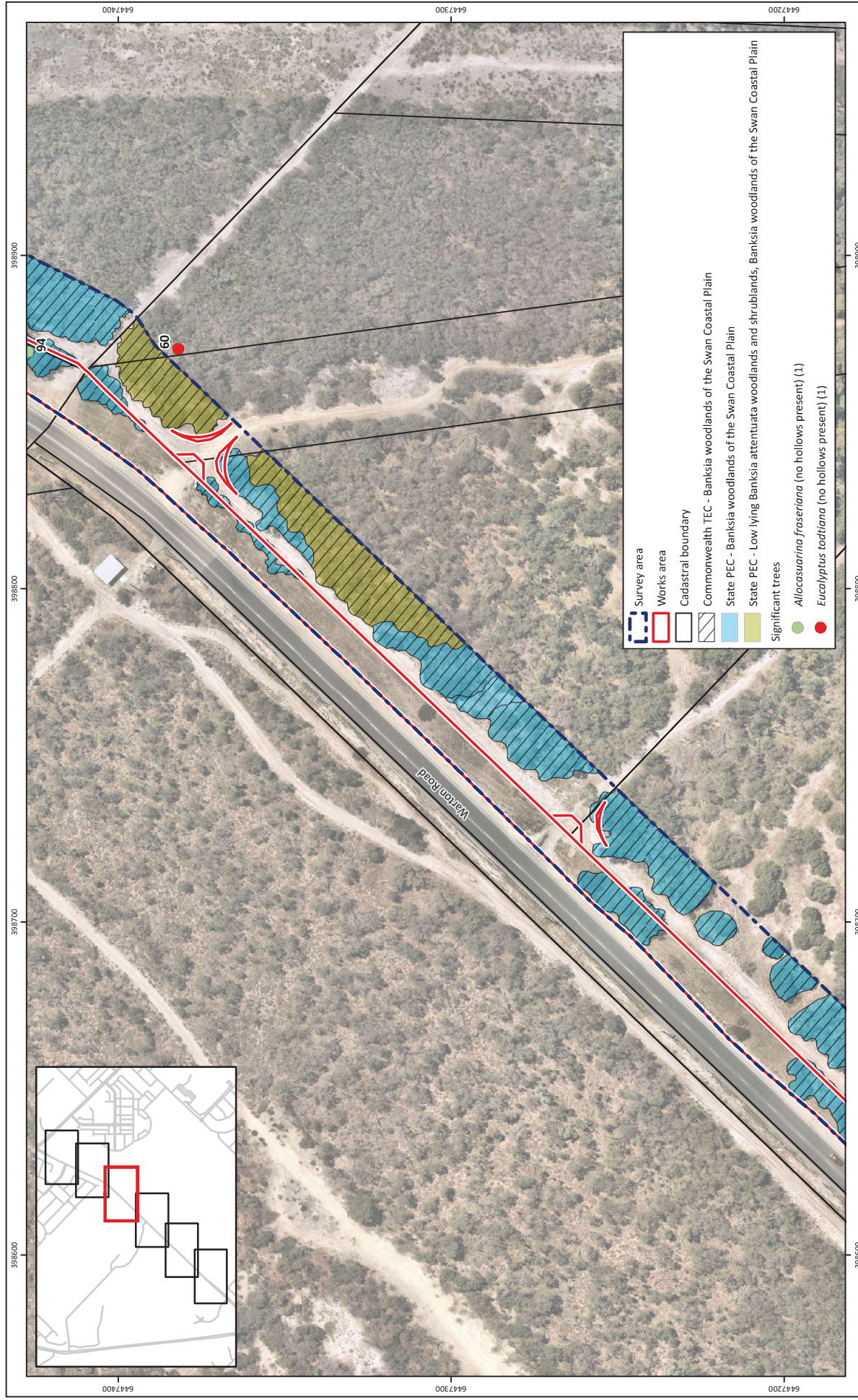
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**Figure 6: Conservation Significant Vegetation - Map 4 of 6**

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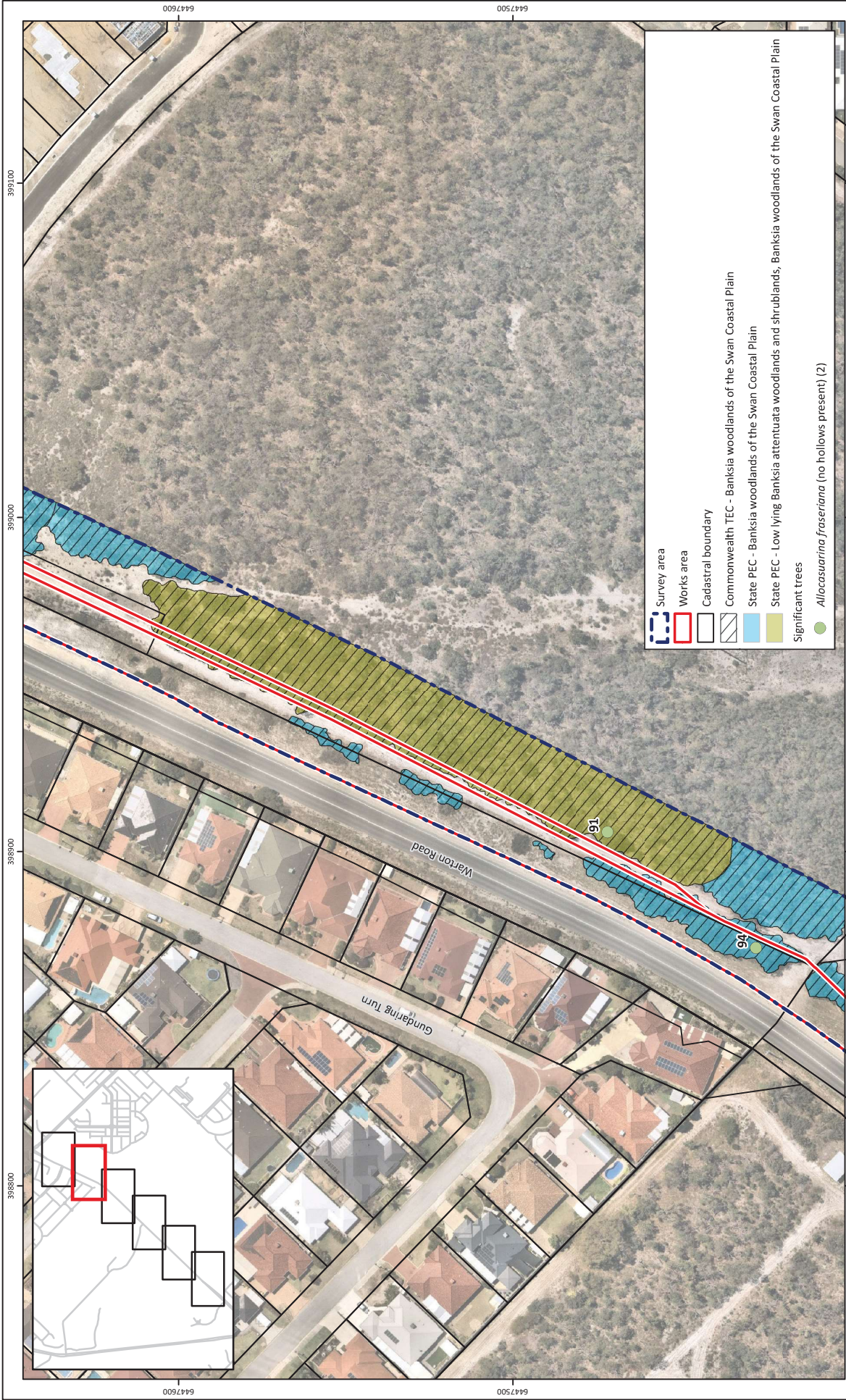
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**Project:** Flora and Vegetation Survey and Monitoring Report  
**Client:** Proposed Warton Road Duplication, Canning Vale  
**City of Gosnells**

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**Figure 6: Conservation Significant Vegetation - Map 5 of 6**

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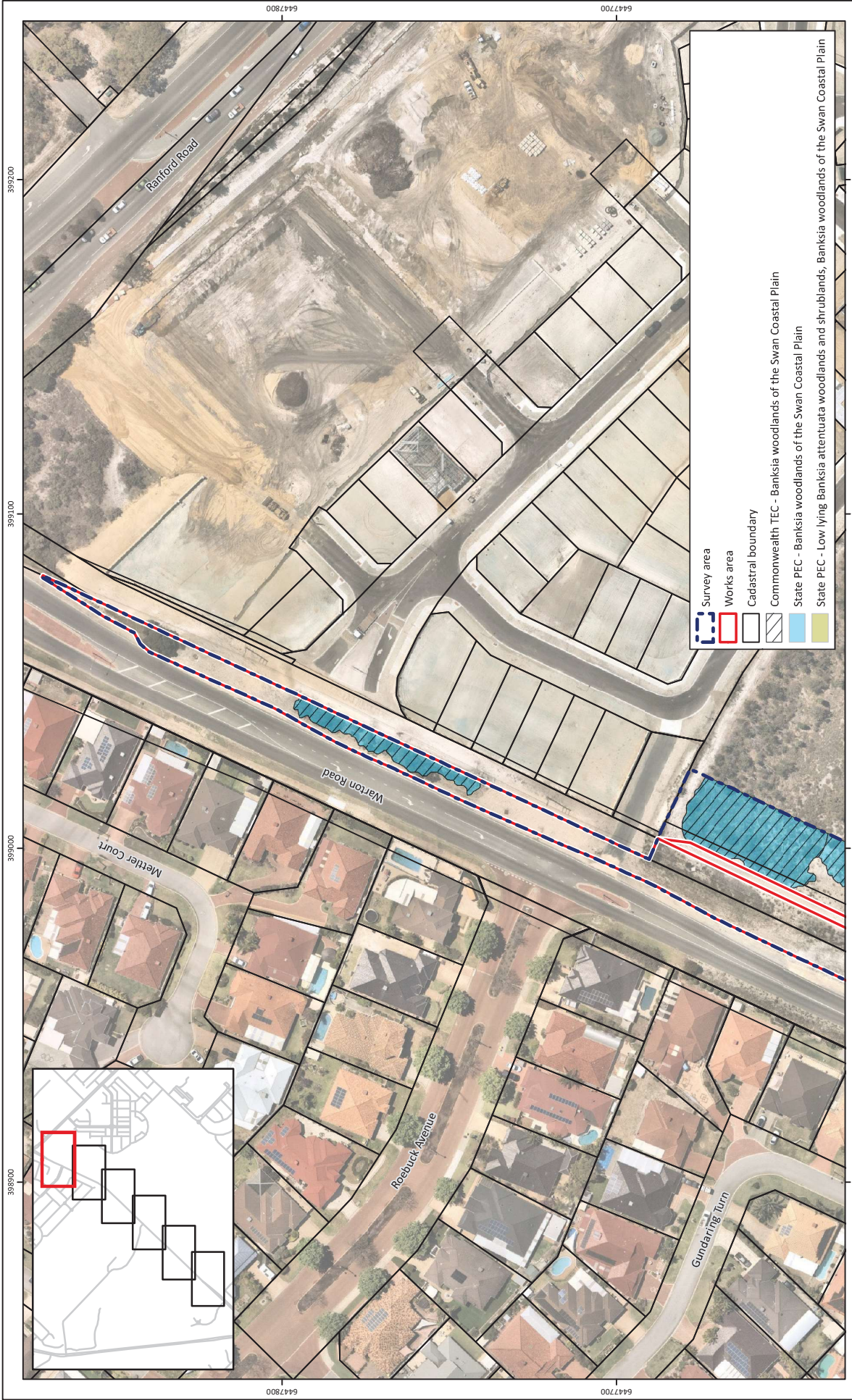
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Proposed Warton Road Duplication, Canning Vale  
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**Figure 6: Conservation Significant Vegetation - Map 6 of 6**

Plan Number:  
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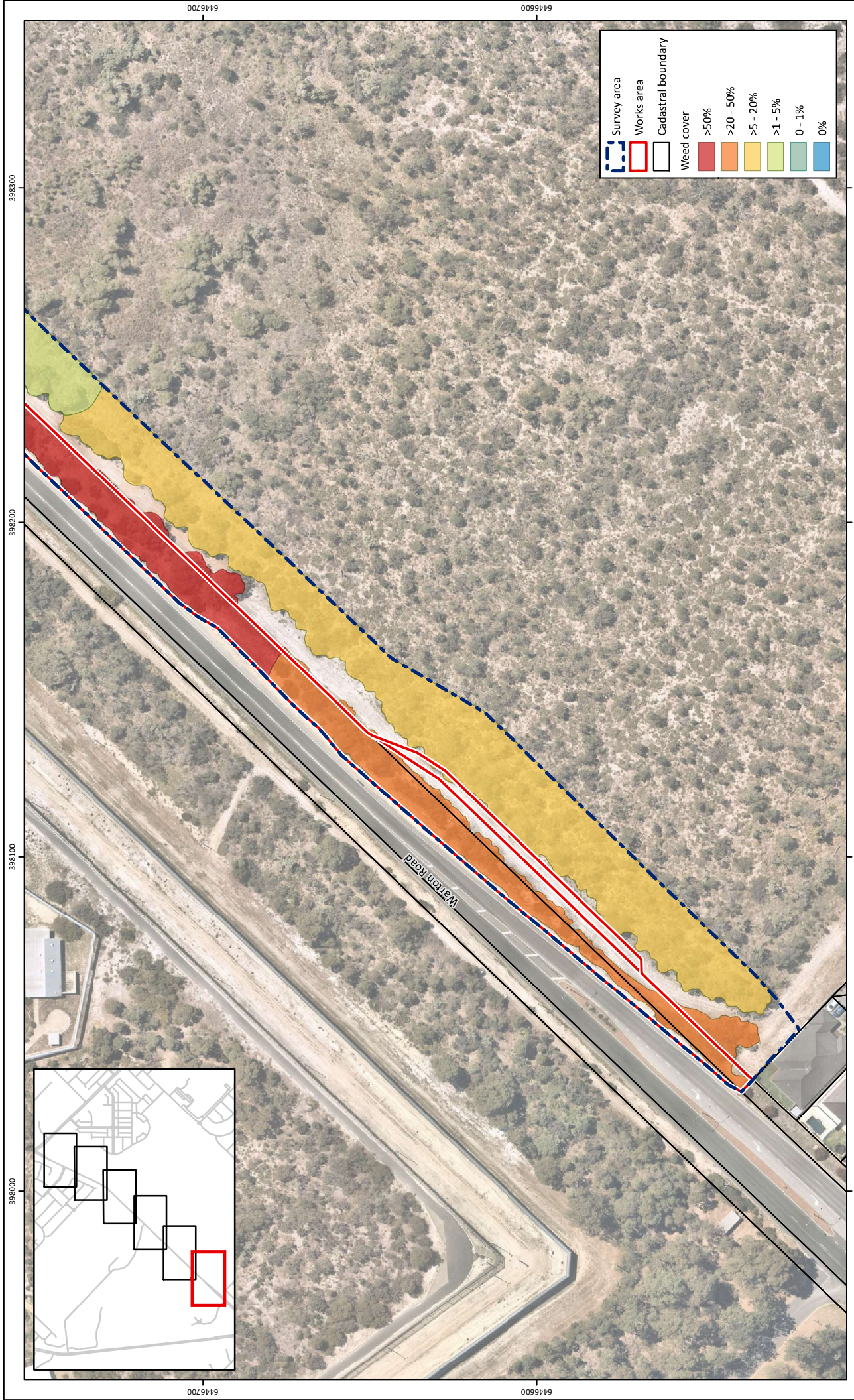
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**Figure 7: Weed Suite 1 - Annual and Perennial Grasses - Map 1 of 6**

**Project:** Flora and Vegetation Survey and Monitoring Report  
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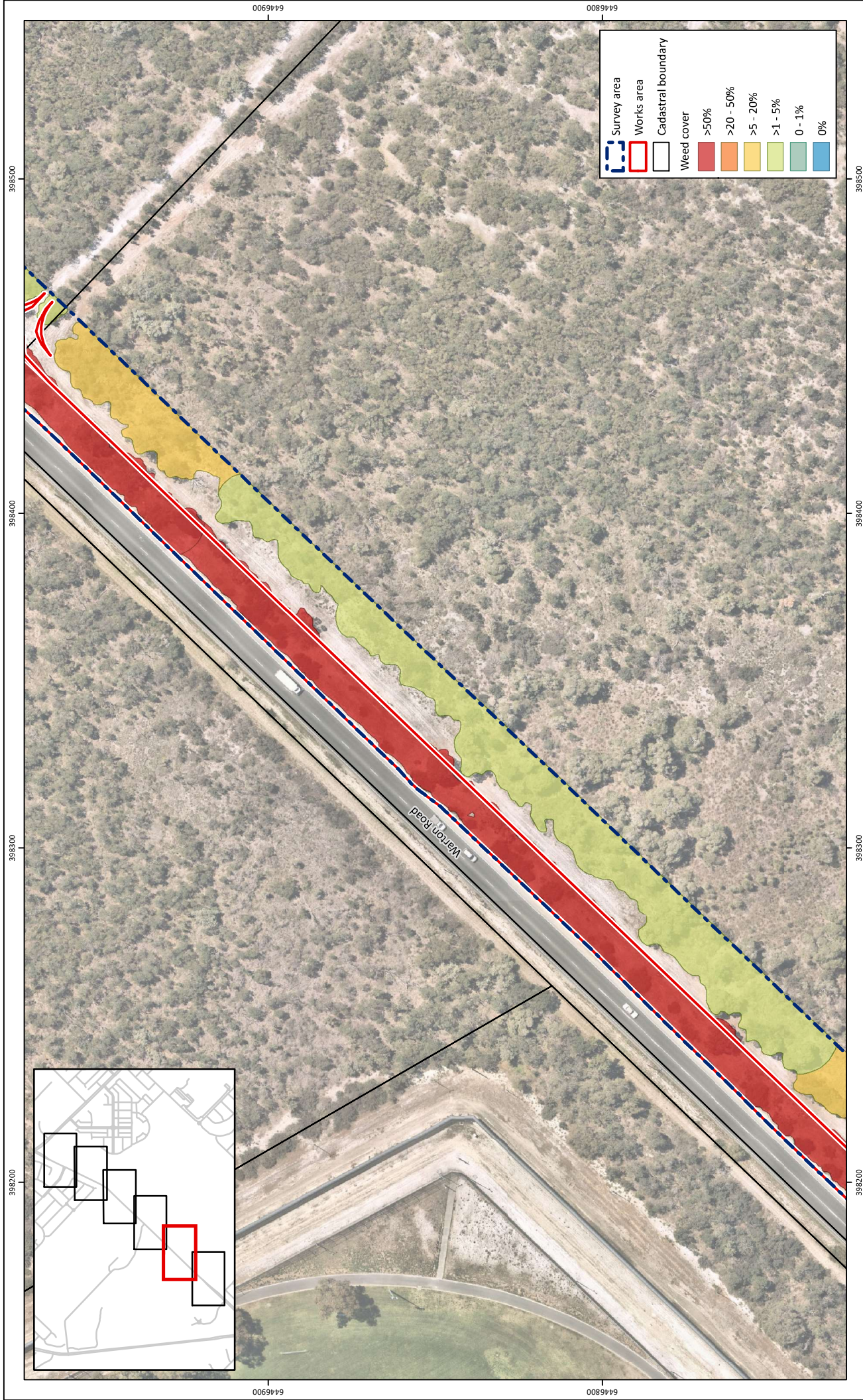
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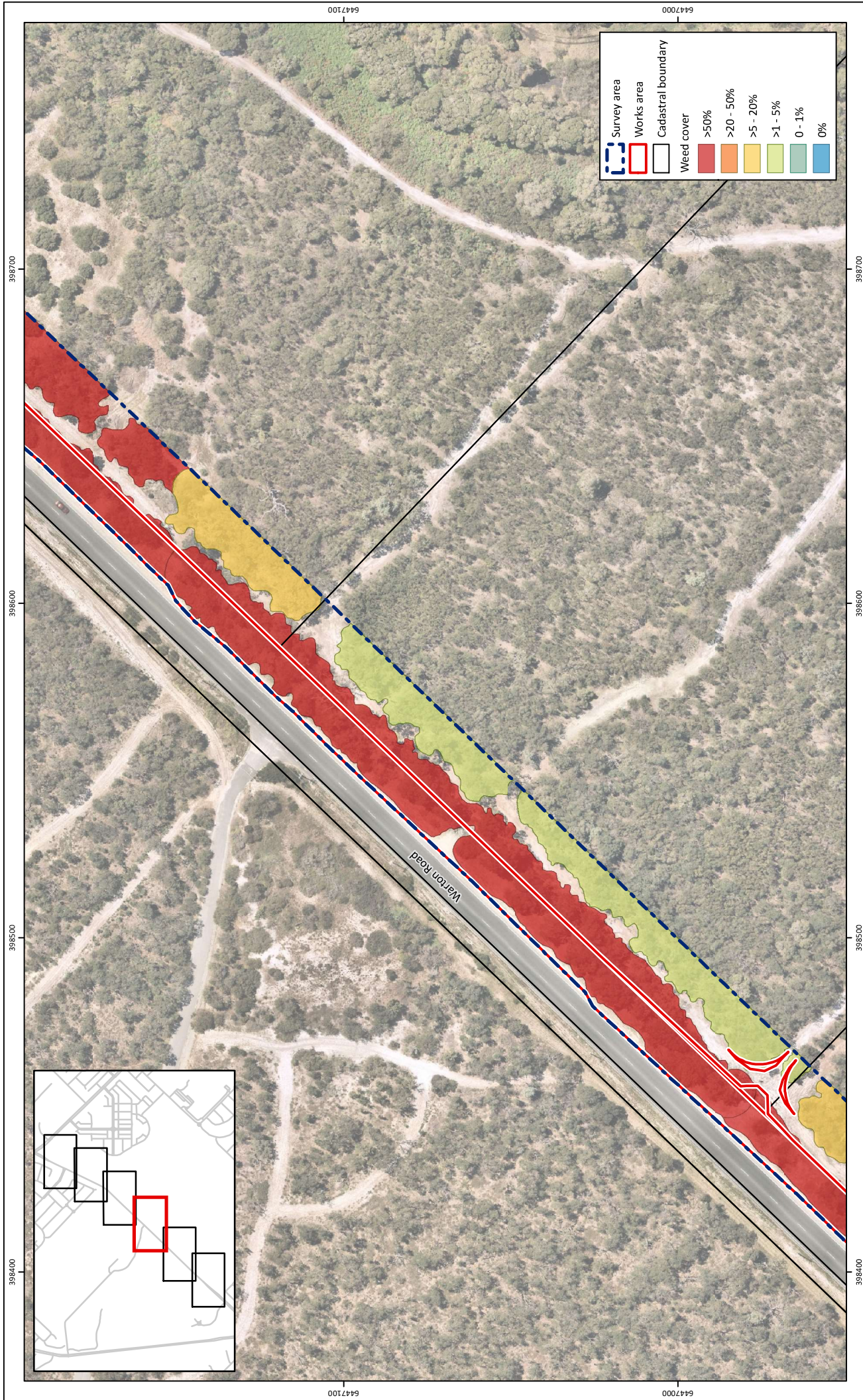
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**Figure 7: Weed Suite 1 - Annual and Perennial Grasses - Map 3 of 6**

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**Approved:** TAA  
**Date:** 5/02/2020

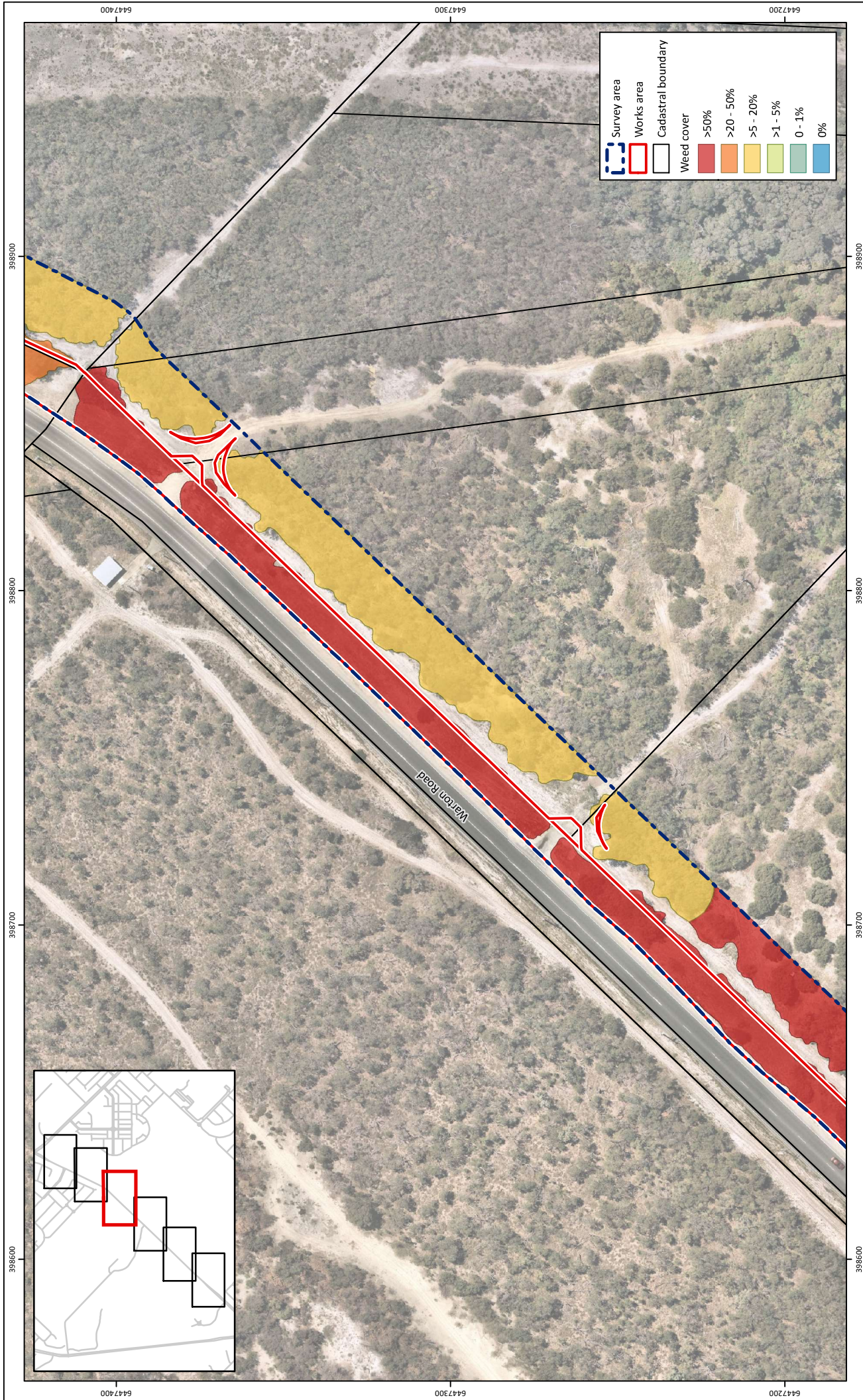


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 GDA 1994 MGA Zone 50



**Project:** Flora and Vegetation Survey and Monitoring Report  
 Proposed Warton Road Duplication, Canning Vale  
**Client:** City of Gosnells





**Figure 7: Weed Suite 1 - Annual and Perennial Grasses - Map 4 of 6**

**Plan Number:**  
EP20-099(01)-F10

**Drawn:** GAR

**Date:** 16/12/2020

**Checked:** SKP

**Approved:** TAA

**Date:** 5/02/2020



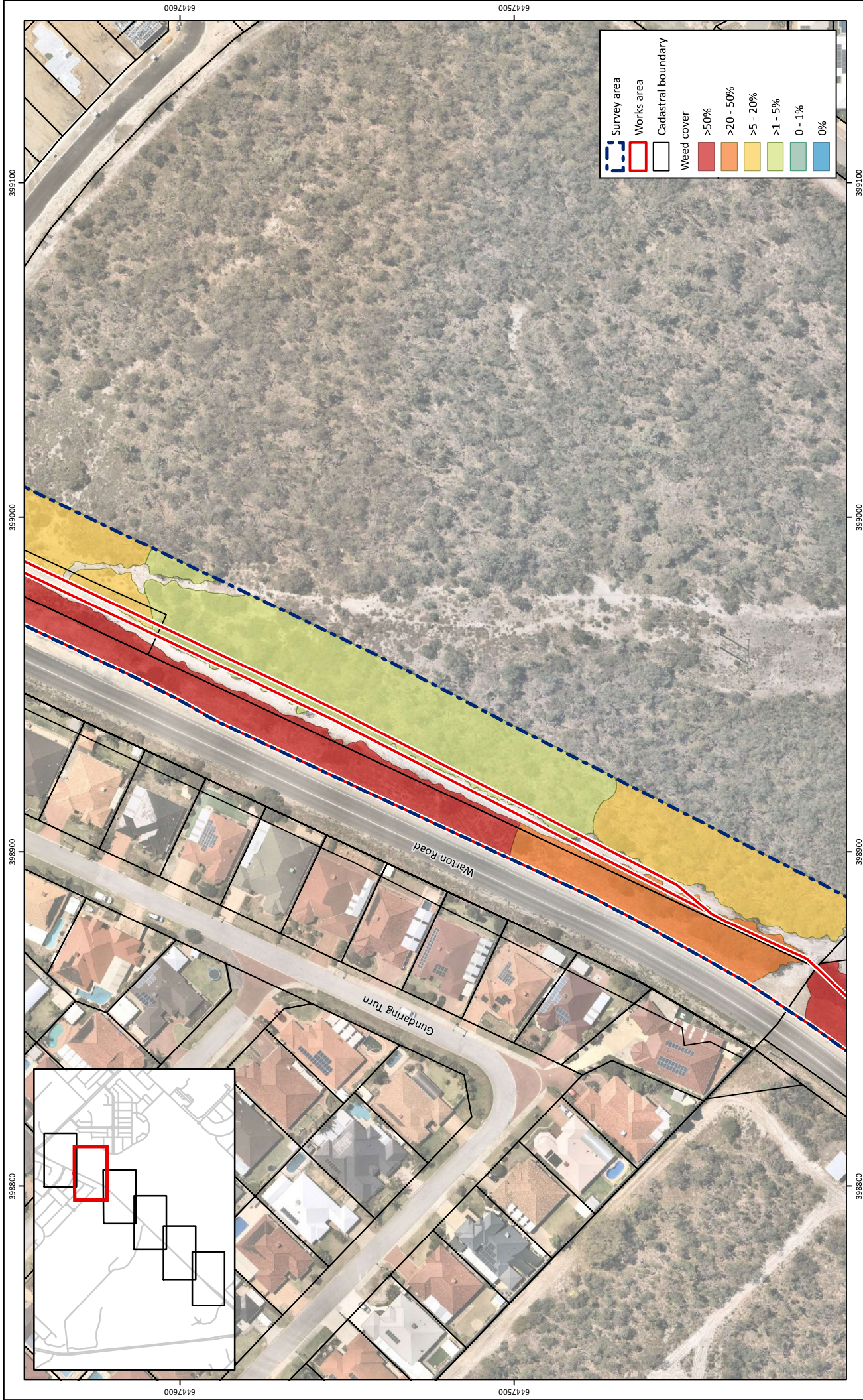
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GDA 1994 MGA Zone 50

**Metres**

0 25 50





**Figure 7: Weed Suite 1 - Annual and Perennial Grasses - Map 5 of 6**

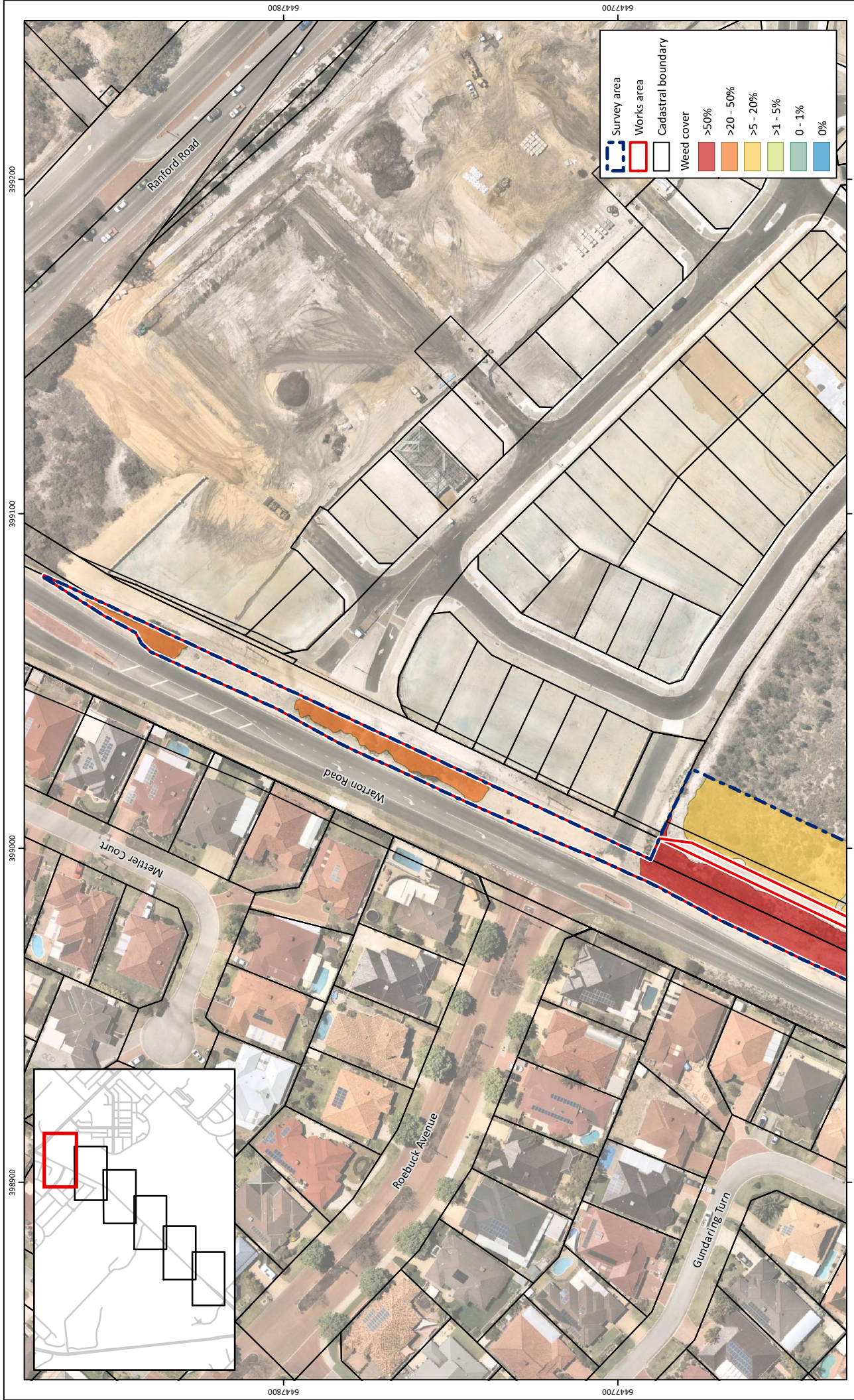
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**Date:** 5/02/2020

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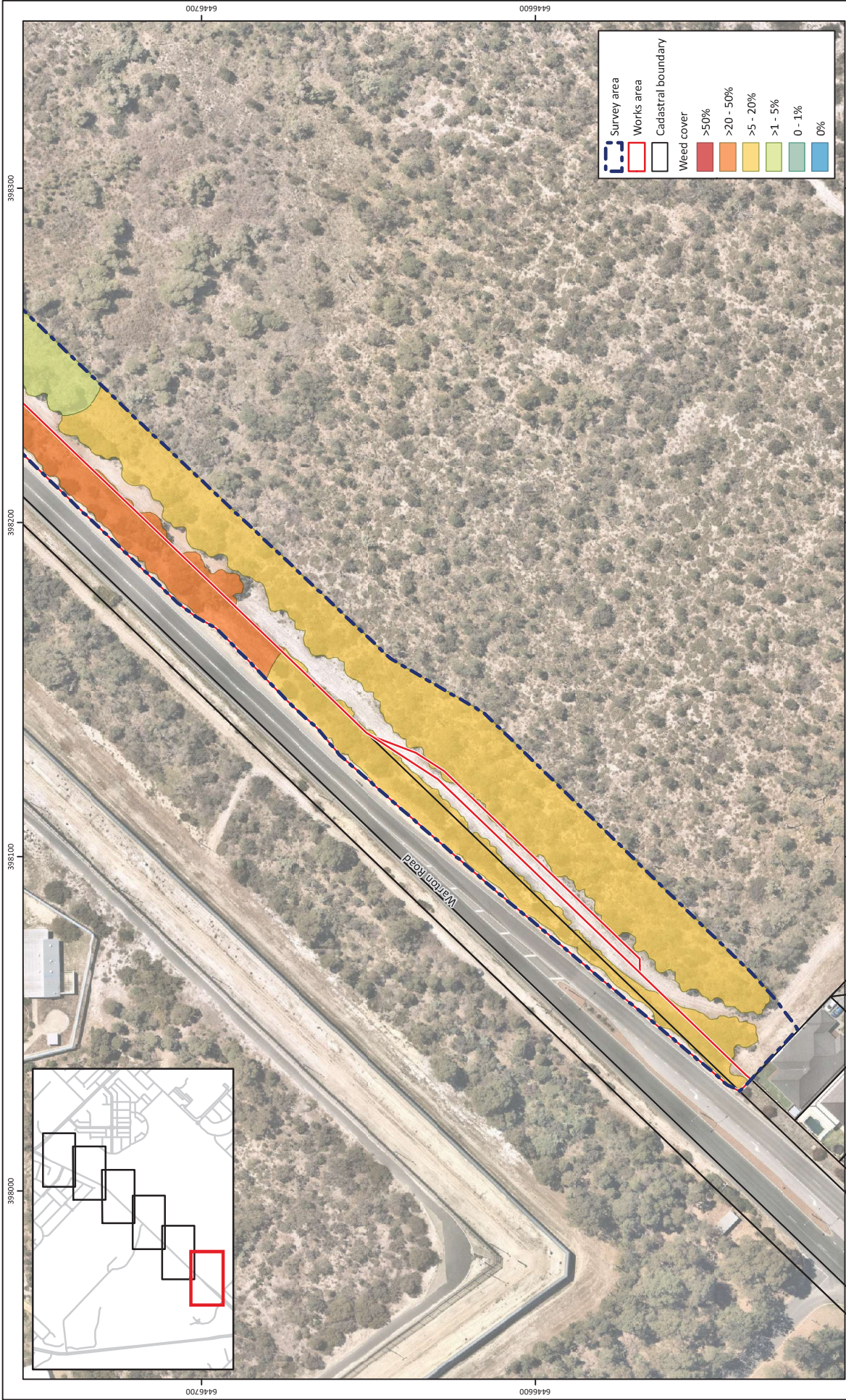
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**Checked:** SKP  
**Approved:** TAA  
**Date:** 5/02/2020

**Scale:** 1:1,500@A4  
 GDA 1994 MGA Zone 50

**Figure 7: Weed Suite 1 - Annual and Perennial Grasses - Map 6 of 6**

**Project:** Flora and Vegetation Survey and Monitoring Report  
 Proposed Warton Road Duplication, Canning Vale  
**Client:** City of Gosnells





**Figure 8: Weed Suite 2 - Herbaceous Weeds - Map 1 of 6**

**Plan Number:** EP20-099[01]-F11  
**Drawn:** GAR  
**Date:** 16/12/2020  
**Checked:** SKP  
**Approved:** TAA  
**Date:** 5/02/2021

**Project:** Flora and Vegetation Survey and Monitoring Report  
 Proposed Warton Road Duplication, Canning Vale

**Client:** City of Gosnells

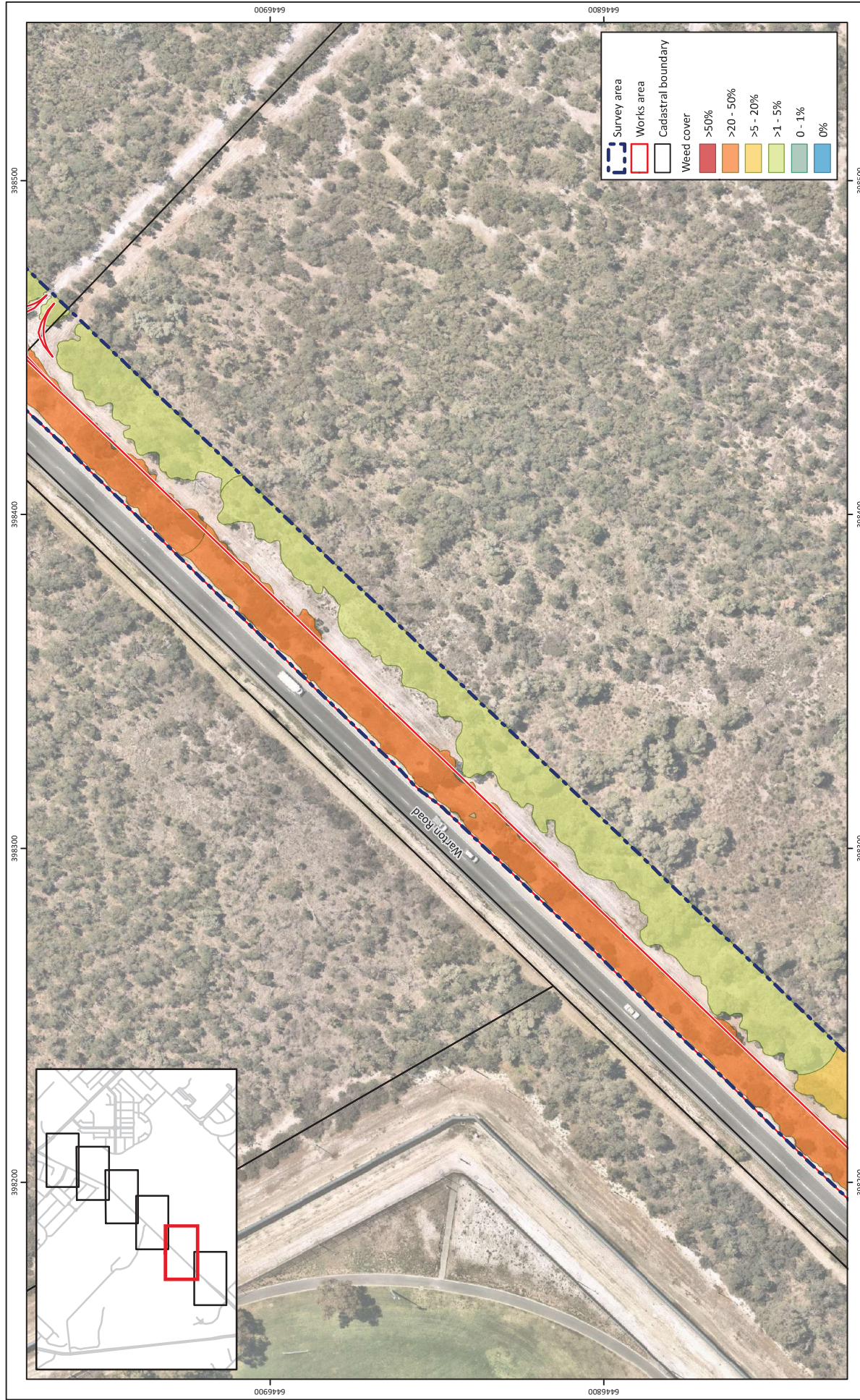
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 GDA 1994 MGA Zone 50

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**Figure 8: Weed Suite 2 - Herbaceous Weeds - Map 2 of 6**

**Plan Number:** EP20-099(01)-F11  
**Drawn:** GAR  
**Date:** 16/12/2020  
**Checked:** SKP  
**Approved:** TAA  
**Date:** 5/02/2021



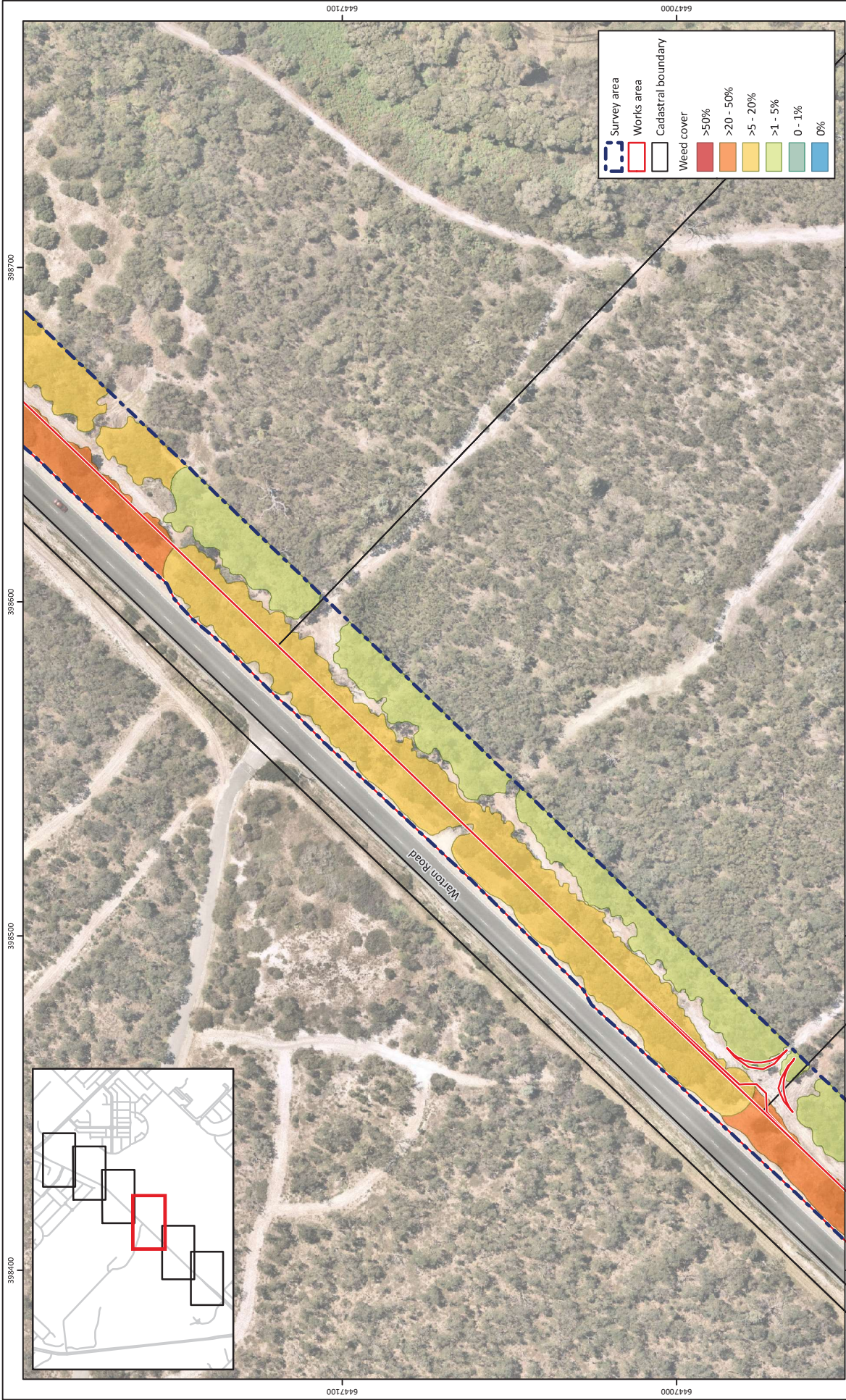
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 GDA 1994 MGA Zone 50



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**Figure 8: Weed Suite 2 - Herbaceous Weeds - Map 3 of 6**

**Plan Number:** EP20-099[01]-F11

**Drawn:** GAR

**Date:** 16/12/2020

**Checked:** SKP

**Approved:** TAA

**Date:** 5/02/2021

**Project:** Flora and Vegetation Survey and Monitoring Report

**Client:** City of Gosnells

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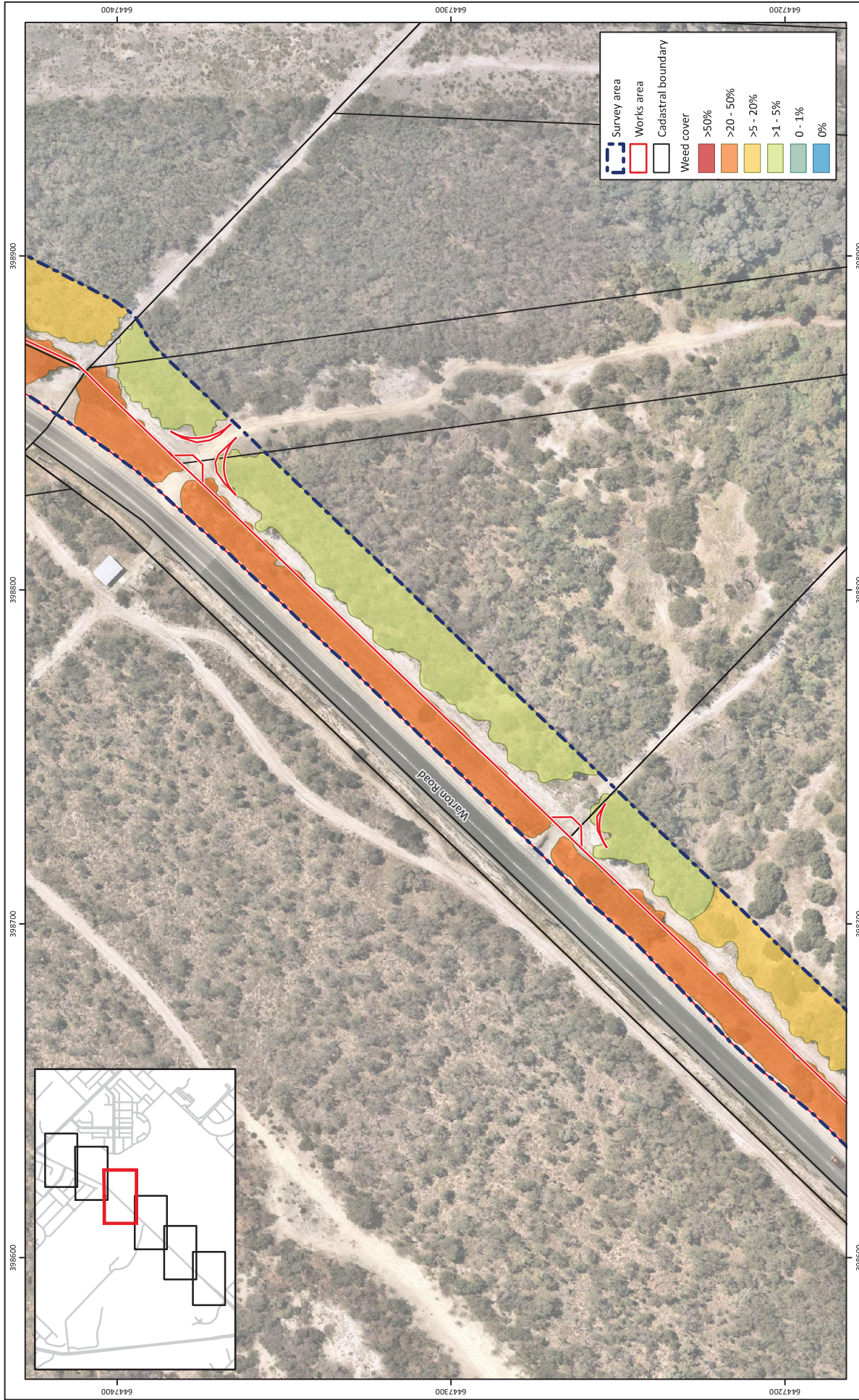
GDA 1994 MGA Zone 50

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**Figure 8: Weed Suite 2 - Herbaceous Weeds - Map 4 of 6**

**Plan Number:** EP20-099(01)-F11

**Drawn:** GAR

**Date:** 16/12/2020

**Checked:** SKP

**Approved:** TAA

**Date:** 5/02/2021

**Project:** Flora and Vegetation Survey and Monitoring Report  
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Scale: 1:1,500@A4  
GDA 1994 MGA Zone 50



**Plan Number:** EP20-099[01]-F11  
**Drawn:** GAR  
**Date:** 16/12/2020  
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**Approved:** TAA  
**Date:** 5/02/2021

**Figure 8: Weed Suite 2 - Herbaceous Weeds - Map 5 of 6**

**Project:** Flora and Vegetation Survey and Monitoring Report  
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**Figure 8: Weed Suite 2 - Herbaceous Weeds - Map 6 of 6**

**Plan Number:** EP20-099[01]-F11  
**Drawn:** GAR  
**Date:** 16/12/2020  
**Checked:** SKP  
**Approved:** TAA  
**Date:** 5/02/2021

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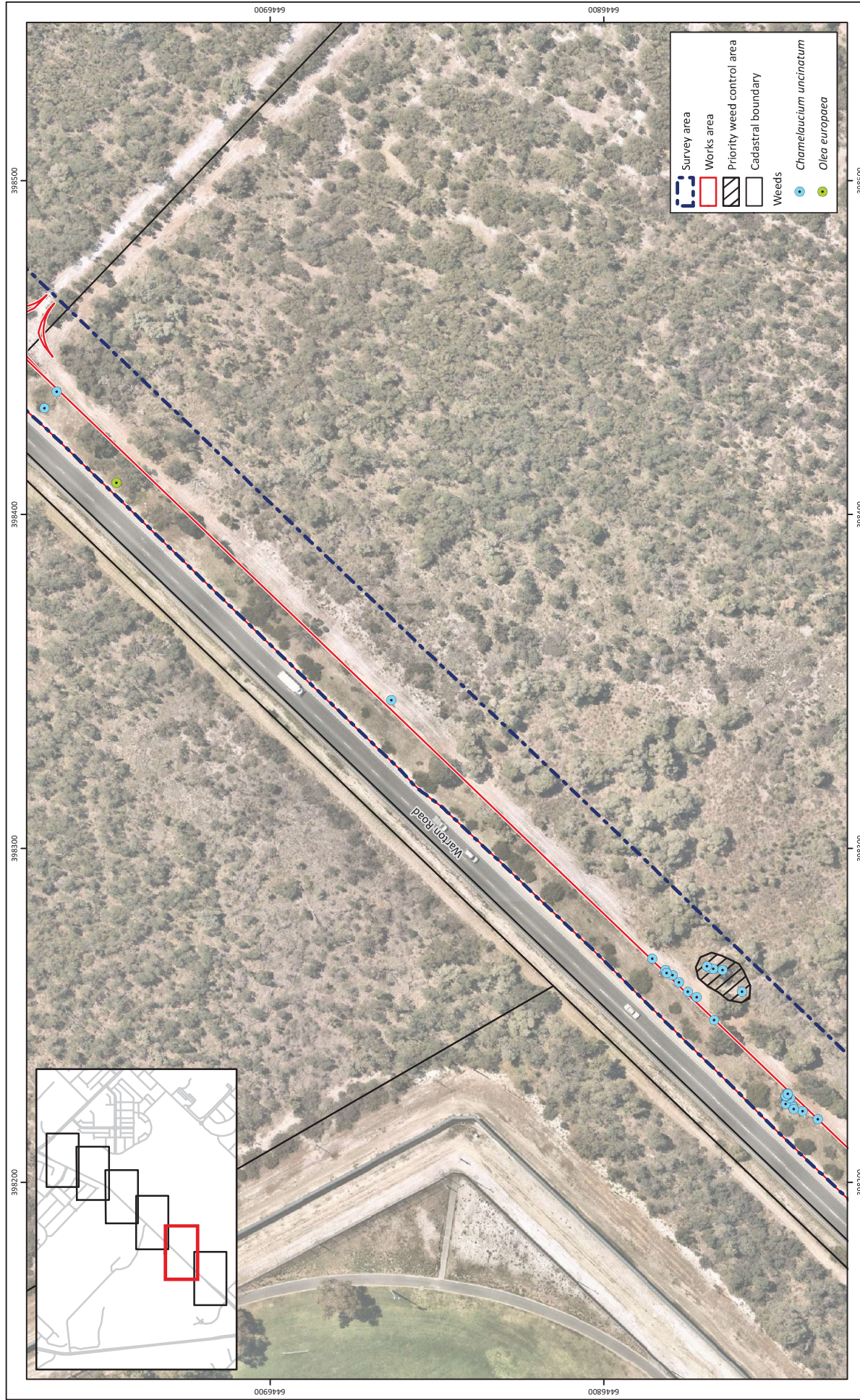
**Project:** Flora and Vegetation Survey and Monitoring Report  
 Proposed Warton Road Duplication, Canning Vale  
**Client:** City of Gosnells

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**Figure 9: Weed Suite 3 - Woody Weeds - Map 2 of 6**

**Plan Number:** EP20-099(01)-F12a  
**Drawn:** GAR  
**Date:** 24/02/2020  
**Checked:** SKP  
**Approved:** TAA  
**Date:** 24/02/2021



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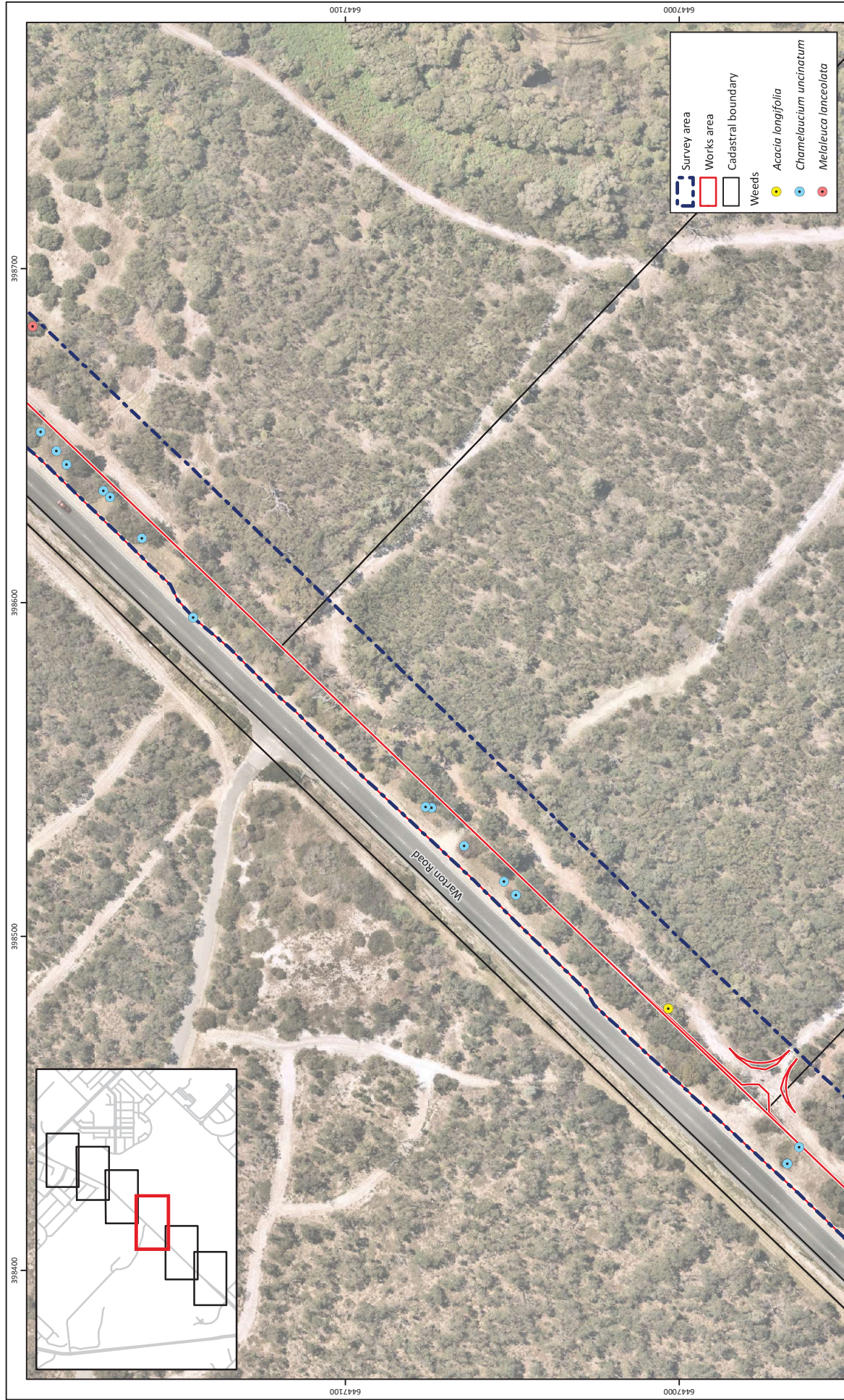
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GDA 1994 MGA Zone 50



**Project:** Flora and Vegetation Survey and Monitoring Report  
Proposed Warton Road Duplication, Canning Vale  
**Client:** City of Gosnells

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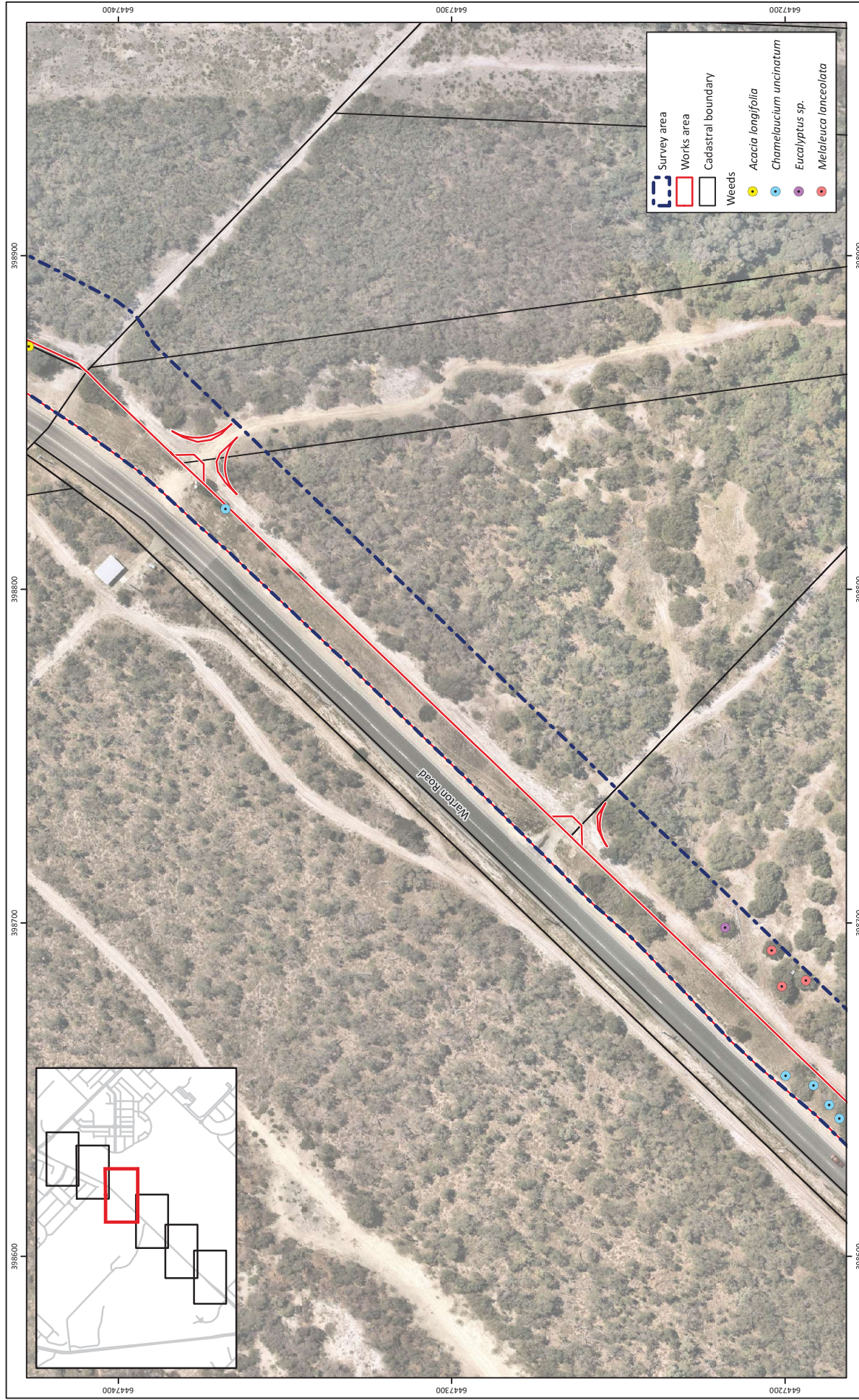


**Figure 9: Weed Suite 3 - Woody Weeds - Map 3 of 6**

**Project:** Flora and Vegetation Survey and Monitoring Report  
 Proposed Watson Road Duplication, Canning Vale  
**Client:** City of Gosnells

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**Figure 9: Weed Suite 3 - Woody Weeds - Map 4 of 6**

**Plan Number:** EP20-099(01)-F12a  
**Drawn:** GAR  
**Date:** 24/02/2020  
**Checked:** SKP  
**Approved:** TAA  
**Date:** 24/02/2021



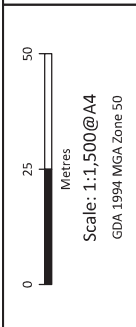
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 GDA 1994 MGA Zone 50



**Project:** Flora and Vegetation Survey and Monitoring Report  
 Proposed Warton Road Duplication, Canning Vale  
**Client:** City of Gosnells

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**Plan Number:**  
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**Drawn:** GAR

**Date:** 24/02/2020

**Checked:** SKP

**Approved:** TAA

**Date:** 24/02/2021

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<b>Figure 9: Weed Suite 3 - Woody Weeds - Map 5 of 6</b>	
<b>Project:</b>	Flora and Vegetation Survey and Monitoring Report Proposed Warton Road Duplication, Canning Vale
<b>Client:</b>	City of Gosnells

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0 25 50  
Metres  
Scale: 1:1,500@A4  
GDA 1994 MGA Zone 50

**Plan Number:** EP20-099(01)-F12a  
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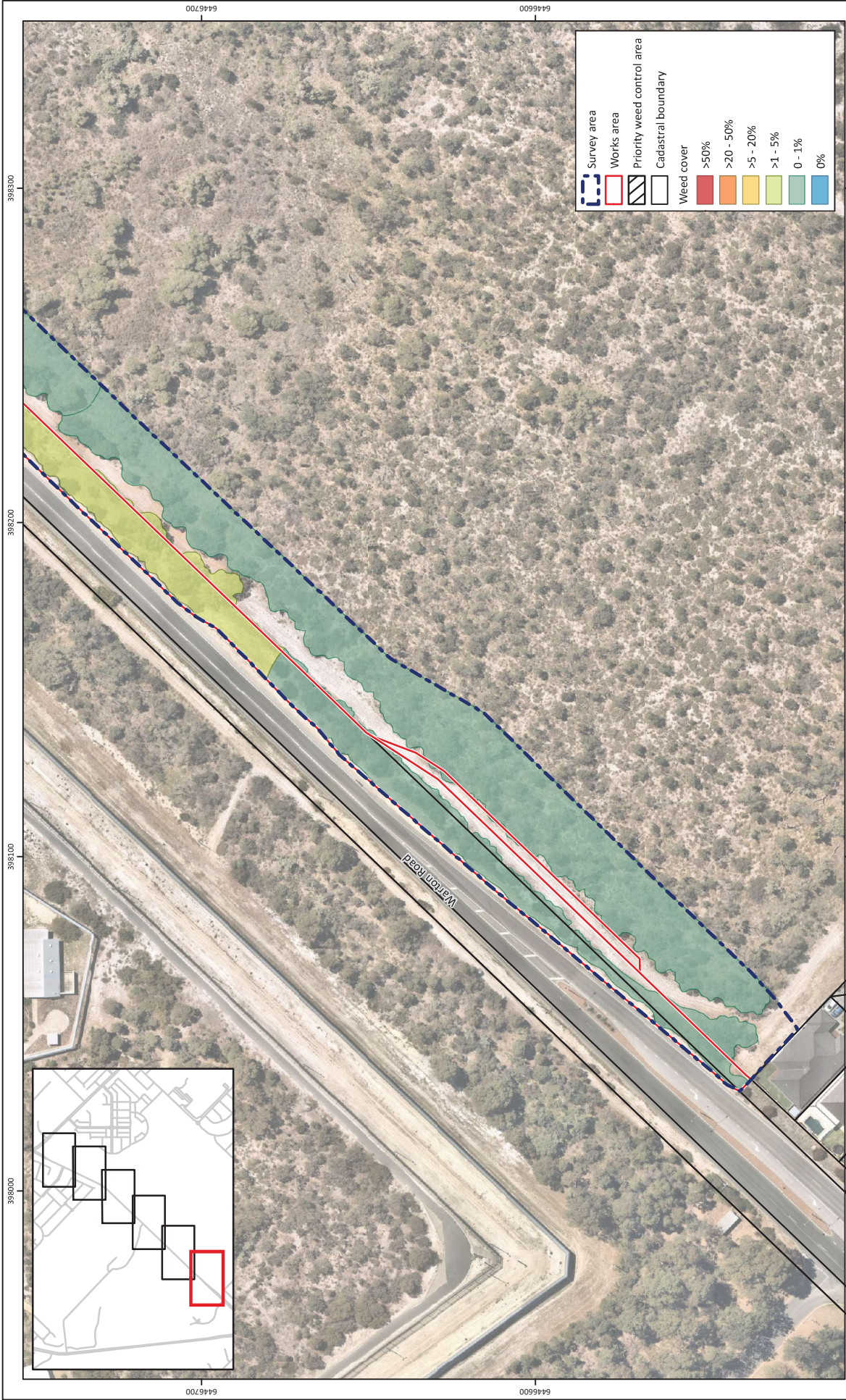
**Figure 9: Weed Suite 3 - Woody Weeds - Map 6 of 6**

**Project:** Flora and Vegetation Survey and Monitoring Report  
Proposed Warton Road Duplication, Canning Vale

**Client:** City of Gosnells

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Scale: 1:1,500@A4  
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Date: 5/02/2021

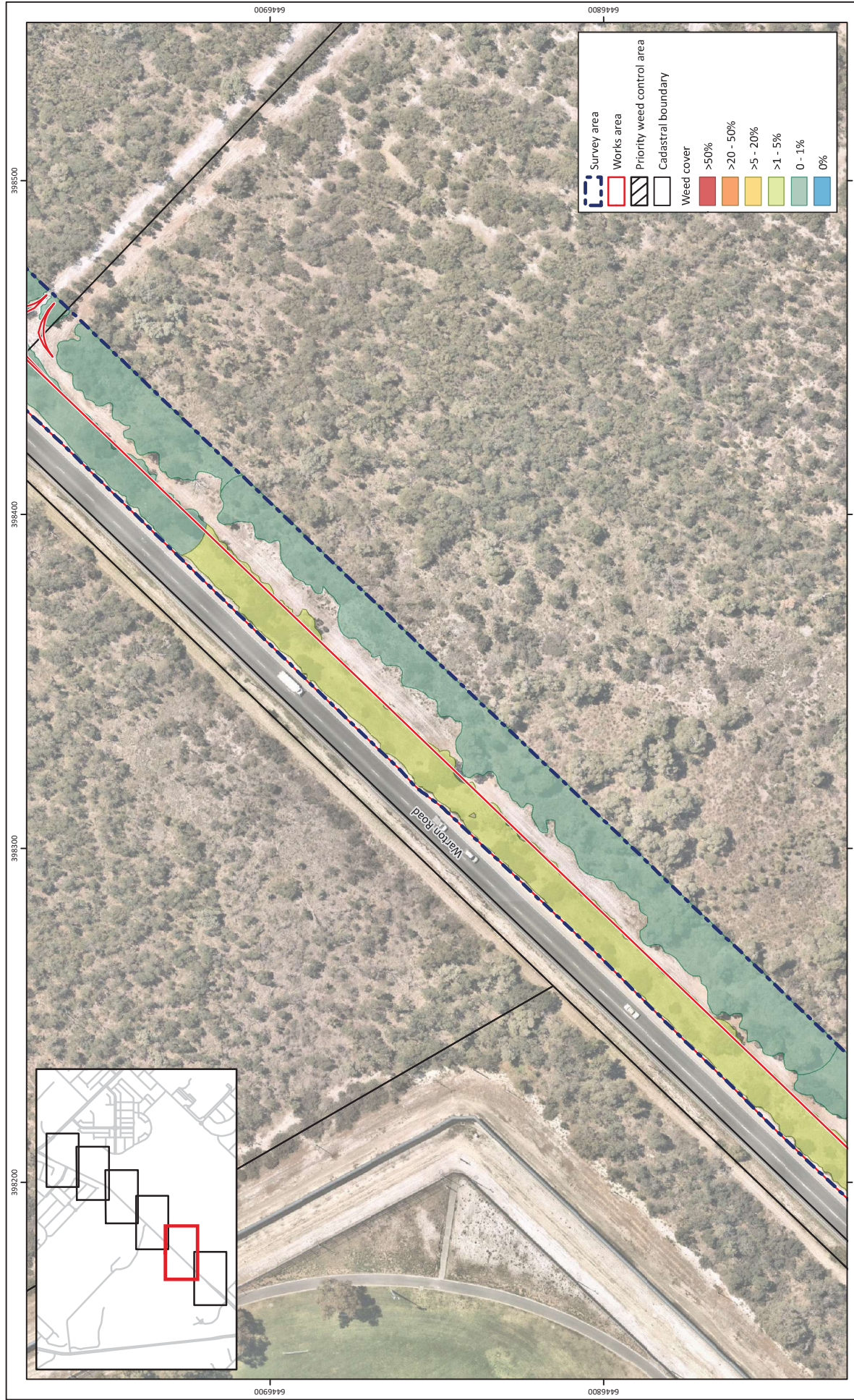
**Figure 10: Weed Suite 4 - Bulbous Weeds - Map 1 of 6**

**Project:** Flora and Vegetation Survey and Monitoring Report  
Proposed Warton Road Duplication, Canning Vale

**Client:** City of Gosnells

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Scale: 1:1,500@A4  
GDA 1994 MGA Zone 50

0 25 50  
Metres

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**Drawn:** GAR  
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**Date:** 5/02/2021

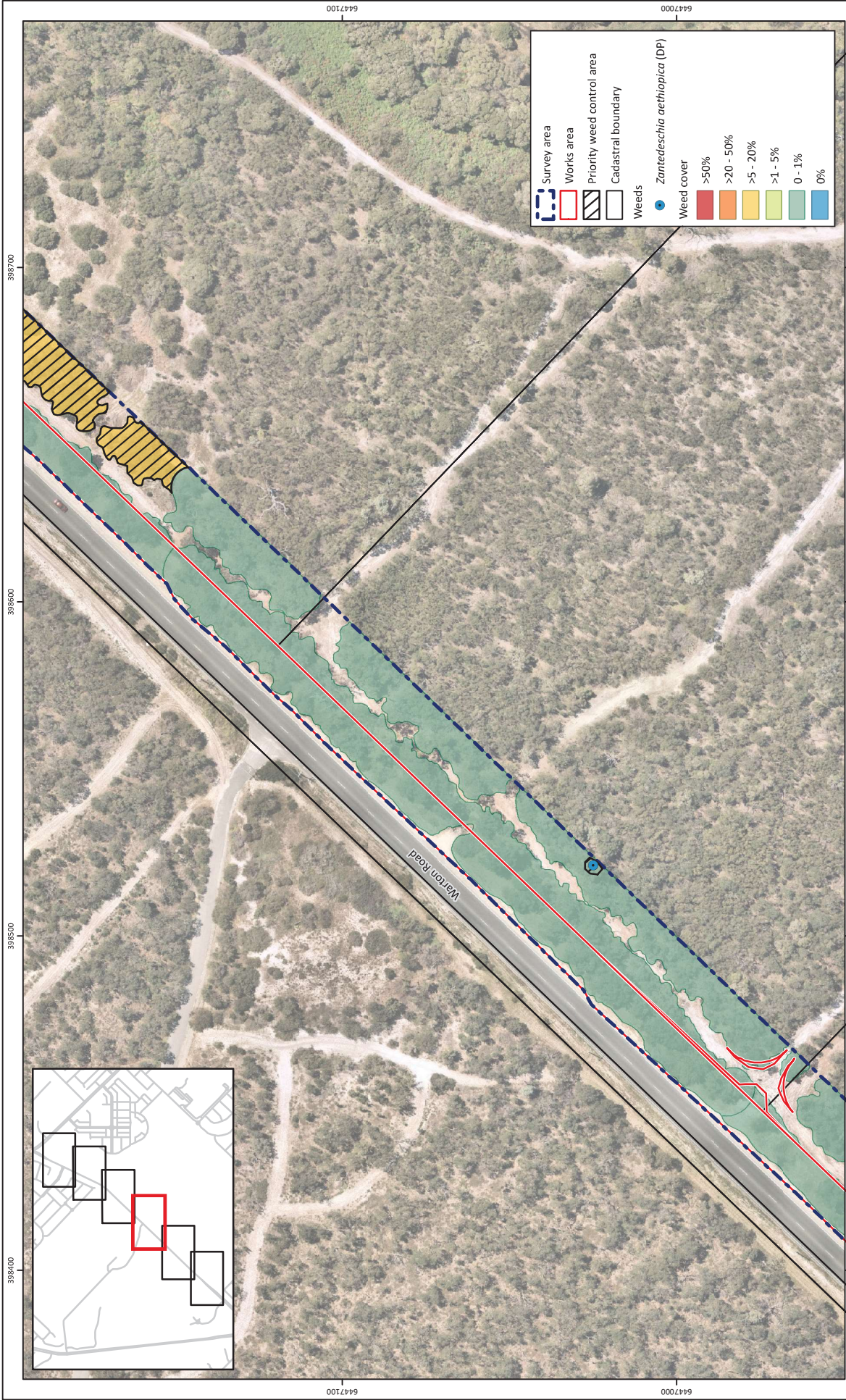
**Project:** Flora and Vegetation Survey and Monitoring Report  
Proposed Warton Road Duplication, Canning Vale

**Client:** City of Gosnells

**Figure 10: Weed Suite 4 - Bulbous Weeds - Map 2 of 6**

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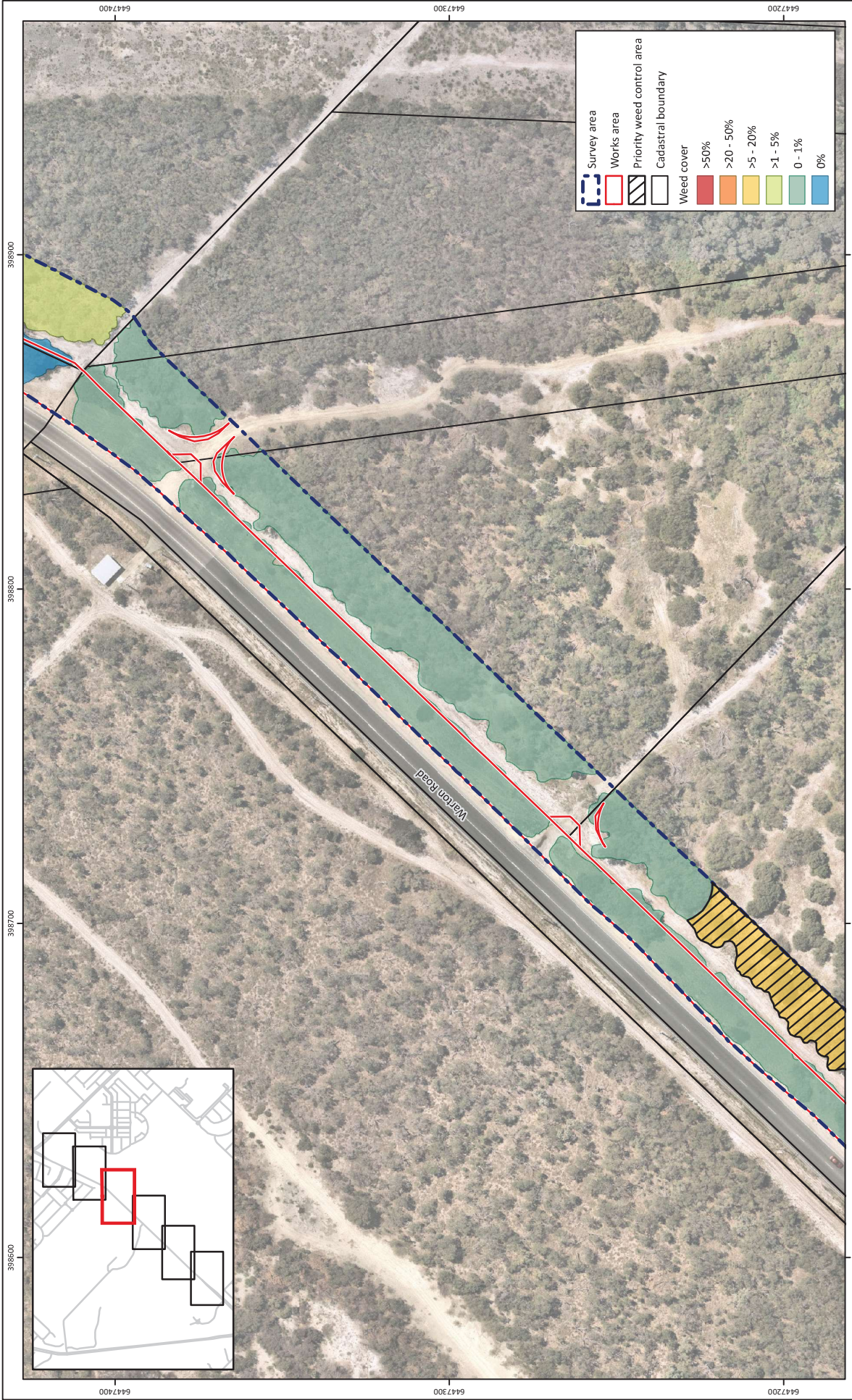
**Figure 10: Weed Suite 4 - Bulbous Weeds - Map 3 of 6**

**Project:** Flora and Vegetation Survey and Monitoring Report  
Proposed Warton Road Duplication, Canning Vale

**Client:** City of Gosnells

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Date: 16/12/2020  
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Date: 5/02/2021

**Figure 10: Weed Suite 4 - Bulbous Weeds - Map 4 of 6**

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**Date:** 16/12/2020  
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**Date:** 5/02/2021

**Project:** Flora and Vegetation Survey and Monitoring Report  
 Proposed Warton Road Duplication, Canning Vale  
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**Figure 10: Weed Suite 4 - Bulbous Weeds - Map 5 of 6**

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Scale: 1:1,500@A4  
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Plan Number: EP20-099(01)-F13  
Drawn: GAR  
Date: 16/12/2020  
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Date: 5/02/2021

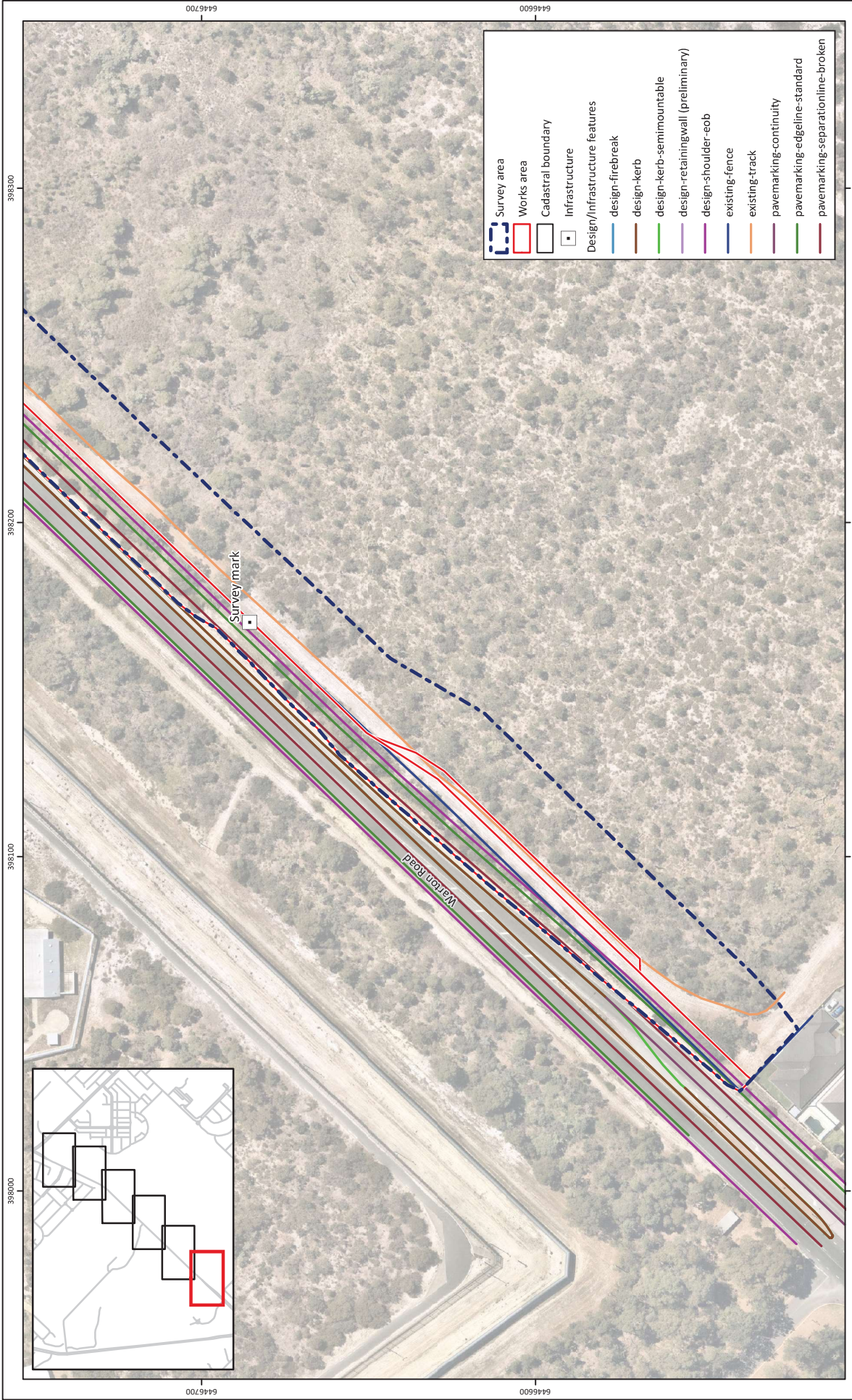
**Figure 10: Weed Suite 4 - Bulbous Weeds - Map 6 of 6**

**Project:** Flora and Vegetation Survey and Monitoring Report  
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**Client:** City of Gosnells

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**Plan Number:** EP20-099(01)-F14

**Drawn:** GAR

**Date:** 16/12/2020

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**Date:** 5/02/2021

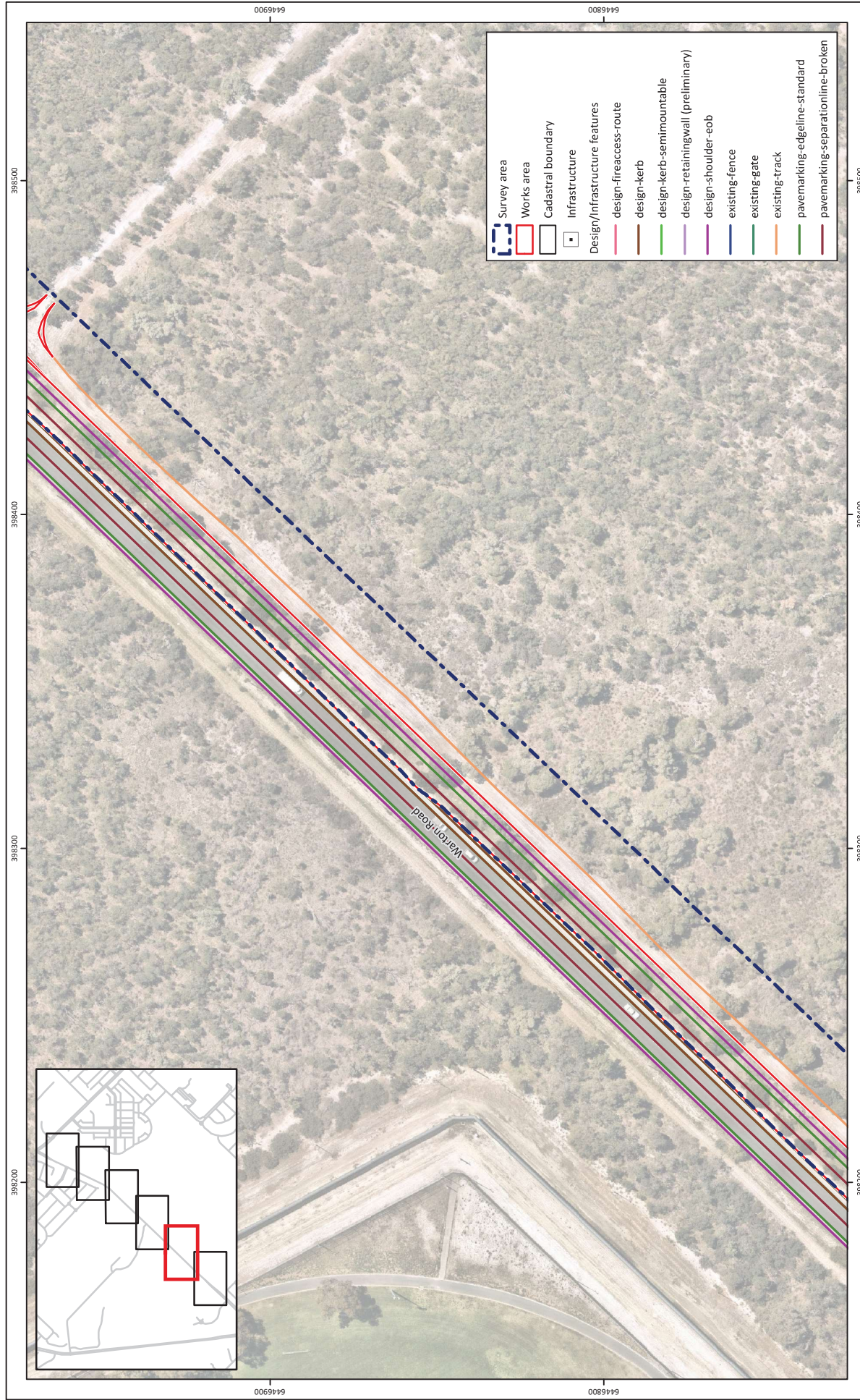
**Figure 11: Infrastructure - Map 1 of 6**

**Project:** Flora and Vegetation Survey and Monitoring Report  
Proposed Warton Road Duplication, Canning Vale

**Client:** City of Gosnells

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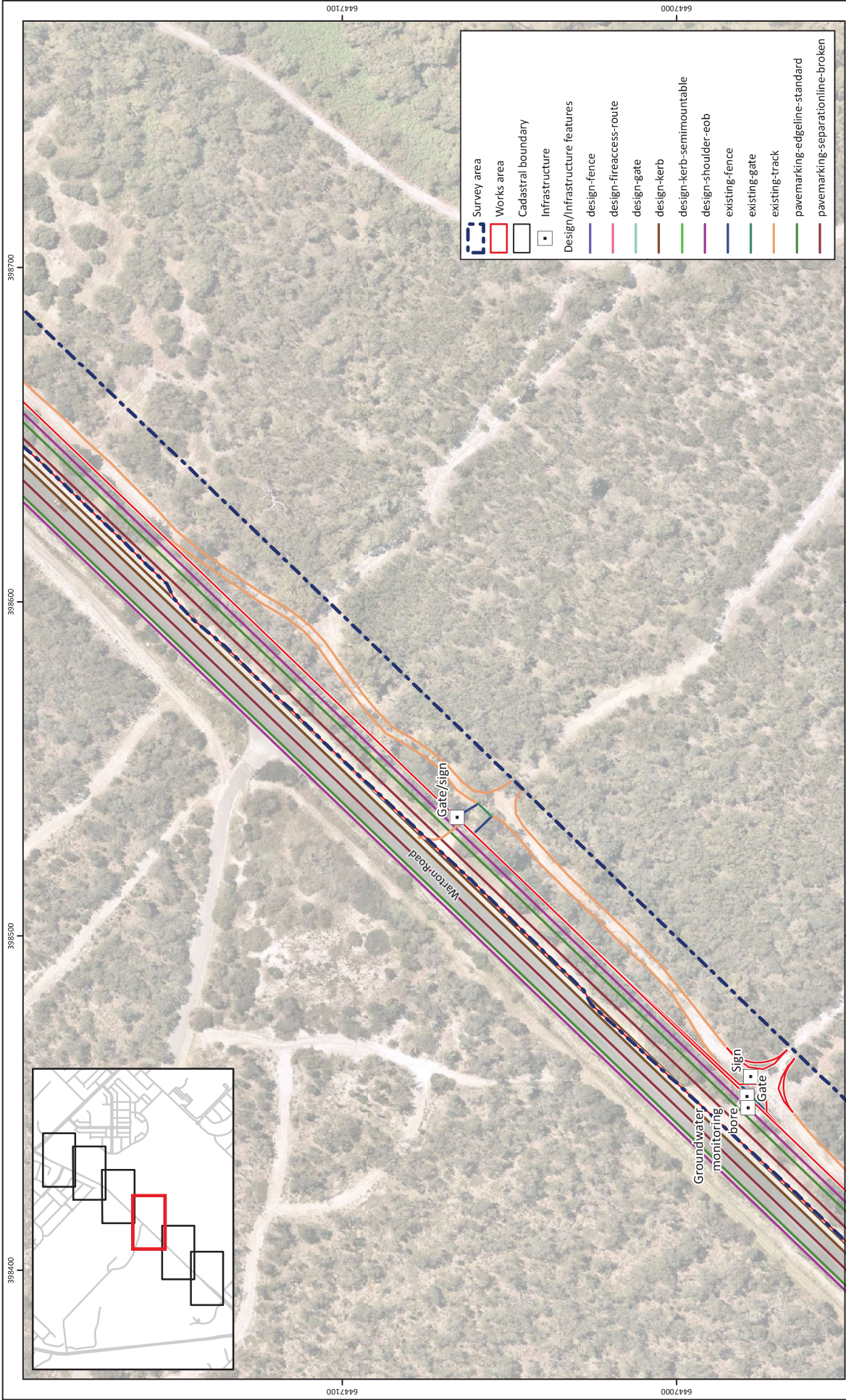
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**Date:** 5/02/2021

**Figure 11: Infrastructure - Map 2 of 6**

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**Plan Number:** EP20-099(01)-F14  
**Drawn:** GAR  
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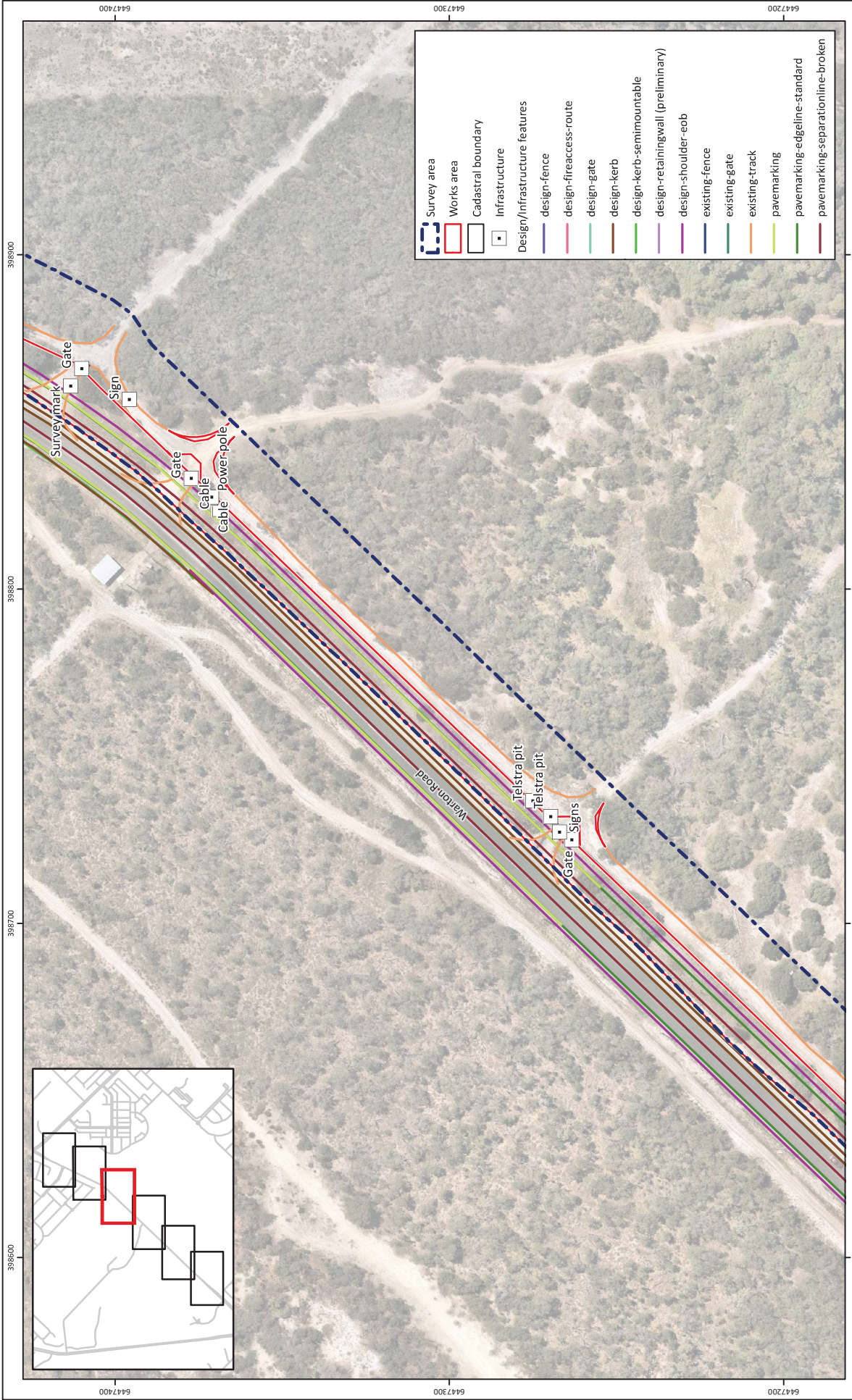
**Figure 11: Infrastructure - Map 3 of 6**

**Project:** Flora and Vegetation Survey and Monitoring Report  
Proposed Warton Road Duplication, Canning Vale

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**Figure 11: Infrastructure - Map 4 of 6**

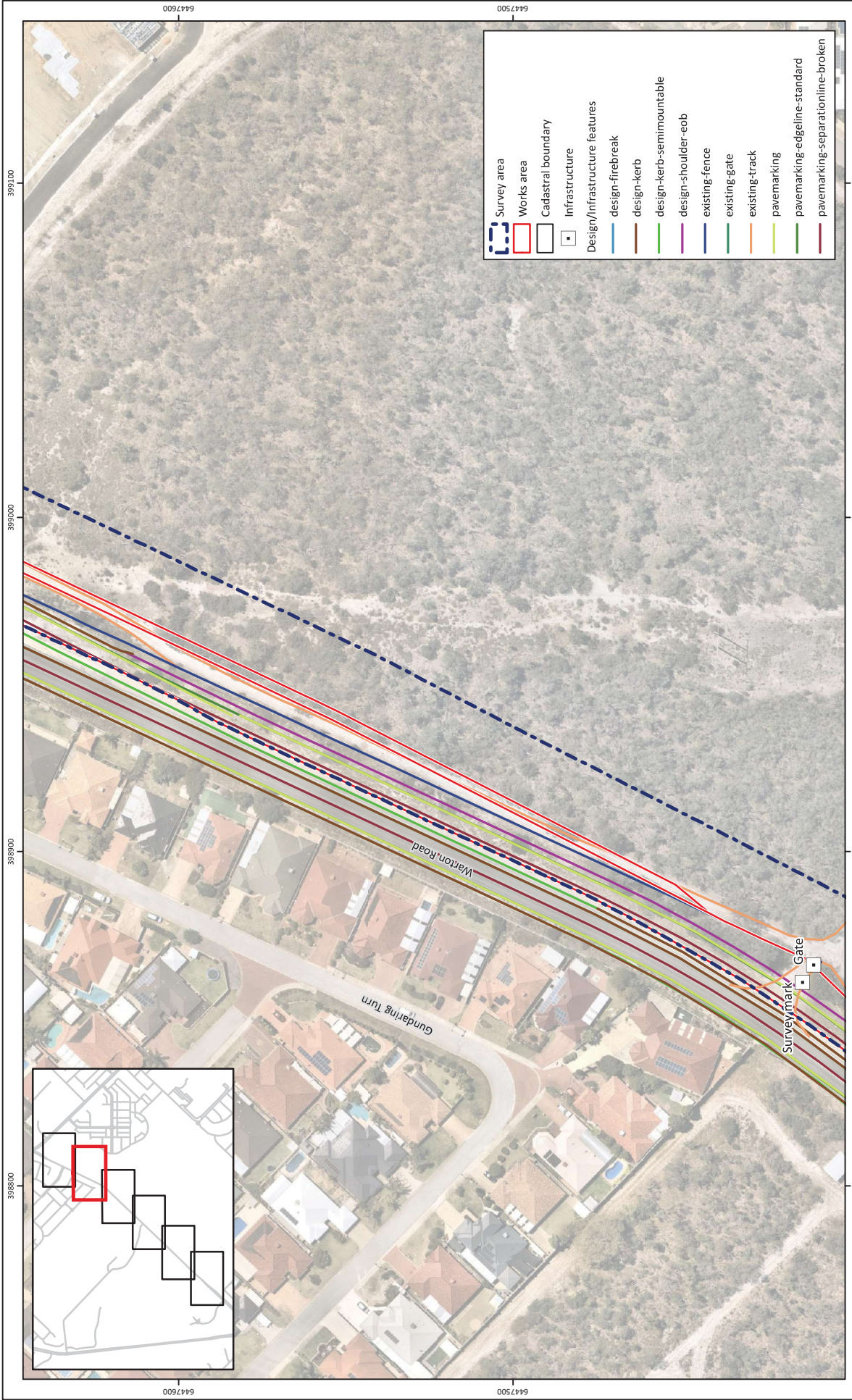
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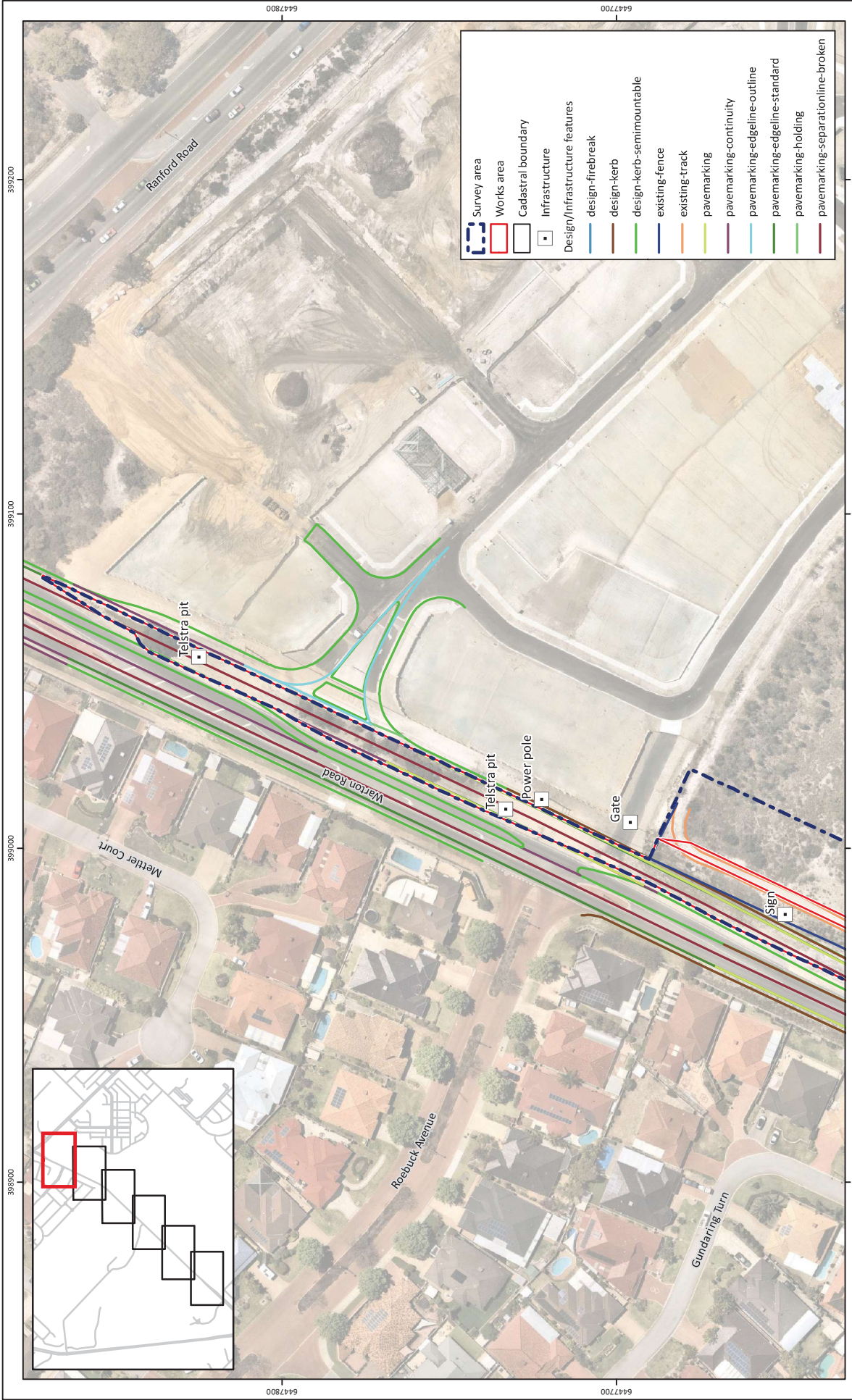
**Figure 11: Infrastructure - Map 5 of 6**

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**Figure 11: Infrastructure - Map 6 of 6**

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**Date:** 16/12/2020  
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**Project:** Flora and Vegetation Survey and Monitoring Report  
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# Appendix A

Additional Information







## Conservation Significant Flora and Vegetation

### Threatened and priority flora

Flora species considered rare or under threat warrant special protection under Commonwealth and/or State legislation. At the Commonwealth level, flora species can be listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Flora species considered ‘threatened’ pursuant to Schedule 1 of the EPBC Act are assigned categories according to their conservation status, as outlined in **Table 1**.

In Western Australia, plant taxa may be classed as ‘threatened’ under the *Biodiversity Conservation Act 2016* (BC Act) which is enforced by Department of Biodiversity Conservation and Attractions (DBCA). Threatened flora species are listed under sections 19(1) and 26(2) of the BC Act. It is an offence to ‘take’ or disturb threatened flora without Ministerial approval. Section 5(1)1 of the Act defines to take as including “... to gather, pluck, cut, pull up, destroy, dig up, remove, harvest or damage flora by any means” or to cause or permit the same to be done. The definition of threatened flora under the BC Act is provided in **Table 1**.

Section 43 of the BC Act requires that an occurrence of a threatened species or threatened ecological community is reported to DBCA where the occurrence has been identified as part of field work completed:

- as part of an assessment under Part IV of the *Environmental Protection Act 1986*; or
- in relation to an application for a clearing permit under the *Environmental Protection Act 1986* section 51E(1)(d).

Penalties apply to individuals and organisations that fail to provide accurate reports of threatened species or communities.

The *Biodiversity Conservation Regulations 2018* (BC Regulations 2018) came into effect on January 1 2019. The BC Regulations include provisions for licencing, charges, penalties and other provisions associated with the BC Act.

Flora species that may be threatened or near threatened but lack sufficient information to be listed under the BC Act may be added to the DBCA’s *Priority Flora List* (DBCA 2018b). Priority flora species are considered during State approval processes. Priority flora categories and definitions are listed in **Table 1**.

*Table 1: Definitions of conservation significant flora species pursuant to the EPBC Act and BC Act and on DBCA's Priority Flora List (DBCA 2018b)*

Conservation code	Description
EX <sup>†</sup>	Threatened Flora – Presumed Extinct Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such.
T <sup>†</sup>	Threatened Flora – Extant Taxa which are declared to be likely to become extinct or is rare, or otherwise in need of special protection.
CR <sup>^</sup>	Threatened Flora – Critically Endangered Taxa which are considered to be facing an extremely high risk of extinction in the wild.
EN <sup>^</sup>	Threatened Flora – Endangered Taxa which are considered to be facing a very high risk of extinction in the wild.
VU <sup>^</sup>	Threatened Flora – Vulnerable Taxa which are considered to be facing a high risk of extinction in the wild.
P1 <sup>□</sup>	Priority One – Poorly Known Taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat e.g. road verges, urban areas, farmland, active mineral leases etc., or the plants are under threat, e.g. from disease, grazing by feral animals etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
P2 <sup>□</sup>	Priority Two – Poorly Known Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but urgently need further survey.
P3 <sup>□</sup>	Priority Three – Poorly Known Taxa which are known from several populations, and the taxa are not believed to be under immediate threat (i.e. not currently endangered), either due to the number of known populations (generally >5), or known populations being large, and either widespread or protected. Such taxa are under consideration for declaration as 'rare flora' but needs further survey.
P4 <sup>□</sup>	Priority Four – Rare Taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5-10 years.

<sup>^</sup>pursuant to the EPBC Act, <sup>†</sup>pursuant to the BC Act, <sup>□</sup>on DBCA's *Priority Flora List*

## Threatened and priority ecological communities

'Threatened ecological communities' (TECs) are recognised as ecological communities that are rare or under threat and therefore warrant special protection. Selected TECs are afforded statutory protection at a Commonwealth level under section 181 of the EPBC Act. TECs nominated for listing under the EPBC Act are considered by the Threatened Species Scientific Committee and a final decision is made by the Commonwealth Minister for the Environment. Once listed under the EPBC Act, communities are categorised as either 'critically endangered', 'endangered' or 'vulnerable' as defined in **Table 2**. Any action likely to have a significant impact on a community listed under the EPBC Act requires approval from the Minister for the Environment.



Within Western Australia TECs are determined by the Western Australian Threatened Ecological Communities Scientific Advisory Committee (WATECSAC) and endorsed by the State Minister for the Environment. The WATECSAC is an independent group comprised of representatives from organisations including tertiary institutions, the Western Australian Museum and DBCA. The TECs endorsed by the State Minister are published by DBCA (DBCA 2018a).

TECs are assigned to one of the categories outlined in **Table 2** according to their status (in relation to the level of threat). TECs are afforded direct statutory protection at a State level under the BC Act and BC Regulations. Ecological communities are listed under Section 27(1) and 33 of the BC Act. Their significance is also acknowledged through other state environmental approval processes such as 'environmental impact assessment' pursuant to Part IV of the *Environmental Protection Act 1986* (EP Act) and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*.

*Table 2: Categories of threatened ecological communities (English and Blyth 1997; DEC 2009)*

Conservation code	Description
PD	Presumably Totally Destroyed An ecological community that has been adequately searched for but for which no representative occurrences have been located.
CE	Critically Endangered An ecological community that has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future.
E	Endangered An ecological community that has been adequately surveyed and is not critically endangered but is facing a very high risk of total destruction in the near future.
V	Vulnerable An ecological community that has been adequately surveyed and is not critically endangered or endangered but is facing a high risk of total destruction or significant modification in the medium to long-term future.

An ecological community that is under consideration for listing as a TEC, but does not yet meet survey criteria or has not been adequately defined may be listed as a 'priority ecological community' (PEC). PECs are categorised as priority category 1, 2 or 3 as described in **Table 3**. 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' (DEC 2013). Listed PECs are published by DBCA (DBCA 2017).

Table 3: Categories of priority ecological communities (DEC 2013)

Priority code	Description
P1	<p>Priority One: Poorly known ecological communities</p> <p>Ecological communities that are known from very few occurrences with a very restricted distribution (generally <math>\leq 5</math> occurrences or a total area of <math>\leq 100</math>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.</p>
P2	<p>Priority Two: Poorly known ecological communities</p> <p>Communities that are known from few occurrences with a restricted distribution (generally <math>\leq 10</math> occurrences or a total area of <math>\leq 200</math>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.</p>
P3	<p>Priority Three: Poorly known ecological communities</p> <p>(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;</p> <p>(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;</p> <p>(iii) communities 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.</p> <p>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.</p>
P4	<p>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.</p> <p>(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.</p> <p>(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.</p> <p>(iii) Ecological communities that have been removed from the list of threatened communities during the past five years.</p>
P5	<p>Priority Five: Conservation Dependent ecological communities</p> <p>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.</p>



## References

### General references

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# Appendix B

Conservation Significant Flora Species and Likelihood of Occurrence







Species name	Level of significance		Life strategy	Habitat	Flowering period	Likelihood of occurrence	Justification
	WA	EPBC Act					
<i>Austrostipa jacobsonia</i>	CR	CR	P	Grey sandy clay.	Nov-Jan	Possible	Grey sandy soils present
<i>Grevillea thelemanniana</i>	CR	CR	P	Sand, sandy clay. Winter-wet low-lying flats.	May-Nov	Possible	Sandy soils, low lying landforms present
<i>Ptilotus pyramidatus</i>	CR	CR	P	Seasonally inundated, flat floodplain on pale grey muddy sand.	Early Oct	Unlikely	Survey area is not seasonally inundated
<i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696)	CR	CR	P	Low woodland on grey, clayey sand with lateritic pebbles (Pinjarra Plain) near winter wet flats.	Sep-Nov	Unlikely	Lateritic gravel is not present
<i>Synaphea</i> sp. Serpentine (G.R. Brand 103)	CR	CR	P	Seasonally damp areas, loam - sand.	Sep-Oct	Possible	Habitat requirements are met
<i>Caladenia huegelii</i>	CR	E	PG	Well-drained, deep sandy soils in lush undergrowth in a variety of moisture levels.	Sep-early Nov	Possible	Habitat requirements are met
<i>Calytrix breviseta</i> subsp. <i>breviseta</i>	CR	E	P	Seasonally wet sandy-clay soil on swampy flats	Oct-Nov	Possible	Habitat requirements are met
<i>Drakaea elastica</i>	CR	E	PG	Bare patches of sand within otherwise dense vegetation in low-lying areas alongside winter-wet swamps.	late Sep- Oct/Nov, survey Jul-Aug	Possible	Habitat requirements are met
<i>Eucalyptus x balanites</i>	CR	E	P	Light coloured sandy soils over laterite. Habitat consists of gently sloping heathlands; open mallee woodland over shrubland (Population 2) or heathland with emergent mallees (population 1)	Oct - Feb	Unlikely	Lateritic gravel is not present
<i>Thelymitra dedmaniarum</i>	CR	E	PG	Red brown sandy loam with dolerite and granite outcrops.	Oct-Nov	Unlikely	Sandy loam with dolerite and granite outcrops is not present

Species name	Level of significance		Life strategy	Habitat	Flowering period	Likelihood of occurrence	Justification
	WA	EPBC Act					
<i>Diuris purdiei</i>	EN	E	PG	Sand to sandy clay soils in areas subject to winter inundation.	Late September to mid-October, but only after a summer or early autumn fire (Brown et al., 1998)	Possible	Habitat requirements are met
<i>Grevillea curviloba subsp. incurva</i>	EN	E	P	Sand, sandy loam. Winter-wet heath.	Aug-Sep	Possible	Habitat requirements are met
<i>Lepidosperma rostratum</i>	EN	E	P	Peaty sand and clay amongst low heath, in winter-wet swamps.	May-Jun (survey late Jun-Aug)	Unlikely	Habitat requirements are not met
<i>Macarthuria keigheryi</i>	EN	E	P	Low-lying winter-wet damp grey/white sands in open patches.	Sep-Dec or Feb-Mar	Possible	Habitat requirements are met
<i>Thelymitra stellata</i>	EN	E	PG	Sandy loam, clay or gravel over laterite or gravel.	Sep-Nov	Unlikely	Clay, gravel or laterite absent from the site
<i>Andersonia gracilis</i>	VU	E	P	Seasonally damp, black sandy clay flats near or on the margins of swamps.	Sep-Nov	Unlikely	Black sandy clay absent from the site
<i>Banksia mimica</i>	VU	E	P	Flat to gentle slopes in grey and white sand in open woodlands.	Dec-Jan	Possible	Habitat requirements present within the site
<i>Austrostipa bronwenae</i>	EN	E	P	Grey-brown sandy loam soil in low lying winter wet areas.	Sep-Nov	Possible	Habitat requirements are met
<i>Eremophila glabra subsp. chlorella</i>	EN	E	P	Sandy clay. Winter-wet depressions.	Jul-Nov	Unlikely	Clay soils absent from the site



Species name	Level of significance		Life strategy	Habitat	Flowering period	Likelihood of occurrence	Justification
	WA	EPBC Act					
<i>Goodenia arthrotricha</i>	EN	E	P	Granite rocks, slopes	Oct-Nov	Unlikely	Granite rocks absent from the site
<i>Drakaea micrantha</i>	EN	V	PG	Open sandy patches often adjacent to winter-wet swamps.	Sept- early Oct	Possible	Habitat requirements are met
<i>Conospermum undulatum</i>	VU	V	P	Sand and sandy clay soils, on flat or gently sloping sites between the Swan and Canning Rivers	May-Oct	Unlikely	Site is not located between Swan and Canning Rivers
<i>Diuris drummondii</i>	VU	V	PG	In low-lying depressions in peaty and sandy clay swamps.	Nov-Jan	Unlikely	Peaty and clay soils absent from the site
<i>Diuris micrantha</i>	VU	V	PG	Dark grey-black sandy clay-loam in winter wet depressions or swamps. Often in shallow standing water.	Aug/Sep- early Oct	Unlikely	Grey-black clay loam and standing water absent from the site
<i>Eleocharis keigheryi</i>	VU	V	P	Clay or sandy loam in freshwater creeks and transient waterbodies such as seasonally wet clay pans.	Aug-Dec	Unlikely	Freshwater creeks and transient waterbodies absent from the site
<i>Acacia lasiocarpa</i> var. <i>bracteolata</i> long peduncle variant (G.J. Keighery 5026)	P1	-	P	Grey or black sand over clay in winter wet areas.	May-Aug	Possible	Habitat requirements are met
<i>Bolboschoenus fluviatilis</i>	P1	-	P	Floodplain with grey/brown wet sand.	Nov	Possible	Habitat requirements are met
<i>Calytrix simplex</i> subsp. <i>simplex</i>	P1	-	P	Swamps to well drained lateritic gravel slopes and flats.	(Dec-) Jan	Unlikely	Lateritic gravel absent from the site
<i>Hydrocotyle striata</i>	P1	-	A	Sand and clay in springs and creeklines.	Nov	Unlikely	Springs and creeklines absent from the site
<i>Levenhookia preissii</i>	P1	-	A	Grey or black, peaty sand. Swamps	Sep-Dec/Jan	Possible	Habitat requirements are met

Species name	Level of significance		Life strategy	Habitat	Flowering period	Likelihood of occurrence	Justification
	WA	EPBC Act					
<i>Ptilotus sericostachyus</i> subsp. <i>roseus</i>	P1	-	P	Unknown. Seem to be associated with wetlands/rivers.	Sep-Dec	Unlikely	Rivers absent
<i>Schoenus</i> sp. <i>Beaufort</i> (G.J. Keighery 6291)	P1	-	A	Mud in winter-wet clay pans.	Sep-Oct	Unlikely	Clay pans absent
<i>Acacia benthamii</i>	P2	-	P	Sand, typically on limestone breakaways	Aug - Sept	Unlikely	Limestone absent
<i>Andersonia</i> sp.							
<i>Blepharifolia</i> (F. & J. Hort 1919)	P2	-	P	Sandy clay with gravel.	Sep-Nov	Unlikely	Gravel absent
<i>Calcectasia grandiflora</i>	P2	-	P	White, grey or yellow sand.	Jun-Nov	Possible	Habitat requirements are met
<i>Comesperma griffinii</i>	P2	-	A/P	Yellow or grey sand on plains.	Oct	Possible	Habitat requirements are met
<i>Comesperma rhadinocarpum</i>	P2	-	P	Sandy soils.	Oct-Nov	Possible	Habitat requirements are met
<i>Diuris brevis</i>	P2	-	P	Black peaty soil.	Unknown	Unlikely	Black peaty soil absent
<i>Johnsonia pubescens</i> subsp. <i>cygnorum</i>	P2	-	P	Grey white yellow sands on flats and seasonally wet areas.	Sep	Possible	Habitat requirements are met
<i>Lepyrodia curvescens</i>	P2	-	P	Sand, laterite. Seasonally inundated swampland.	Sep-Nov	Possible	Habitat requirements are met
<i>Poranthera moorokatta</i>	P2	-	A	Sandy or clay soils. Dampland or low sandy dunes.	Oct or Feb	Possible	Habitat requirements are met
<i>Schoenus loliaceus</i>	P2	-	A	Sandy soils in winter-wet depressions.	Aug-Nov	Possible	Habitat requirements are met
<i>Stenanthemum sublineare</i>	P2	-	P	White sand on coastal plains.	Oct-Dec	Possible	Habitat requirements are met
<i>Thelymitra variegata</i>	P2	-	P	Sandy clay, sand, laterite.	Jun-Sep	Possible	Habitat requirements are met



Species name	Level of significance		Life strategy	Habitat	Flowering period	Likelihood of occurrence	Justification
	WA	EPBC Act					
Thysanotus sp. Badgingarra (E.A. Griffin 2511)	P2	-	P	Grey sand with lateritic gravel.	Dec	Unlikely	Lateritic gravel absent
Acacia horridula	P3	-	P	Gravelly soils over granite, sand, rocky hillsides.	May-Aug	Unlikely	Gravelly soils over granite absent
Angianthus micropodioides	P3	-	A	Saline sandy soils on edge of rivers, depressions and clay pans.	Nov-Dec or Jan	Unlikely	saline soils, rivers and clay pans absent
Asteridea gracilis	P3	-	A	Sand, clay, gravelly soils.	Sep-Dec	Possible	Habitat requirements are met
Babingtonia urbana	P3	-	P	Grey sand, lateritic gravel.	Jan-Mar	Possible	Habitat requirements are met
Beaufortia purpurea	P3	-	P	Lateritic or granitic soils on rocky slopes.	Oct-Feb	Unlikely	Lateritic or granitic soils absent
Byblis gigantea	P3	-	P	Sandy-peat swamps. Seasonally wet areas.	Sep-Jan	Possible	Habitat requirements are met
Carex tereticaulis	P3	-	P	Black peaty sand.	Sep-Oct	Unlikely	Black peaty soil absent
Chamaescilla gibsonii	P3	-	P	Clay to sandy clay in winter-wet flats, shallow water-filled claypans.	Sep	Unlikely	Clay soils absent
Cyathochaeta teretifolia	P3	-	P	Grey sand, sandy clay in swamps and creek edges.	Oct-Jan	Possible	Habitat requirements are met
Dampiera triloba	P3	-	P	Damp peat/loam soil.	Aug-Dec	Unlikely	Peat loam soil absent
Eryngium pinnatifidum subsp. Palustre (G.J. Keighery 13459)	P3	-	P	Grey brown sand or clay in winter wet flats.	Sep-Nov	Possible	Habitat requirements are met
Eryngium sp. Subdecumbens (G.J. Keighery 5390)	P3	-	A	Clay in seasonal wetlands.	Sep-Nov	Unlikely	Clay soils absent

Species name	Level of significance		Life strategy	Habitat	Flowering period	Likelihood of occurrence	Justification
	WA	EPBC Act					
<i>Haemodorum loratum</i>	P3	-	P	Grey or yellow sand, gravel.	Nov	Possible	Habitat requirements are met
<i>Halgania corymbosa</i>	P3	-	P	Gravelly soils, soils over granite.	Aug-Nov	Unlikely	Gravelly soils over granite absent
<i>Isotropis cuneifolia</i> subsp. <i>glabra</i>	P3	-	P	Sand, clay loam in winter-wet flats.	Sep	Possible	Habitat requirements are met
<i>Jacksonia gracillima</i>	P3	-	P	Sand, often adjacent to winter wet areas	Sep-Dec	Possible	Habitat requirements are met
<i>Lasiopetalum glutinosum</i> subsp. <i>glutinosum</i>	P3	-	P	Brown clay loam on slopes	Sep-Dec	Unlikely	Clay loam soils absent
<i>Meionectes tenuifolia</i>	P3	-	P	Clay loam in seasonally wet areas.	Oct-Dec	Unlikely	Clay loam soils absent
<i>Myriophyllum echinatum</i>	P3	-	A	Clay in winter-wet flats.	Nov	Unlikely	Clay soils absent
<i>Phlebocarya pilosissima</i> subsp. <i>pilosissima</i>	P3	-	P	White or grey sand, lateritic gravel.	Aug-Oct	Possible	Habitat requirements are met
<i>Schoenus benthamii</i>	P3	-	P	White, grey ands, sandy clay in winter wet flats and swamps	Oct-Nov	Possible	Habitat requirements are met
<i>Schoenus capillifolius</i>	P3	-	A	Brown mud in claypans	Oct-Nov	Unlikely	Claypans absent
<i>Schoenus pennisetis</i>	P3	-	A	Grey or peaty sand in swamps and winter-wet depressions.	Aug-Sep	Possible	Habitat requirements are met
<i>Stylidium aceratum</i>	P3	-	A	Sandy soils in swamp heathland.	Oct-Nov	Possible	Habitat requirements are met
<i>Stylidium paludicola</i>	P3	-	P	Peaty sand over clay. Winter wet habitats. Marri and Melaleuca woodland, Melaleuca shrubland	Oct-Dec	Possible	Habitat requirements are met
<i>Stylidium perisclanthum</i>	P3	-	P	Loamy clay, moist soils pockets on wet flats and low granitic hills.	Sep-Oct	Unlikely	Clay loam soils, granite absent



Species name	Level of significance		Life strategy	Habitat	Flowering period	Likelihood of occurrence	Justification
	WA	EPBC Act					
<i>Styphelia filifolia</i>	P3	-	P	Brown over pale yellow sand.	Feb-Apr	Possible	Habitat requirements are met
<i>Thysanotus anceps</i>	P3	-	P	White or grey sand, lateritic gravel, laterite.	Oct-Dec	Possible	Habitat requirements are met
<i>Acacia oncinophylla</i> subsp. <i>patulifolia</i>	P4	-	P	Granitic soils, occasionally on laterite.	Aug-Nov/Nov-D	Unlikely	Granite and laterite absent
<i>Aponogeton hexatelpalus</i>	P4	-	P	Mud. Freshwater: ponds, rivers, claypans.	Jul-Oct	Unlikely	Mud absent
<i>Boronia tenuis</i>	P4	-	P	Laterite, stony soils, granite.	Aug-Nov	Unlikely	Granite and laterite absent
<i>Dodonaea hackettiana</i>	P4	-	P	Sand, outcropping limestone.	Jul-Oct	Unlikely	Limestone absent
<i>Drosera occidentalis</i>	P4	-	P	Flat, brown/white/yellow moist sand/clay/peat, often near swamps.	Oct-Dec/Jan	Possible	Habitat requirements are met
<i>Hydrocotyle lemnoides</i>	P4	-	A	Floating in swamps.	Aug-Oct	Unlikely	Standing water absent
<i>Jacksonia sericea</i>	P4	-	P	Calcareous and sandy soils on Swan Coastal Plain	Dec-Feb	Unlikely	Calcareous soils absent
<i>Kennedia beckxiana</i>	P4	-	P	Sand or loam on granite hills and outcrops.	Sep-Dec	Unlikely	Granite hills and outcrops absent
<i>Microtis quadrata</i>	P4	-	PG	Sand, loam or peat in winter wet areas	Oct-Dec	Possible	Habitat requirements are met
<i>Ornduffia submersa</i>	P4	-	A	wetland/creek.	Aug-Nov	Unlikely	Inundation absent
<i>Schoenus natans</i>	P4	-	A	Aquatic, in winter-wet depressions.	Oct	Unlikely	Aquatic habitats absent
<i>Stylidium longitubum</i>	P4	-	A	Sandy clay, clay. Seasonal wetlands.	Oct-Dec	Possible	Habitat requirements are met
<i>Thysanotus glaucus</i>	P4	-	P	White, grey or yellow sand, sandy gravel.	Oct-Mar	Possible	Habitat requirements are met

Species name	Level of significance		Life strategy	Habitat	Flowering period	Likelihood of occurrence	Justification
	WA	EPBC Act					
Tripterococcus sp. Brachylobus (A.S. George 14234)	P4	-	P	Winter-wet areas on grey sand.	Oct-Feb	Possible	Habitat requirements are met
Verticordia lindleyi subsp. Lindleyi	P4	-	P	Sand and sandy clay in winter wet areas.	May or Nov-Jan	Possible	Habitat requirements are met



# Appendix C

Conservation Significant Communities and Likelihood of  
Occurrence Assessment







Code	Community name	TEC/PEC	Level of significance	
			State	EPBC Act
	Banksia woodlands of the Swan Coastal Plain	TEC	-	EN
Banksia WL SCP	Banksia Woodlands of the Swan Coastal Plain IBRA Region	PEC	P3	-
SCP21c	Low lying <i>Banksia attenuata</i> woodlands or shrublands	PEC	P3	-
SCP22	<i>Banksia ilicifolia</i> woodlands	PEC	P3	-
Claypans with shrubs over herbs	Claypans with mid dense shrublands of <i>Melaleuca lateritia</i> over herbs	PEC	P1	
	Claypans of the Swan Coastal Plain	TEC		CR
SCP08	Herb rich shrublands in clay pans	TEC	VU	CR
SCP10a	Shrublands on dry clay flats	TEC	EN	CR
Tuart Woodlands	Tuart ( <i>Eucalyptus gomphocephala</i> ) Woodlands and Forests of the Swan Coastal Plain ecological community	TEC		CR
Muchea Limestone	Shrublands and woodlands on Muchea Limestone of the Swan Coastal Plain	TEC	EN	EN
Note: TEC=threatened ecological community, PEC=priority ecological community, CR=critically EN, EN=EN, VU=vulnerable, P3=priority 3, P1=priority 1				





# Appendix D

Species List







## Flora Species List - Proposed Warton Road Duplication, Canning Vale

Note: \* denotes introduced weed species, DP denotes Declared Pests, Pl = planted.

Family	Status	Species
<b>Anarthriaceae</b>		<i>Lyginia barbata</i> <i>Lyginia imberbis</i>
<b>Apiaceae</b>		<i>Platysace filiformis</i>
<b>Araceae</b>	*, DP	<i>Zantedeschia aethiopica</i>
<b>Araliaceae</b>		<i>Trachymene pilosa</i>
<b>Asparagaceae</b>		<i>Laxmannia ramosa</i> subsp. <i>ramosa</i> <i>Laxmannia squarrosa</i> <i>Lomandra caespitosa</i> <i>Lomandra hermaphrodita</i> <i>Lomandra micrantha</i> <i>Lomandra nigricans</i> <i>Lomandra preissii</i> <i>Lomandra sonderi</i> <i>Lomandra</i> sp. <i>Thysanotus manglesianus</i> <i>Thysanotus thyrsoides</i> <i>Thysanotus triandrus</i>
<b>Asphodelaceae</b>	*	<i>Asphodelus fistulosus</i>
<b>Asteraceae</b>	*	<i>Arctotheca calendula</i> <i>Asteridea pulverulenta</i>
	*	<i>Gazania linearis</i> <i>Hyalosperma cotula</i>
	*	<i>Hypochaeris glabra</i>
	*	<i>Hypochaeris radicata</i>
	*	<i>Leontodon rhagadioloides</i> <i>Podotheca angustifolia</i> <i>Podotheca gnaphalioides</i> <i>Rhodanthe citrina</i>
	*	<i>Senecio</i> sp. <i>Siloxerus filifolius</i>
	*	<i>Sonchus oleraceus</i>
	*	<i>Ursinia anthemoides</i>

## Flora Species List - Proposed Warton Road Duplication, Canning Vale

Note: \* denotes introduced weed species, DP denotes Declared Pests, Pl = planted.

Family	Status	Species
<b>Brassicaceae</b>	*	<i>Brassica tournefortii</i>
<b>Campanulaceae</b>	*	<i>Wahlenbergia capensis</i> <i>Wahlenbergia preissii</i>
<b>Casuarinaceae</b>		<i>Allocasuarina fraseriana</i> <i>Allocasuarina huegeliana</i>
<b>Centrolepidaceae</b>		<i>Centrolepis drummondiana</i>
<b>Colchicaceae</b>		<i>Burchardia congesta</i>
<b>Crassulaceae</b>	*	<i>Crassula colorata</i> <i>Crassula glomerata</i>
<b>Cyperaceae</b>		<i>Chaetospora curvifolia</i> Cyperaceae sp. <i>Isolepis marginata</i> <i>Lepidosperma ?calicicola</i> <i>Lepidosperma longitudinale</i> <i>Lepidosperma pubisquameum</i> <i>Schoenus efolius</i> <i>Schoenus subfascicularis</i> <i>Schoenus unispiculatus</i> <i>Schoenus sp.</i>
<b>Dasypogonaceae</b>		<i>Dasypogon bromeliifolius</i>
<b>Dilleniaceae</b>		<i>Hibbertia hypericoides</i> <i>Hibbertia racemosa</i> <i>Hibbertia stellaris</i> <i>Hibbertia subvaginata</i>
<b>Droseraceae</b>		<i>Drosera erythrorhiza</i> <i>Drosera pallida</i>
<b>Elaeocarpaceae</b>		



## Flora Species List - Proposed Warton Road Duplication, Canning Vale

Note: \* denotes introduced weed species, DP denotes Declared Pests, PI = planted.

Family	Status	Species
		<i>Platytheca galioides</i>
<b>Ericaceae</b>		<i>Conostephium pendulum</i> <i>Leucopogon polymorphus</i> <i>Leucopogon squarrosus subsp. squarrosus</i> <i>Styphelia conostephioides</i> <i>Styphelia xerophylla</i>
<b>Euphorbiaceae</b>	*	<i>Euphorbia terracina</i>
<b>Fabaceae</b>	*	<i>Acacia huegelii</i> <i>Acacia longifolia</i> <i>Acacia pulchella var. glaberrima</i> <i>Acacia saligna</i> <i>Acacia stenoptera</i> <i>Aotus procumbens</i> <i>Bossiaea eriocarpa</i> <i>Euchilopsis linearis</i> <i>Gastrolobium capitatum</i> <i>Gompholobium tomentosum</i> <i>Hovea trisperma</i> <i>Jacksonia furcellata</i> <i>Lotus subbiflorus</i> <i>Lupinus cosentinii</i> <i>Medicago polymorpha</i> <i>Trifolium campestre</i> <i>Trifolium arvense</i>
<b>Geraniaceae</b>	*	<i>Erodium botrys</i>
	*	<i>Pelargonium capitatum</i>
<b>Goodeniaceae</b>		<i>Dampiera linearis</i> <i>Lechenaultia floribunda</i>
<b>Haemodoraceae</b>		<i>Anigozanthos humilis</i> <i>Anigozanthos manglesii</i> <i>Conostylis aculeata subsp. aculeata</i> <i>Conostylis juncea</i> <i>Haemodorum spicatum</i> <i>Phlebocarya ciliata</i> <i>Phlebocarya filifolia</i>

## Flora Species List - Proposed Warton Road Duplication, Canning Vale

Note: \* denotes introduced weed species, DP denotes Declared Pests, PI = planted.

Family	Status	Species
<b>Haloragaceae</b>		<i>Gonocarpus cordiger</i>
<b>Hemerocallidaceae</b>		<i>Arnocrinum preissii</i> <i>Caesia occidentalis</i> <i>Corynotheca micrantha</i> <i>Dianella revoluta</i> <i>Hensmania turbinata</i> <i>Tricoryne elatior</i>
<b>Iridaceae</b>	*	<i>Freesia alba</i> × <i>leichtlinii</i>
	*	<i>Gladiolus angustus</i>
	*	<i>Gladiolus caryophyllaceus</i>
	*	<i>Ixia maculata</i>
	*	<i>Moraea setifolia</i>
		<i>Patersonia occidentalis</i>
	*	<i>Romulea rosea</i>
<b>Lamiaceae</b>		<i>Hemiandra pungens</i>
<b>Lauraceae</b>		<i>Cassytha flava</i>
<b>Loganiaceae</b>		<i>Phyllangium paradoxum</i>
<b>Loranthaceae</b>		<i>Nuytsia floribunda</i>
<b>Myrtaceae</b>		<i>Astartea scoparia</i> <i>Calytrix ?flavescens</i> <i>Calytrix fraseri</i>
	*	<i>Chamelaucium uncinatum</i> <i>Corymbia calophylla</i> <i>Eremaea asterocarpa</i> subsp. <i>asterocarpa</i> <i>Eremaea pauciflora</i> <i>Eucalyptus marginata</i> <i>Eucalyptus todtiana</i> <i>Hypocalymma angustifolium</i> <i>Kunzea glabrescens</i>
	PI	<i>Melaleuca lanceolata</i> <i>Melaleuca preissiana</i>



## Flora Species List - Proposed Warton Road Duplication, Canning Vale

Note: \* denotes introduced weed species, DP denotes Declared Pests, PI = planted.

Family	Status	Species
		<i>Melaleuca seriata</i>
		<i>Melaleuca thymoides</i>
		<i>Melaleuca trichophylla</i>
		<i>Pericalymma ellipticum</i>
		<i>Regelia inops</i>
		<i>Scholtzia involucrata</i>
<b>Orchidaceae</b>		<i>Caladenia flava</i> subsp. <i>flava</i>
		<i>Caladenia longicauda</i> subsp. <i>calcigena</i>
		<i>Caladenia paludosa</i>
	*	<i>Disa bracteata</i>
		<i>Diuris corymbosa</i>
		<i>Microtis media</i>
		<i>Prasophyllum parvifolium</i>
		<i>Pterostylis sanguinea</i>
		<i>Thelymitra crinita</i>
<b>Oxalidaceae</b>	*	<i>Oxalis pes-caprae</i>
<b>Papaveraceae</b>	*	<i>Fumaria capreolata</i>
<b>Phyllanthaceae</b>		<i>Poranthera microphylla</i>
<b>Poaceae</b>		<i>Amphipogon turbinatus</i>
		<i>Austrostipa compressa</i>
	*	<i>Avena barbata</i>
	*	<i>Briza maxima</i>
	*	<i>Bromus diandrus</i>
	*	<i>Cenchrus setaceus</i>
	*	<i>Ehrharta calycina</i>
	*	<i>Ehrharta longiflora</i>
	*	<i>Eragrostis curvula</i>
	*	<i>Lagurus ovatus</i>
	*	<i>Pentameris airoides</i> subsp. <i>airoides</i>
	*	<i>Vulpia bromoides</i>
<b>Polygalaceae</b>		<i>Comesperma calymega</i>
<b>Primulaceae</b>	*	<i>Lysimachia arvensis</i>

## Flora Species List - Proposed Warton Road Duplication, Canning Vale

Note: \* denotes introduced weed species, DP denotes Declared Pests, Pl = planted.

Family	Status	Species
<b>Proteaceae</b>		<i>Adenanthos cygnorum</i> <i>Adenanthos obovatus</i> <i>Banksia attenuata</i> <i>Banksia ilicifolia</i> <i>Banksia menziesii</i> <i>Petrophile linearis</i> <i>Stirlingia latifolia</i>
<b>Restionaceae</b>		<i>Alexgeorgea nitens</i> <i>Desmocladius flexuosus</i> <i>Hypolaena exsulca</i>
<b>Rutaceae</b>		<i>Cyanothamnus ramosus subsp. anethifolius</i> <i>Philotheca spicata</i>
<b>Santalaceae</b>		<i>Leptomeria cunninghamii</i>
<b>Solanaceae</b>	*	<i>Solanum nigrum</i>
<b>Stylidiaceae</b>		<i>Levenhookia stipitata</i> <i>Stylidium brunonianum</i> <i>Stylidium piliferum</i> <i>Stylidium repens</i>
<b>Xanthorrhoeaceae</b>		<i>Chamaescilla corymbosa</i> <i>Xanthorrhoea brunonis</i> <i>Xanthorrhoea preissii</i>
<b>Zamiaceae</b>		<i>Macrozamia fraseri</i>



# Appendix E

Species x Plant Community Matrix







Flora Species x Plant Community Matrix - Warton Road Duplication						
Species	Plant community				Cleared	Clearing footprint
	AcEaPc	AfBKg	BaBm	MpAf		
<i>Acacia huegelii</i>			X			
<i>Acacia longifolia</i>		X		X	X	X
<i>Acacia pulchella</i> var. <i>glaberrima</i>	X	X	X	X		X
<i>Acacia saligna</i>				X	X	X
<i>Acacia stenoptera</i>		X				X
<i>Adenanthos cygnorum</i>	X	X	X	X	X	X
<i>Adenanthos obovatus</i>				X		
<i>Alexgeorgea nitens</i>	X		X			
<i>Allocasuarina fraseriana</i>		X		X	X	X
<i>Allocasuarina huegeliana</i>			X			
<i>Amphipogon turbinatus</i>	X		X	X		
<i>Anigozanthos humilis</i>			X			
<i>Anigozanthos manglesii</i>	X	X	X	X		
<i>Aotus procumbens</i>	X					
<i>Arctotheca calendula</i>					X	X
<i>Arnocrinum preissii</i>			X	X		
<i>Asphodelus fistulosus</i>					X	X
<i>Astartea scoparia</i>				X		
<i>Asteridea pulverulenta</i>				X		
<i>Austrostipa compressa</i>	X		X	X		
<i>Avena barbata</i>	X		X	X	X	X
<i>Banksia attenuata</i>	X	X	X	X		X
<i>Banksia ilicifolia</i>	X	X			X	X
<i>Banksia menziesii</i>	X	X	X	X		X
<i>Bossiaea eriocarpa</i>		X	X	X		
<i>Brassica tournefortii</i>	X				X	
<i>Briza maxima</i>	X	X	X	X	X	X
<i>Bromus diandrus</i>					X	X
<i>Burchardia congesta</i>	X	X	X	X		X
<i>Caesia occidentalis</i>		X				
<i>Caladenia flava</i> subsp. <i>flava</i>		X	X	X		X
<i>Caladenia longicauda</i> subsp. <i>calcigena</i>				X		X
<i>Caladenia paludosa</i>		X				X
<i>Calytrix ?flavescens</i>			X	X		
<i>Calytrix fraseri</i>	X		X	X		X
<i>Cassytha flava</i>			X	X		
<i>Cenchrus setaceus</i>					X	X
<i>Centrolepis drummondiana</i>	X					
<i>Chaetospora curvifolia</i>			X			
<i>Chamaescilla corymbosa</i>		X		X		
<i>Chamelaucium uncinatum</i>				X	X	X
<i>Comesperma calymega</i>		X				
<i>Conostephium pendulum</i>	X	X	X			
<i>Conostylis aculeata</i> subsp. <i>aculeata</i>		X	X	X		X
<i>Conostylis juncea</i>	X	X	X	X		
<i>Corymbia calophylla</i>		X				
<i>Corynotheca micrantha</i>			X			

Flora Species x Plant Community Matrix - Warton Road Duplication						
Species	Plant community				Cleared	Clearing footprint
	AcEaPc	AfBKg	BaBm	MpAf		
<i>Crassula colorata</i>	X		X			X
<i>Crassula glomerata</i>			X			X
<i>Cyanothamnus ramosus</i> subsp. <i>anethifolius</i>		X	X	X		X
<i>Cyperaceae</i> sp.		X				
<i>Dampiera linearis</i>	X	X		X		
<i>Dasypogon bromeliifolius</i>	X	X	X	X	X	X
<i>Desmocladius flexuosus</i>	X	X	X	X		X
<i>Dianella revoluta</i>		X		X		
<i>Disa bracteata</i>		X				
<i>Diuris corymbosa</i>	X					
<i>Drosera erythrorhiza</i>		X				
<i>Drosera pallida</i>			X			X
<i>Ehrharta calycina</i>	X	X	X	X	X	X
<i>Ehrharta longiflora</i>		X		X	X	X
<i>Eragrostis curvula</i>		X	X	X	X	X
<i>Eremaea asterocarpa</i> subsp. <i>asterocarpa</i>	X					
<i>Eremaea pauciflora</i> var. <i>pauciflora</i>			X	X		
<i>Erodium botrys</i>						
<i>Eucalyptus marginata</i> subsp. <i>marginata</i>		X			X	
<i>Eucalyptus todtiana</i>	X		X	X		X
<i>Euchilopsis linearis</i>				X		
<i>Euphorbia terracina</i>	X	X	X	X	X	X
<i>Freesia alba</i> x <i>leichtlinii</i>		X			X	X
<i>Fumaria capreolata</i>				X	X	X
<i>Gastrolobium capitatum</i>				X		
<i>Gazania linearis</i>		X			X	X
<i>Gladiolus angustus</i>				X	X	X
<i>Gladiolus caryophyllaceus</i>	X	X	X	X	X	X
<i>Gompholobium tomentosum</i>	X	X	X	X		X
<i>Gonocarpus cordiger</i>		X				
<i>Haemodorum spicatum</i>			X			
<i>Hemiandra pungens</i>	X	X	X	X		
<i>Hensmania turbinata</i>	X					
<i>Hibbertia hypericoides</i>			X	X		
<i>Hibbertia racemosa</i>		X				
<i>Hibbertia stellaris</i>				X		
<i>Hibbertia subvaginata</i>	X		X	X		X
<i>Hovea trisperma</i>		X				
<i>Hyalosperma cotula</i>	X		X	X		
<i>Hypocalymma angustifolium</i>				X		
<i>Hypochaeris glabra</i>	X	X	X	X	X	X
<i>Hypochaeris radicata</i>				X	X	X
<i>Hypolaena exsulca</i>	X	X		X		
<i>Isolepis marginata</i>	X			X		
<i>Ixia maculata</i>		X			X	X
<i>Jacksonia furcellata</i>	X	X		X		X
<i>Kunzea glabrescens</i>	X	X	X	X	X	X



Flora Species x Plant Community Matrix - Warton Road Duplication						
Species	Plant community				Cleared	Clearing footprint
	AcEaPc	AfBKg	BaBm	MpAf		
<i>Lagurus ovatus</i>	X				X	X
<i>Laxmannia ramosa</i> subsp. <i>ramosa</i>	X	X	X	X		
<i>Laxmannia squarrosa</i>	X		X	X	X	X
<i>Lechenaultia floribunda</i>	X		X	X		
<i>Leontodon rhagadioloides</i>		X			X	X
<i>Lepidosperma ?calicicola</i>		X				
<i>Lepidosperma longitudinale</i>				X		
<i>Lepidosperma pubisqameum</i>		X		X		X
<i>Leptomeria cunninghamii</i>			X			
<i>Leucopogon polymorphus</i>				X		
<i>Leucopogon squarrosus</i> subsp. <i>squarrosus</i>	X		X			X
<i>Levenhookia stipitata</i>	X		X	X		
<i>Lomandra caespitosa</i>	X	X		X		
<i>Lomandra hermaphrodita</i>		X	X	X		X
<i>Lomandra micrantha</i>	X					
<i>Lomandra nigricans</i>		X		X		
<i>Lomandra preissii</i>		X		X		X
<i>Lomandra sonderi</i>	X	X				
<i>Lomandra sp.</i>		X				
<i>Lotus subbiflorus</i>	X				X	X
<i>Lupinus cosentinii</i>					X	X
<i>Lyginia barbata</i>	X	X	X	X		X
<i>Lyginia imberbis</i>	X	X	X	X		
<i>Lysimachia arvensis</i>				X	X	X
<i>Macrozamia fraseri</i>		X	X	X		X
<i>Medicago polymorpha</i>					X	X
<i>Melaleuca lanceolata</i>						
<i>Melaleuca preissiana</i>				X	X	X
<i>Melaleuca seriata</i>				X		
<i>Melaleuca thymoides</i>	X	X	X	X	X	
<i>Melaleuca trichophylla</i>	X	X				X
<i>Microtis media</i>	X	X		X		X
<i>Nuytsia floribunda</i>		X	X	X		X
<i>Oxalis pes-caprae</i>		X	X		X	X
<i>Patersonia occidentalis</i>	X	X	X	X		X
<i>Pelargonium capitatum</i>	X	X		X	X	X
<i>Pentameris airoides</i> subsp. <i>airoides</i>	X		X	X		X
<i>Pericalymma ellipticum</i>				X		
<i>Petrophile linearis</i>	X	X	X	X		X
<i>Philothea spicata</i>	X	X				X
<i>Phlebocarya ciliata</i>	X	X	X	X		X
<i>Phlebocarya filifolia</i>	X		X	X		
<i>Phyllangium paradoxum</i>	X			X		
<i>Platysace filiformis</i>		X				
<i>Platytheca galioides</i>				X		
<i>Podotheca angustifolia</i>	X				X	
<i>Podotheca gnaphalioides</i>				X	X	

Flora Species x Plant Community Matrix - Warton Road Duplication						
Species	Plant community				Cleared	Clearing footprint
	AcEaPc	AfBKg	BaBm	MpAf		
<i>Poranthera microphylla</i>	X			X		
<i>Prasophyllum parvifolium</i>		X				
<i>Pterostylis sanguinea</i>		X		X		
<i>Regelia inops</i>	X		X	X		
<i>Rhodanthe citrina</i>				X		
<i>Romulea rosea</i>	X			X		X
<i>Schoenus efoliatus</i>				X		
<i>Schoenus sp.</i>				X		
<i>Schoenus subfascicularis</i>				X		X
<i>Schoenus unispiculatus</i>				X		
<i>Scholtzia involucrata</i>	X		X	X		X
<i>Senecio sp.</i>			X			X
<i>Siloxerus filifolius</i>	X		X	X		X
<i>Sonchus oleraceus</i>		X	X	X	X	X
<i>Stirlingia latifolia</i>			X	X		
<i>Stylidium brunonianum</i>				X		
<i>Stylidium piliferum</i>			X			
<i>Stylidium repens</i>	X	X	X	X		
<i>Styphelia conostephioides</i>	X	X	X	X		X
<i>Styphelia xerophylla</i>			X	X		
<i>Thelymitra crinita</i>		X				X
<i>Thysanotus manglesianus</i>		X				X
<i>Thysanotus thysoideus</i>			X	X		
<i>Thysanotus triandrus</i>	X	X				X
<i>Trachymene pilosa</i>	X	X	X	X		X
<i>Tricoryne elatior</i>	X	X	X	X		X
<i>Trifolium arvense</i>					X	X
<i>Trifolium campestre</i>		X	X		X	X
<i>Ursinia anthemoides</i>	X	X	X	X	X	X
<i>Vulpia bromoides</i>	X				X	
<i>Wahlenbergia capensis</i>	X	X			X	
<i>Wahlenbergia preissii</i>				X		
<i>Xanthorrhoea brunonis</i>		X		X		X
<i>Xanthorrhoea preissii</i>		X				X
<i>Zantedeschia aethiopica</i>		X				



# Appendix F

Survey Data







## Sample Name: Q1

Project no.: EP20-099

Date: 22/09/2020

Author: SKP,

Status Non-permanent

Q1: Page 1 of 3

### Quadrat and landform details

Sample type: quadrat

Size: other

NW corner easting: 0

NW corner northing: 0

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: slightly damp

Landform: flat

Time since fire: 0

Disturbance: high - weeds, clearing

Soil type/texture sand/

Bare ground (%): 0

Rocks (%) and type: No rocks

Soil colour: white/

Litter: 50% (leaves,logs,)

Vegetation condition: very good



## Sample Name: Q1

Project no.: EP20-099

Date: 22/09/2020

Author: SKP,

Status Non-permanent

Q1: Page 2 of 3

### Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	2
	<i>Acacia stenoptera</i>	0.5
	<i>Allocasuarina fraseriana</i>	1
	<i>Banksia attenuata</i>	1
	<i>Banksia menziesii</i>	5
	<i>Caladenia paludosa</i>	0.5
	<i>Dasypogon bromeliifolius</i>	2
	<i>Desmocladius flexuosus</i>	3
	* <i>Ehrharta calycina</i>	2
	* <i>Eragrostis curvula</i>	5
	* <i>Euphorbia terracina</i>	2
	* <i>Gladiolus caryophyllaceus</i>	0.5
	<i>Gompholobium tomentosum</i>	0.5
	* <i>Hypochaeris glabra</i>	1
	<i>Jacksonia furcellata</i>	0.5
	<i>Kunzea glabrescens</i>	50
	* <i>Leontodon rhagadioloides</i>	1
	<i>Lepidosperma pubisquamum</i>	0.5
	<i>Lomandra hermaphrodita</i>	0.5
	<i>Lomandra preissii</i>	0.5
	<i>Lomandra preissii</i>	0.5
	<i>Lyginia barbata</i>	0.5
	<i>Macrozamia fraseri</i>	0.5
	<i>Melaleuca thymoides</i>	2
	<i>Melaleuca trichophylla</i>	0.5
	* <i>Oxalis pes-caprae</i>	10
	* <i>Oxalis pes-caprae</i>	10
	<i>Patersonia occidentalis</i>	0.5
	<i>Petrophile linearis</i>	0.5
	<i>Philothea spicata</i>	0.5
	<i>Phlebocarya ciliata</i>	0.5
	<i>Thelymitra crinita</i>	0.5
	<i>Thysanotus manglesianus</i>	0.5
	<i>Thysanotus triandrus</i>	0.5
	<i>Tricoryne elatior</i>	0.5
	* <i>Trifolium campestre</i>	0.5



**Sample Name:** Q1

**Project no.:** EP20-099

**Date:** 22/09/2020

**Author:** SKP,

**Status** Non-permanent

Q1: Page 3 of 3

*Xanthorrhoea preissii*

3

**Sample Name:** Q2

**Project no.:** EP20-099

**Date:** 22/09/2020

**Author:** SKP,

**Status** Non-permanent

Q2: Page 1 of 2

## Quadrat and landform details

Sample type: quadrat

Size: other

NW corner easting: 0

NW corner northing: 0

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: slightly damp

Landform: lower slope

Time since fire: 0

Disturbance: high - weeds, clearing

Soil type/texture sand/ with organic layer

Bare ground (%): 0

Rocks (%) and type: No rocks

Soil colour: brown/

Litter: 35% (leaves,branches,)

Vegetation condition: very good





**Sample Name:** Q2

**Project no.:** EP20-099

**Date:** 22/09/2020

**Author:** SKP,

**Status** Non-permanent

Q2: Page 2 of 2

## Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	opp
	<i>Acacia saligna</i>	5
	<i>Allocasuarina fraseriana</i>	10
*	<i>Avena barbata</i>	20
*	<i>Briza maxima</i>	10
	<i>Burchardia congesta</i>	0.5
	<i>Caladenia longicauda</i> subsp. <i>calcigena</i>	0.5
	<i>Dasypogon bromeliifolius</i>	0.5
*	<i>Eragrostis curvula</i>	15
*	<i>Euphorbia terracina</i>	1
*	<i>Fumaria capreolata</i>	0.5
*	<i>Gladiolus angustus</i>	0.5
*	<i>Gladiolus caryophyllaceus</i>	1
	<i>Gompholobium tomentosum</i>	1
*	<i>Hypochaeris glabra</i>	2
	<i>Lepidosperma pubisquamum</i>	opp
*	<i>Lysimachia arvensis</i>	0.5
	<i>Melaleuca preissiana</i>	10
	<i>Microtis media</i>	opp
	<i>Nuytsia floribunda</i>	5
*	<i>Romulea rosea</i>	1
	<i>Schoenus subfascicularis</i>	opp
*	<i>Sonchus oleraceus</i>	0.5
	<i>Tricoryne elatior</i>	1
*	<i>Ursinia anthemoides</i>	1
	<i>Xanthorrhoea brunonis</i>	3

## Sample Name: Q3

Project no.: EP20-099

Date: 22/09/2020

Author: SKP,

Status Non-permanent

Q3: Page 1 of 2

### Quadrat and landform details

Sample type: quadrat

Size: other

NW corner easting: 0

NW corner northing: 0

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: dry

Landform: upper slope

Time since fire: 0

Disturbance: high - weeds, clearing

Soil type/texture sand/

Bare ground (%): 5

Rocks (%) and type: No rocks

Soil colour: white/grey

Litter: 10% (leaves,twigs,)

Vegetation condition: very good





## Sample Name: Q3

Project no.: EP20-099

Date: 22/09/2020

Author: SKP,

Status Non-permanent

Q3: Page 2 of 2

### Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	<i>Adenanthos cygnorum</i>	15
	<i>Banksia attenuata</i>	20
*	<i>Briza maxima</i>	0.5
	<i>Burchardia congesta</i>	0.5
	<i>Caladenia flava subsp. flava</i>	0.5
	<i>Calytrix fraseri</i>	2
	<i>Conostylis aculeata subsp. aculeata</i>	0.5
	<i>Crassula colorata</i>	0.5
*	<i>Crassula glomerata</i>	0.5
	<i>Cyanothamnus ramosus subsp. anethifolius</i>	0.5
	<i>Drosera pallida</i>	0.5
*	<i>Ehrharta calycina</i>	5
*	<i>Eragrostis curvula</i>	10
	<i>Eremaea pauciflora var. pauciflora</i>	5
	<i>Eucalyptus tottiana</i>	3
*	<i>Euphorbia terracina</i>	3
*	<i>Gladiolus caryophyllaceus</i>	1
	<i>Gompholobium tomentosum</i>	1
	<i>Hibbertia subvaginata</i>	0.5
*	<i>Hypochaeris glabra</i>	5
	<i>Laxmannia squarrosa</i>	0.5
	<i>Leucopogon squarrosus subsp. squarrosus</i>	1
	<i>Lyginia barbata</i>	0.5
*	<i>Oxalis pes-caprae</i>	2
	<i>Patersonia occidentalis</i>	0.5
*	<i>Pentameris airoides subsp. airoides</i>	0.5
	<i>Scholtzia involucrata</i>	0.5
	<i>Senecio sp.</i>	0.5
	<i>Siloxerus filifolius</i>	0.5
*	<i>Sonchus oleraceus</i>	1
	<i>Styphelia conostephioides</i>	0.5
	<i>Trachymene pilosa</i>	0.5
*	<i>Trifolium campestre</i>	1
*	<i>Ursinia anthemoides</i>	1

## Sample Name: Q4 (ML1)

Project no.: EP20-099

Date: 20/10/2020

Author: SKP,

Status Permanent

Q4 (ML1): Page 1 of 3

### Quadrat and landform details

Sample type: quadrat

Size: 10 m x 10 m

NW corner easting: 0

NW corner northing: 0

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: dry

Landform: flat

Time since fire: 0

Disturbance: moderate - weeds, some tree deaths

Soil type/texture sand/

Bare ground (%): 7

Rocks (%) and type: No rocks

Soil colour: grey/brown

Litter: 10% (logs,twigs,leaves)

Vegetation condition: very good



### Additional monitoring parameters

Plant community: AcEaPc

Vegetation health: Good. Some old tree senescence.

Signs of disturbance

Rubbish: present in low densities (cans)

Clearing: No, but adjacent to track firebreak

Pest animals: Evidence of rabbit digging



## Sample Name: Q4 (ML1)

Project no.: EP20-099

Date: 20/10/2020

Author: SKP,

Status Non-permanent

Q4 (ML1): Page 2 of 3

### Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	5
	<i>Adenanthos cygnorum</i>	5
	<i>Anigozanthos manglesii</i>	opp
	<i>Austrostipa compressa</i>	1
*	<i>Avena barbata</i>	opp
	<i>Banksia attenuata</i>	2
	<i>Banksia ilicifolia</i>	opp
	<i>Banksia menziesii</i>	opp
*	<i>Briza maxima</i>	4
	<i>Burchardia congesta</i>	0.5
	<i>Calytrix fraseri</i>	10
	<i>Centrolepis drummondiana</i>	0.5
	<i>Conostylis juncea</i>	0.5
	<i>Crassula colorata</i>	0.5
	<i>Dampiera linearis</i>	5
	<i>Dasypogon bromeliifolius</i>	2
	<i>Desmocladius flexuosus</i>	5
	<i>Desmocladius flexuosus</i>	1
*	<i>Ehrharta calycina</i>	0.5
	<i>Eremaea asterocarpa</i> subsp. <i>asterocarpa</i>	5
	<i>Eucalyptus todtiana</i>	opp
*	<i>Gladiolus caryophyllaceus</i>	0.5
	<i>Gompholobium tomentosum</i>	1
	<i>Hibbertia subvaginata</i>	0.5
	<i>Hyalosperma cotula</i>	0.5
*	<i>Hypochaeris glabra</i>	0.5
	<i>Isolepis marginata</i>	0.5
	<i>Jacksonia furcellata</i>	3
	<i>Kunzea glabrescens</i>	opp
	<i>Laxmannia ramosa</i> subsp. <i>ramosa</i>	3
	<i>Lechenaultia floribunda</i>	5
	<i>Leucopogon squarrosus</i> subsp. <i>squarrosus</i>	opp
	<i>Levenhookia stipitata</i>	0.5
	<i>Lomandra caespitosa</i>	0.5
	<i>Lomandra micrantha</i>	1
	<i>Lomandra sonderi</i>	1

**Sample Name:**

**Q4 (ML1)**

**Project no.:** EP20-099

**Date:** 20/10/2020

**Status** Non-permanent

**Author:** SKP,

Q4 (ML1): Page 3 of 3

<i>Lyginia barbata</i>	5
<i>Melaleuca thymoides</i>	1
<i>Melaleuca trichophylla</i>	15
<i>Patersonia occidentalis</i>	1
* <i>Pelargonium capitatum</i>	0.5
* <i>Pentameris airoides subsp. airoides</i>	0.5
<i>Phlebocarya ciliata</i>	5
<i>Phyllangium paradoxum</i>	0.5
<i>Podotheca angustifolia</i>	0.5
<i>Poranthera microphylla</i>	0.5
<i>Scholtzia involucrata</i>	1
<i>Siloxerus filifolius</i>	0.5
<i>Stylidium repens</i>	opp
<i>Trachymene pilosa</i>	0.5
<i>Tricoryne elatior</i>	0.5
* <i>Ursinia anthemoides</i>	7
* <i>Wahlenbergia capensis</i>	0.5



## Sample Name: Q5 (ML2)

Project no.: EP20-099

Date: 20/10/2020, 27/10/2020

Author: SKP,

Status Permanent

Q5 (ML2): Page 1 of 3

### Quadrat and landform details

Sample type: quadrat

Size: 10 m x 10 m

NW corner easting: 0

NW corner northing: 0

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: dry

Landform: flat

Time since fire: > 5 yrs

Disturbance: low - weeds, some tree deaths

Soil type/texture sand with organic layer

Bare ground (%): 3

Rocks (%) and type: No rocks

Soil colour: brown/

Litter: 20% (leaves,twigs,logs)

Vegetation condition: very good



### Additional monitoring parameters

Plant community: AfEaPc

Vegetation health: Good. *Kunzea glabrescens* and *Banksia* spp. senescence but vegetation healthy

Signs of disturbance

Rubbish: Absent

Clearing: No, but adjacent to track firebreak

Pest animals: Evidence of rabbit digging

## Sample Name: Q5 (ML2)

Project no.: EP20-099

Date: 20/10/2020, 27/10/2020

Status Non-permanent

Author: SKP,

Q5 (ML2): Page 2 of 3

### Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	* <i>Acacia longifolia</i>	0.5
	<i>Allocasuarina fraseriana</i>	1
	<i>Anigozanthos manglesii</i>	opp
	<i>Banksia attenuata</i>	20
	<i>Banksia ilicifolia</i>	opp
	<i>Banksia menziesii</i>	20
	<i>Bossiaea eriocarpa</i>	2
	* <i>Briza maxima</i>	1
	<i>Burchardia congesta</i>	1
	<i>Caesia occidentalis</i>	0.5
	<i>Caladenia flava subsp. flava</i>	0.5
	<i>Chamaescilla corymbosa</i>	1
	<i>Comesperma calymega</i>	5
	<i>Conostephium pendulum</i>	1
	<i>Conostylis juncea</i>	1
	<i>Cyperaceae sp.</i>	1
	<i>Dampiera linearis</i>	opp
	<i>Dasypogon bromeliifolius</i>	10
	<i>Dianella revoluta</i>	1
	<i>Drosera erythrorhiza</i>	1
	<i>Eucalyptus marginata subsp. marginata</i>	opp
	<i>Gompholobium tomentosum</i>	3
	<i>Hovea trisperma</i>	1
	* <i>Hypochaeris glabra</i>	0.5
	<i>Jacksonia furcellata</i>	1
	<i>Kunzea glabrescens</i>	30
	<i>Lepidosperma ?calcicola</i>	opp
	<i>Lepidosperma pubisqameum</i>	3
	<i>Lomandra hermaphrodita</i>	1
	<i>Lomandra sonderi</i>	1
	<i>Lomandra sp.</i>	0.5
	<i>Lyginia barbata</i>	3
	<i>Macrozamia fraseri</i>	opp
	<i>Melaleuca thymoides</i>	2
	<i>Microtis media</i>	0.5
	<i>Nuytsia floribunda</i>	opp



**Sample Name:**

**Q5 (ML2)**

**Project no.:** EP20-099

**Date:** 20/10/2020, 27/10/2020

**Status** Non-permanent

**Author:** SKP,

Q5 (ML2): Page 3 of 3

<i>Patersonia occidentalis</i>	1
* <i>Pelargonium capitatum</i>	opp
<i>Petrophile linearis</i>	0.5
<i>philotheca spicata</i>	opp
<i>Phlebocarya ciliata</i>	20
<i>Pterostylis sanguinea</i>	opp
<i>Styphelia conostephioides</i>	0.5
<i>Thysanotus manglesianus</i>	1
<i>Trachymene pilosa</i>	0.5
<i>Tricoryne elatior</i>	opp
<i>Tricoryne elatior</i>	opp
<i>Xanthorrhoea brunonis</i>	3

## Sample Name: Q6 (ML3)

Project no.: EP20-099

Date: 20/10/2020, 27/10/2020

Author: SKP,

Status Permanent

Q6 (ML3): Page 1 of 3

### Quadrat and landform details

Sample type: quadrat

Size: 10 m x 10 m

NW corner easting: 0

NW corner northing: 0

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: dry

Landform: flat

Time since fire: 0

Disturbance: moderate - weeds. clearing

Soil type/texture sand/ with organic layer

Bare ground (%): 10

Rocks (%) and type: No rocks

Soil colour: grey/brown

Litter: 40% (leaves,logs,branches)

Vegetation condition: very good



### Additional monitoring parameters

Plant community: AfEaPc

Vegetation health: Moderate. Senescent Banksia spp. but juveniles observed. Higher weed cover than surrounding vegetation.

Signs of disturbance

Rubbish: Present in low densities (bags)

Clearing: Partial clearing in the southern portion. Adjacent to track/firebreak

Pest animals: Evidence of rabbit digging



## Sample Name: Q6 (ML3)

Project no.: EP20-099

Date: 20/10/2020, 27/10/2020

Status Non-permanent

Author: SKP,

Q6 (ML3): Page 2 of 3

### Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	2
	<i>Adenanthos cygnorum</i>	opp
	<i>Allocasuarina fraseriana</i>	opp
	<i>Anigozanthos manglesii</i>	opp
	<i>Banksia attenuata</i>	15
	<i>Banksia menziesii</i>	10
	* <i>Briza maxima</i>	3
	<i>Burchardia congesta</i>	0.5
	<i>Caladenia flava</i> subsp. <i>flava</i>	0.5
	<i>Caladenia paludosa</i>	opp
	<i>Conostylis aculeata</i> subsp. <i>aculeata</i>	5
	<i>Cyanothamnus ramosus</i> subsp. <i>anethifolius</i>	opp
	<i>Dasypogon bromeliifolius</i>	10
	<i>Desmocladius flexuosus</i>	2
	* <i>Disa bracteata</i>	0.5
	* <i>Ehrharta calycina</i>	1
	* <i>Ehrharta longiflora</i>	1
	* <i>Gladiolus caryophyllaceus</i>	0.5
	<i>Gompholobium tomentosum</i>	1
	<i>Hypochaeris glabra</i>	1
	<i>Hypolaena exsulca</i>	2
	<i>Jacksonia furcellata</i>	1
	<i>Kunzea glabrescens</i>	25
	<i>Laxmannia ramosa</i> subsp. <i>ramosa</i>	1
	<i>Lepidosperma pubisquamum</i>	opp
	<i>Lomandra caespitosa</i>	0.5
	<i>Lomandra preissii</i>	2
	<i>Lyginia imberbis</i>	2
	<i>Macrozamia fraseri</i>	opp
	<i>Melaleuca thymoides</i>	2
	<i>Nuytsia floribunda</i>	opp
	<i>Patersonia occidentalis</i>	1
	<i>Phlebocarya ciliata</i>	5
	* <i>Sonchus oleraceus</i>	2
	<i>Stylidium repens</i>	0.5
	<i>Thysanotus manglesianus</i>	0.5

## Sample Name: Q6 (ML3)

Project no.: EP20-099

Date: 20/10/2020, 27/10/2020

Status Non-permanent

Author: SKP,

Q6 (ML3): Page 3 of 3

<i>Trachymene pilosa</i>	1
<i>Tricoryne elatior</i>	opp
* <i>Ursinia anthemoides</i>	10
* <i>Wahlenbergia capensis</i>	0.5



## Sample Name: Q7 (ML4)

Project no.: EP20-099

Date: 20/10/2020

Author: SKP,

Status Permanent

Q7 (ML4): Page 1 of 3

### Quadrat and landform details

Sample type: quadrat

Size: 10 m x 10 m

NW corner easting: 0

NW corner northing: 0

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: dry

Landform: flat

Time since fire: > 5 yrs

Disturbance: low - weeds

Soil type/texture sand/ with organic layer

Bare ground (%): 0

Rocks (%) and type: No rocks

Soil colour: brown/

Litter: 70% (leaves, branches, twigs)

Vegetation condition: very good



### Additional monitoring parameters

Plant community: AfEaPc

Vegetation health: Good. Some old tree senescence

Signs of disturbance

Rubbish: Absent

Clearing: No. Adjacent to track/firebreak

Pest animals: Evidence of rabbit digging

## Sample Name: Q7 (ML4)

Project no.: EP20-099

Date: 20/10/2020

Author: SKP,

Status Non-permanent

Q7 (ML4): Page 2 of 3

### Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	1
	<i>Adenanthos cygnorum</i>	opp
	<i>Allocasuarina fraseriana</i>	25
	<i>Banksia attenuata</i>	10
	<i>Banksia menziesii</i>	opp
	<i>Bossiaea eriocarpa</i>	0.5
	* <i>Briza maxima</i>	2
	<i>Burchardia congesta</i>	0.5
	<i>Caladenia flava</i> subsp. <i>flava</i>	0.5
	<i>Caladenia paludosa</i>	0.5
	<i>Chamaescilla corymbosa</i>	1
	<i>Comesperma calymega</i>	0.5
	<i>Conostephium pendulum</i>	1
	<i>Conostylis juncea</i>	1
	<i>Dasypogon bromeliifolius</i>	25
	<i>Dianella revoluta</i>	opp
	<i>Drosera erythrorhiza</i>	0.5
	* <i>Ehrharta longiflora</i>	1
	<i>Eucalyptus marginata</i> subsp. <i>marginata</i>	15
	* <i>Gladiolus caryophyllaceus</i>	0.5
	<i>Gompholobium tomentosum</i>	1
	<i>Hemiandra pungens</i>	opp
	<i>Hibbertia racemosa</i>	0.5
	<i>Hovea trisperma</i>	1
	<i>Jacksonia furcellata</i>	1
	<i>Kunzea glabrescens</i>	15
	<i>Lomandra nigricans</i>	0.5
	<i>Lomandra preissii</i>	1
	<i>Lomandra sonderi</i>	1
	<i>Macrozamia fraseri</i>	2
	<i>Microtis media</i>	0.5
	<i>Patersonia occidentalis</i>	opp
	<i>Phlebocarya ciliata</i>	3
	<i>Prasophyllum parvifolium</i>	0.5
	<i>Pterostylis sanguinea</i>	0.5
	<i>Tricoryne elatior</i>	1



**Sample Name:**

**Q7 (ML4)**

**Project no.:** EP20-099

**Date:** 20/10/2020

**Status** Non-permanent

**Author:** SKP,

Q7 (ML4): Page 2 of 3

*Xanthorrhoea brunonis*

10

\*, DP *Zantedeschia aethiopica*

opp

## Sample Name: Q8 (ML5)

Project no.: EP20-099

Date: 20/10/2020

Author: SKP,

Status Permanent

Q8 (ML5): Page 1 of 3

### Quadrat and landform details

Sample type: quadrat

Size: 10 m x 10 m

NW corner easting: 0

NW corner northing: 0

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: dry

Landform: flat

Time since fire: > 5 yrs

Disturbance: low - weeds, rabbits

Soil type/texture sand/

Bare ground (%): 5

Rocks (%) and type: No rocks

Soil colour: grey/

Litter: 30% (leaves, branches,)

Vegetation condition: very good



### Additional monitoring parameters

Plant community: MpAf

Vegetation health: Good. Some old tree senescence

Signs of disturbance

Rubbish: Absent

Clearing: No. Adjacent to track/firebreak

Pest animals: Evidence of rabbit digging



## Sample Name: Q8 (ML5)

Project no.: EP20-099

Date: 20/10/2020

Author: SKP,

Status Non-permanent

Q8 (ML5): Page 2 of 3

### Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	2
	<i>Adenanthos obovatus</i>	1
	<i>Allocasuarina fraseriana</i>	opp
	<i>Amphipogon turbinatus</i>	0.5
	<i>Austrostipa compressa</i>	0.5
	<i>Banksia attenuata</i>	2
	* <i>Briza maxima</i>	1
	<i>Calytrix fraseri</i>	2
	<i>Chamaescilla corymbosa</i>	0.5
	<i>Conostylis juncea</i>	0.5
	<i>Cyanothamnus ramosus</i> subsp. <i>anethifolius</i>	0.5
	<i>Dampiera linearis</i>	1
	<i>Dasypogon bromeliifolius</i>	40
	* <i>Ehrharta calycina</i>	1
	<i>Eucalyptus tottiana</i>	20
	* <i>Gladiolus caryophyllaceus</i>	0.5
	<i>Gompholobium tomentosum</i>	1
	<i>Hemiandra pungens</i>	1
	<i>Hyalosperma cotula</i>	0.5
	<i>Hypocalymma angustifolium</i>	0.5
	* <i>Hypochaeris glabra</i>	0.5
	<i>Jacksonia furcellata</i>	1
	<i>Kunzea glabrescens</i>	5
	<i>Laxmannia squarrosa</i>	0.5
	<i>Lepidosperma pubisquamum</i>	1
	<i>Levenhookia stipitata</i>	0.5
	<i>Lomandra caespitosa</i>	0.5
	<i>Lomandra preissii</i>	0.5
	<i>Melaleuca preissiana</i>	5
	<i>Melaleuca seriata</i>	20
	<i>Melaleuca thymoides</i>	1
	<i>Nuytsia floribunda</i>	4
	<i>Patersonia occidentalis</i>	0.5
	<i>Phlebocarya ciliata</i>	5
	<i>Phyllangium paradoxum</i>	0.5
	<i>Platytheca galioides</i>	0.5

**Sample Name:**

**Q8 (ML5)**

**Project no.:** EP20-099

**Date:** 20/10/2020

**Status** Non-permanent

**Author:** SKP,

Q8 (ML5): Page 3 of 3

<i>Poranthera microphylla</i>	0.5
<i>Rhodanthe citrina</i>	0.5
<i>Schoenus subfascicularis</i>	0.5
<i>Schoenus unispiculatus</i>	0.5
<i>Siloxerus filifolius</i>	0.5
<i>Stylidium repens</i>	0.5
<i>Trachymene pilosa</i>	1
<i>Tricoryne elatior</i>	1
* <i>Ursinia anthemoides</i>	0.5
<i>Xanthorrhoea brunonis</i>	2



## Sample Name: Q9 (ML6)

Project no.: EP20-099

Date: 20/10/2020, 27/10/2020

Author: SKP,

Status Permanent

Q9 (ML6): Page 1 of 3

### Quadrat and landform details

Sample type: quadrat

Size: 10 m x 10 m

NW corner easting: 0

NW corner northing: 0

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: dry

Landform: mid-slope

Time since fire: 0

Disturbance: low - weeds, rabbits

Soil type/texture sand/

Bare ground (%): 10

Rocks (%) and type: No rocks

Soil colour: white/brown

Litter: 10% (branches,logs,)

Vegetation condition: very good



### Additional monitoring parameters

Plant community: BaBm

Vegetation health: Good

Signs of disturbance

Rubbish: Absent

Clearing: No. Adjacent to track/firebreak

Pest animals: Evidence of rabbit digging

## Sample Name: Q9 (ML6)

Project no.: EP20-099

Date: 20/10/2020, 27/10/2020

Status Non-permanent

Author: SKP,

Q9 (ML6): Page 2 of 3

### Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	<i>Acacia huegelii</i>	0.5
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	2
	<i>Alexgeorgea nitens</i>	0.5
	<i>Allocasuarina huegeliana</i>	5
	<i>Amphipogon turbinatus</i>	1
	<i>Anigozanthos humilis</i>	opp
	<i>Arnocrinum preissii</i>	0.5
	<i>Austrostipa compressa</i>	1
	<i>Banksia attenuata</i>	20
	<i>Banksia menziesii</i>	5
	<i>Bossiaea eriocarpa</i>	0.5
	* <i>Briza maxima</i>	3
	<i>Burchardia congesta</i>	0.5
	<i>Caladenia flava</i> subsp. <i>flava</i>	0.5
	<i>Calytrix ?flavescens</i>	2
	<i>Calytrix fraseri</i>	4
	<i>Cassytha flava</i>	0.5
	<i>Chaetospora curvifolia</i>	0.5
	<i>Conostephium pendulum</i>	1
	<i>Conostylis aculeata</i> subsp. <i>aculeata</i>	0.5
	<i>Conostylis juncea</i>	0.5
	<i>Cyanothamnus ramosus</i> subsp. <i>anethifolius</i>	0.5
	<i>Dasypogon bromeliifolius</i>	2
	<i>Desmocladius flexuosus</i>	1
	<i>Drosera pallida</i>	0.5
	* <i>Ehrharta calycina</i>	1
	<i>Eremaea pauciflora</i> var. <i>pauciflora</i>	25
	* <i>Gladiolus caryophyllaceus</i>	1
	<i>Gompholobium tomentosum</i>	1
	<i>Hemiandra pungens</i>	0.5
	<i>Hibbertia hypericoides</i>	20
	<i>Hibbertia subvaginata</i>	0.5
	<i>Hyalosperma cotula</i>	0.5
	<i>Hypochaeris glabra</i>	0.5
	<i>Hypochaeris glabra</i>	1
	<i>Laxmannia ramosa</i> subsp. <i>ramosa</i>	0.5



**Sample Name:**

**Q9 (ML6)**

**Project no.:** EP20-099

**Date:** 20/10/2020, 27/10/2020

**Status** Non-permanent

**Author:** SKP,

Q9 (ML6): Page 3 of 3

<i>Laxmannia squarrosa</i>	opp
<i>Lechenaultia floribunda</i>	0.5
<i>Levenhookia stipitata</i>	0.5
<i>Lomandra hermaphrodita</i>	0.5
<i>Lyginia barbata</i>	1
<i>Nuytsia floribunda</i>	opp
<i>Patersonia occidentalis</i>	1
* <i>Pentameris airoides subsp. airoides</i>	<b>0.5</b>
<i>Petrophile linearis</i>	1
<i>Phlebocarya filifolia</i>	1
<i>Scholtzia involucrata</i>	1
<i>Stirlingia latifolia</i>	opp
<i>Stylidium piliferum</i>	0.5
<i>Stylidium repens</i>	1
<i>Styphelia xerophylla</i>	2
<i>Trachymene pilosa</i>	0.5
<i>Tricoryne elatior</i>	opp
* <i>Ursinia anthemoides</i>	2

## Sample Name: Q10 (ML7)

Project no.: EP20-099

Date: 20/10/2020, 27/10/2020

Author: SKP,

Status Permanent

Q10 (ML7): Page 1 of 3

### Quadrat and landform details

Sample type: quadrat

Size: 10 m x 10 m

NW corner easting: 0

NW corner northing: 0

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: dry

Landform: flat

Time since fire: no evidence

Disturbance: moderate - weeds, rabbits

Soil type/texture sand/ with organic layer

Bare ground (%): 2

Rocks (%) and type: No rocks

Soil colour: brown/

Litter: 20% (branches,leaves,)

Vegetation condition: very good



### Additional monitoring parameters

Plant community: MpAf

Vegetation health: Good. Some dead shrubs

Signs of disturbance

Rubbish: Absent

Clearing: No. Adjacent to track/firebreak

Pest animals: Evidence of rabbit digging



## Sample Name: Q10 (ML7)

Project no.: EP20-099

Date: 20/10/2020, 27/10/2020

Status Non-permanent

Author: SKP,

Q10 (ML7): Page 2 of 3

### Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	1
	<i>Adenanthos cygnorum</i>	opp
	<i>Adenanthos obovatus</i>	2
	<i>Allocasuarina fraseriana</i>	opp
	<i>Austrostipa compressa</i>	1
*	<i>Avena barbata</i>	1
	<i>banksia menziesii</i>	opp
*	<i>Briza maxima</i>	5
	<i>Caladenia flava</i> subsp. <i>flava</i>	0.5
	<i>Calytrix fraseri</i>	2
*	<i>Ehrharta calycina</i>	2
*	<i>Ehrharta longiflora</i>	2
*	<i>Fumaria capreolata</i>	1
	<i>Gastrolobium capitatum</i>	1
*	<i>Gladiolus caryophyllaceus</i>	1
	<i>Gompholobium tomentosum</i>	opp
	<i>Hyalosperma cotula</i>	0.5
	<i>Hypocalymma angustifolium</i>	5
*	<i>Hypochaeris glabra</i>	2
	<i>Isolepis marginata</i>	0.5
	<i>Lomandra hermaphrodita</i>	0.5
	<i>Lomandra nigricans</i>	1
	<i>Lomandra preissii</i>	0.5
	<i>Melaleuca preissiana</i>	opp
	<i>Melaleuca thymoides</i>	opp
	<i>Patersonia occidentalis</i>	1
*	<i>Pentameris airoides</i> subsp. <i>airoides</i>	0.5
	<i>Phlebocarya ciliata</i>	25
	<i>Phlebocarya ciliata</i>	25
	<i>Phyllangium paradoxum</i>	0.5
	<i>Platytheca galioides</i>	0.5
	<i>Podotheca gnaphalioides</i>	3
	<i>Poranthera microphylla</i>	0.5
	<i>Pterostylis sanguinea</i>	0.5
	<i>Regelia inops</i>	20
	<i>Schoenus</i> sp.	0.5

**Sample Name:**

**Q10 (ML7)**

**Project no.:** EP20-099

**Date:** 20/10/2020, 27/10/2020

**Status** Non-permanent

**Author:** SKP,

Q10 (ML7): Page 3 of 3

<i>Schoenus subfascicularis</i>	1
* <i>Sonchus oleraceus</i>	1
<i>Trachymene pilosa</i>	2
<i>Tricoryne elatior</i>	1
* <i>Ursinia anthemoides</i>	2
<i>Wahlenbergia preissii</i>	0.5
<i>Xanthorrhoea brunonis</i>	opp



## Sample Name:

**Q11 (ML 8)**

**Project no.:** EP20-099

**Date:** 27/10/2020

**Author:** SKP,

**Status:** Permanent

Q11 (ML 8): Page 1 of 3

### Quadrat and landform details

Sample type: quadrat

Size: 10 m x 10 m

NW corner easting: 398995

NW corner northing: 6447636

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: dry

Landform: flat

Time since fire: no evidence

Disturbance: moderate - Weeds, adj clearing

Soil type/texture sand/

Bare ground (%): 10

Rocks (%) and type: No rocks

Soil colour: white/grey

Litter: 10% (logs, twigs,)

Vegetation condition: very good



### Additional monitoring parameters

Plant community: AcEaPc

Vegetation health: Good

Signs of disturbance

Rubbish: Present in low densities

Clearing: No. Adjacent to track/firebreak

Pest animals: Evidence of rabbit digging

## Sample Name: Q11 (ML 8)

Project no.: EP20-099

Date: 27/10/2020

Author: SKP,

Status Non-permanent

Q11 (ML 8): Page 2 of 3

### Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	2
	<i>Adenanthos cygnorum</i>	2
	<i>Alexgeorgea nitens</i>	opp
	<i>Amphipogon turbinatus</i>	0.5
	<i>Anigozanthos manglesii</i>	opp
	<i>Aotus procumbens</i>	opp
	<i>Austrostipa compressa</i>	1
*	<i>Avena barbata</i>	4
*	<i>Brassica tournefortii</i>	0.5
*	<i>Briza maxima</i>	3
	<i>Burchardia congesta</i>	0.5
	<i>Conostephium pendulum</i>	0.5
	<i>Crassula colorata</i>	0.5
	<i>Dampiera linearis</i>	2
	<i>Dasypogon bromeliifolius</i>	5
	<i>Desmocladus flexuosus</i>	10
	<i>Diuris corymbosa</i>	0.5
*	<i>Ehrharta calycina</i>	4
	<i>Eremaea asterocarpa</i> subsp. <i>asterocarpa</i>	10
*	<i>Euphorbia terracina</i>	0.5
*	<i>Gladiolus caryophyllaceus</i>	1
	<i>Gompholobium tomentosum</i>	1
	<i>Hemiandra pungens</i>	1
	<i>Hensmania turbinata</i>	1
*	<i>Hypochaeris glabra</i>	0.5
	<i>Hypolaena exsulca</i>	0.5
	<i>Isolepis marginata</i>	0.5
	<i>Jacksonia furcellata</i>	2
	<i>Laxmannia squarrosa</i>	0.5
	<i>Lechenaultia floribunda</i>	2
	<i>Levenhookia stipitata</i>	0.5
	<i>Lomandra sonderi</i>	0.5
*	<i>Lotus subbiflorus</i>	0.5
	<i>Lyginia imberbis</i>	5
	<i>Melaleuca thymoides</i>	0.5
	<i>Melaleuca trichophylla</i>	10



**Sample Name:**

**Q11 (ML 8)**

**Project no.:** EP20-099

**Date:** 27/10/2020

**Status** Non-permanent

**Author:** SKP,

Q11 (ML 8): Page 3 of 3

<i>Microtis media</i>	0.5
<i>Patersonia occidentalis</i>	3
<i>Petrophile linearis</i>	opp
<i>Philothea spicata</i>	2
<i>Phlebocarya ciliata</i>	20
<i>Phlebocarya filifolia</i>	0.5
<i>Phyllangium paradoxum</i>	0.5
<i>Regelia inops</i>	opp
* <i>Romulea rosea</i>	0.5
<i>Scholtzia involucrata</i>	2
<i>Styphelia conostephioides</i>	2
<i>Thysanotus triandrus</i>	0.5
<i>Trachymene pilosa</i>	0.5
<i>Tricoryne elatior</i>	2
* <i>Ursinia anthemoides</i>	5
* <i>Vulpia bromoides</i>	0.5
* <i>Wahlenbergia capensis</i>	0.5

## Sample Name: Q12 (ML9)

Project no.: EP20-099

Date: 27/10/2020

Author: SKP,

Status Permanent

Q12 (ML9): Page 1 of 3

### Quadrat and landform details

Sample type: quadrat

Size: 10 m x 10 m

NW corner easting: 0

NW corner northing: 0

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: dry

Landform: mid-slope

Time since fire: > 5 yrs

Disturbance: moderate - Weeds, adj clearing

Soil type/texture sand/

Bare ground (%): 15

Rocks (%) and type: No rocks

Soil colour: grey/

Litter: 20% (leaves,logs,)

Vegetation condition: very good



### Additional monitoring parameters

Plant community: BaBm

Vegetation health: Moderate. Some Banksia spp. senescence.

Signs of disturbance

Rubbish: Present in low densities

Clearing: No. Adjacent to track/firebreak

Pest animals: Evidence of rabbit digging



## Sample Name: Q12 (ML9)

Project no.: EP20-099

Date: 27/10/2020

Author: SKP,

Status Non-permanent

Q12 (ML9): Page 2 of 3

### Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	<i>Anigozanthos manglesii</i>	0.5
	<i>Austrostipa compressa</i>	0.5
*	<i>Avena barbata</i>	5
	<i>Banksia attenuata</i>	20
	<i>Banksia menziesii</i>	10
	<i>Bossiaea eriocarpa</i>	5
*	<i>Briza maxima</i>	5
	<i>Burchardia congesta</i>	0.5
	<i>Calytrix ?flavescens</i>	1
	<i>Calytrix fraseri</i>	5
	<i>Chaetospora curvifolia</i>	0.5
	<i>Conostephium pendulum</i>	opp
	<i>Conostylis aculeata subsp. aculeata</i>	5
	<i>Corynotheca micrantha</i>	1
	<i>Dasypogon bromeliifolius</i>	2
	<i>Desmocladius flexuosus</i>	20
	<i>Drosera pallida</i>	0.5
*	<i>Ehrharta calycina</i>	1
	<i>Eremaea pauciflora var. pauciflora</i>	10
*	<i>Gladiolus caryophyllaceus</i>	1
	<i>Gompholobium tomentosum</i>	1
	<i>Haemodorum spicatum</i>	opp
	<i>Hibbertia subvaginata</i>	1
	<i>Hyalosperma cotula</i>	0.5
*	<i>Hypochaeris glabra</i>	1
	<i>Kunzea glabrescens</i>	5
	<i>Lechenaultia floribunda</i>	2
	<i>Leptomeria cunninghamii</i>	opp
	<i>Levenhookia stipitata</i>	0.5
	<i>Lomandra hermaphrodita</i>	0.5
	<i>Lyginia barbata</i>	3
	<i>Lyginia imberbis</i>	10
	<i>Macrozamia fraseri</i>	3
	<i>Melaleuca thymoides</i>	3
	<i>Petrophile linearis</i>	0.5
	<i>Phlebocarya ciliata</i>	3

**Sample Name:**

**Q12 (ML9)**

**Project no.:** EP20-099

**Date:** 27/10/2020

**Status** Non-permanent

**Author:** SKP,

Q12 (ML9): Page 3 of 3

<i>Phlebocarya filifolia</i>	0.5
<i>Regelia inops</i>	opp
<i>Stirlingia latifolia</i>	2
<i>Stylidium repens</i>	0.5
<i>Styphelia conostephioides</i>	1
<i>Styphelia xerophylla</i>	opp
<i>Thysanotus thysoides</i>	opp
<i>Trachymene pilosa</i>	<b>1</b>
<i>Tricoryne elatior</i>	1
* <i>Ursinia anthemoides</i>	5



## Sample Name: Q13 (ML10)

Project no.: EP20-099

Date: 27/10/2020

Author: SKP,

Status Permanent

Q13 (ML10): Page 1 of 3

### Quadrat and landform details

Sample type: quadrat

Size: 10 m x 10 m

NW corner easting: 0

NW corner northing: 0

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: dry

Landform: mid-slope

Time since fire: > 5 yrs

Disturbance: low - Weeds, adj clearing

Soil type/texture sand/

Bare ground (%): 20

Rocks (%) and type: No rocks

Soil colour: grey/brown

Litter: 10% (leaves,twigs,)

Vegetation condition: very good



### Additional monitoring parameters

Plant community: BaBm

Vegetation health: Good

Signs of disturbance

Rubbish: Absent

Clearing: No. Adjacent to track/firebreak

Pest animals: Evidence of rabbit digging

## Sample Name: Q13 (ML10)

Project no.: EP20-099

Date: 27/10/2020

Status Non-permanent

Author: SKP,

Q13 (ML10): Page 2 of 3

### Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	3
	<i>Adenanthos cygnorum</i>	15
	<i>Arnocrinum preissii</i>	0.5
	<i>Austrostipa compressa</i>	1
	<i>Banksia attenuata</i>	20
	<i>Banksia menziesii</i>	5
	<i>Bossiaea eriocarpa</i>	4
*	<i>Briza maxima</i>	5
	<i>Burchardia congesta</i>	0.5
	<i>Calytrix ?flavescens</i>	0.5
	<i>Calytrix fraseri</i>	1
	<i>Conostylis aculeata</i> subsp. <i>aculeata</i>	1
	<i>Cyanothamnus ramosus</i> subsp. <i>anethifolius</i>	opp
	<i>Dasypogon bromeliifolius</i>	3
	<i>Desmocladius flexuosus</i>	15
*	<i>Ehrharta calycina</i>	5
	<i>Eremaea pauciflora</i> var. <i>pauciflora</i>	10
	<i>Gastrolobium capitatum</i>	0.5
*	<i>Gladiolus caryophyllaceus</i>	1
	<i>Gompholobium tomentosum</i>	1
	<i>Hibbertia hypericoides</i>	3
	<i>Hyalosperma cotula</i>	0.5
*	<i>Hypochaeris radicata</i>	0.5
	<i>Laxmannia ramosa</i> subsp. <i>ramosa</i>	0.5
	<i>Lechenaultia floribunda</i>	2
	<i>Leucopogon polymorphus</i>	1
	<i>Levenhookia stipitata</i>	0.5
	<i>Lomandra hermaphrodita</i>	0.5
	<i>Lyginia barbata</i>	10
	<i>Lyginia imberbis</i>	5
	<i>Macrozamia fraseri</i>	5
	<i>Melaleuca thymoides</i>	0.5
	<i>Nuytsia floribunda</i>	opp
	<i>Patersonia occidentalis</i>	1
*	<i>Pentameris airoides</i> subsp. <i>airoides</i>	0.5
	<i>Petrophile linearis</i>	1



**Sample Name:**

**Q13 (ML10)**

**Project no.:** EP20-099

**Date:** 27/10/2020

**Status** Non-permanent

**Author:** SKP,

Q13 (ML10): Page 3 of 3

<i>Phlebocarya filifolia</i>	0.5
<i>Regelia inops</i>	opp
<i>Scholtzia involucrata</i>	3
<i>Siloxerus filifolius</i>	0.5
<i>Stirlingia latifolia</i>	1
<i>Stylidium repens</i>	0.5
<i>Styphelia conostephioides</i>	opp
<i>Styphelia xerophylla</i>	2
<i>Thysanotus thysoides</i>	opp
<i>Trachymene pilosa</i>	1
* <i>Ursinia anthemoides</i>	5

## Sample Name:

**Q14 (ML11)**

**Project no.:** EP20-099

**Date:** 27/10/2020

**Author:** SKP,

**Status:** Permanent

Q14 (ML11): Page 1 of 3

### Quadrat and landform details

Sample type: quadrat

Size: 10 m x 10 m

NW corner easting: 0

NW corner northing: 0

Altitude (m): 0

Geographic datum/zone: GDA94/Zone 50

Soil water content: dry

Landform: flat

Time since fire: > 5 yrs

Disturbance: low - Weeds, ajd clearinf

Soil type/texture sand/

Bare ground (%): 5

Rocks (%) and type: No rocks

Soil colour: grey/

Litter: 5% (leaves,twigs,)

Vegetation condition: very good



### Additional monitoring parameters

Plant community: MpAf

Vegetation health: Good

Signs of disturbance

Rubbish: Present in low densities (bottles)

Clearing: No. Adjacent to track/firebreak

Pest animals: Evidence of rabbit digging



## Sample Name: Q14 (ML11)

Project no.: EP20-099

Date: 27/10/2020

Status Non-permanent

Author: SKP,

Q14 (ML11): Page 2 of 3

### Species Data

\* denotes non-native species

Status	Confirmed name	Cover (%)
	* <i>Acacia longifolia</i>	opp
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	0.5
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	opp
	<i>Acacia saligna</i>	0.5
	<i>Adenanthos cygnorum</i>	5
	<i>Anigozanthos manglesii</i>	opp
	<i>Astartea scoparia</i>	1
	<i>Asteridea pulverulenta</i>	0.5
	<i>Austrostipa compressa</i>	0.5
	* <i>Avena barbata</i>	1
	* <i>Briza maxima</i>	3
	<i>Cassya flava</i>	10
	* <i>Chamelaucium uncinatum</i>	opp
	<i>Cyanothamnus ramosus</i> subsp. <i>anethifolius</i>	0.5
	<i>Dianella revoluta</i>	1
	* <i>Ehrharta calycina</i>	3
	* <i>Eragrostis curvula</i>	opp
	<i>Euchilopsis linearis</i>	1
	* <i>Euphorbia terracina</i>	0.5
	* <i>Fumaria capreolata</i>	1
	* <i>Gladiolus caryophyllaceus</i>	0.5
	<i>Gompholobium tomentosum</i>	1
	<i>Hibbertia stellaris</i>	opp
	<i>Hibbertia subvaginata</i>	0.5
	<i>Hyalosperma cotula</i>	0.5
	<i>Hypocalymma angustifolium</i>	50
	* <i>Hypochaeris glabra</i>	1
	<i>Hypolaena exsulca</i>	0.5
	<i>Jacksonia furcellata</i>	1
	<i>Kunzea glabrescens</i>	opp
	<i>Laxmannia squarrosa</i>	0.5
	<i>Lepidosperma longitudinale</i>	1
	<i>Levenhookia stipitata</i>	0.5
	<i>Lomandra caespitosa</i>	opp
	<i>Lyginia barbata</i>	2
	<i>Melaleuca preissiana</i>	40

**Sample Name:**

**Q14 (ML11)**

**Project no.:** EP20-099

**Date:** 27/10/2020

**Status** Non-permanent

**Author:** SKP,

Q14 (ML11): Page 3 of 3

* <i>Pelargonium capitatum</i>	opp
<i>Pericalymma ellipticum</i>	1
<i>Phyllangium paradoxum</i>	1
<i>Podotheca gnaphalioides</i>	2
<i>Poranthera microphylla</i>	0.5
<i>Schoenus efolius</i>	5
<i>Scholtzia involucrata</i>	opp
<i>Siloxerus filifolius</i>	0.5
<i>Stylidium brunonianum</i>	0.5
<i>Stylidium repens</i>	1
* <i>Ursinia anthemoides</i>	5



# Appendix G

Cluster Dendrograms

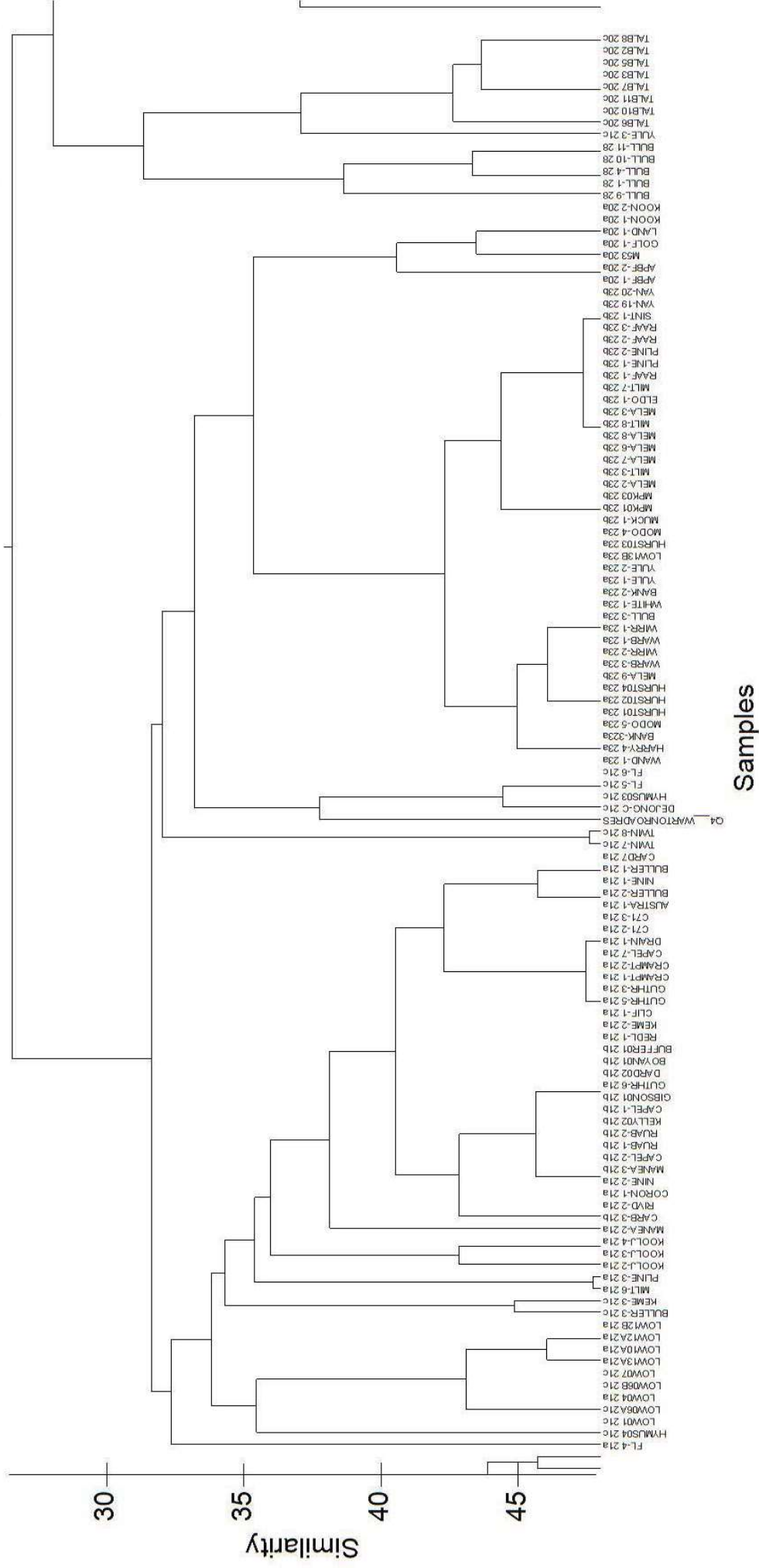


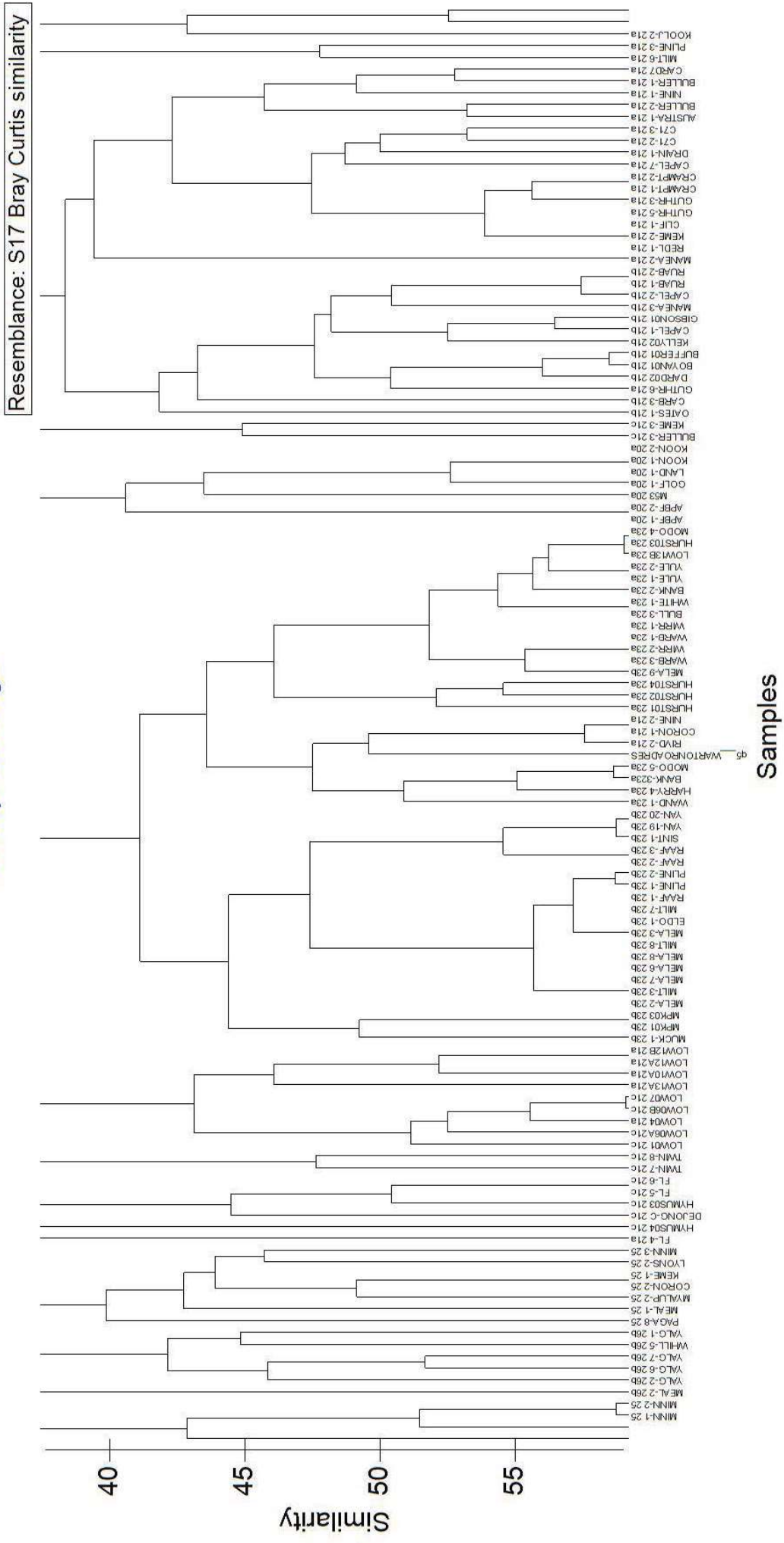




Group average

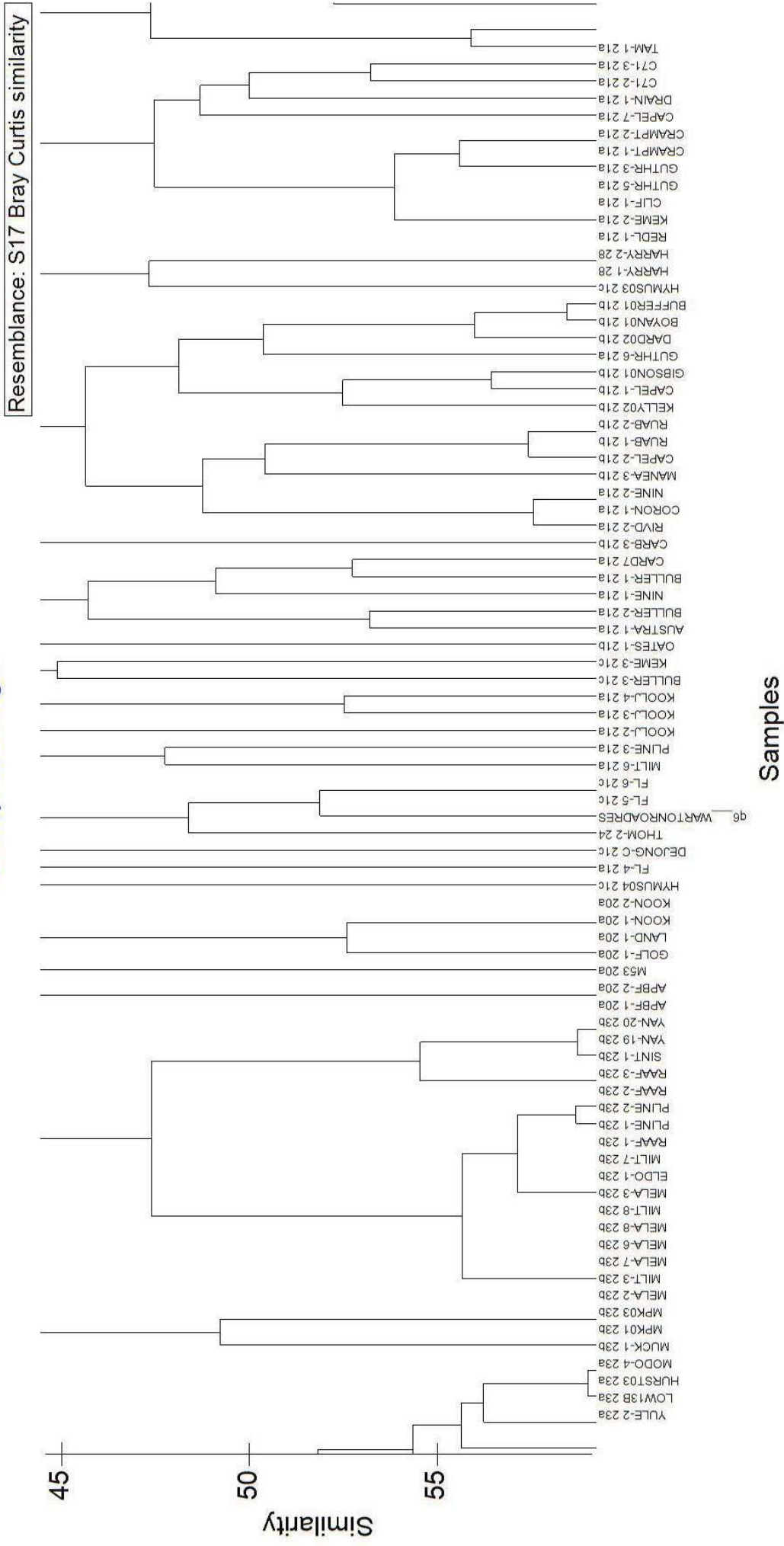
Resemblance: S17 Bray Curtis similarity





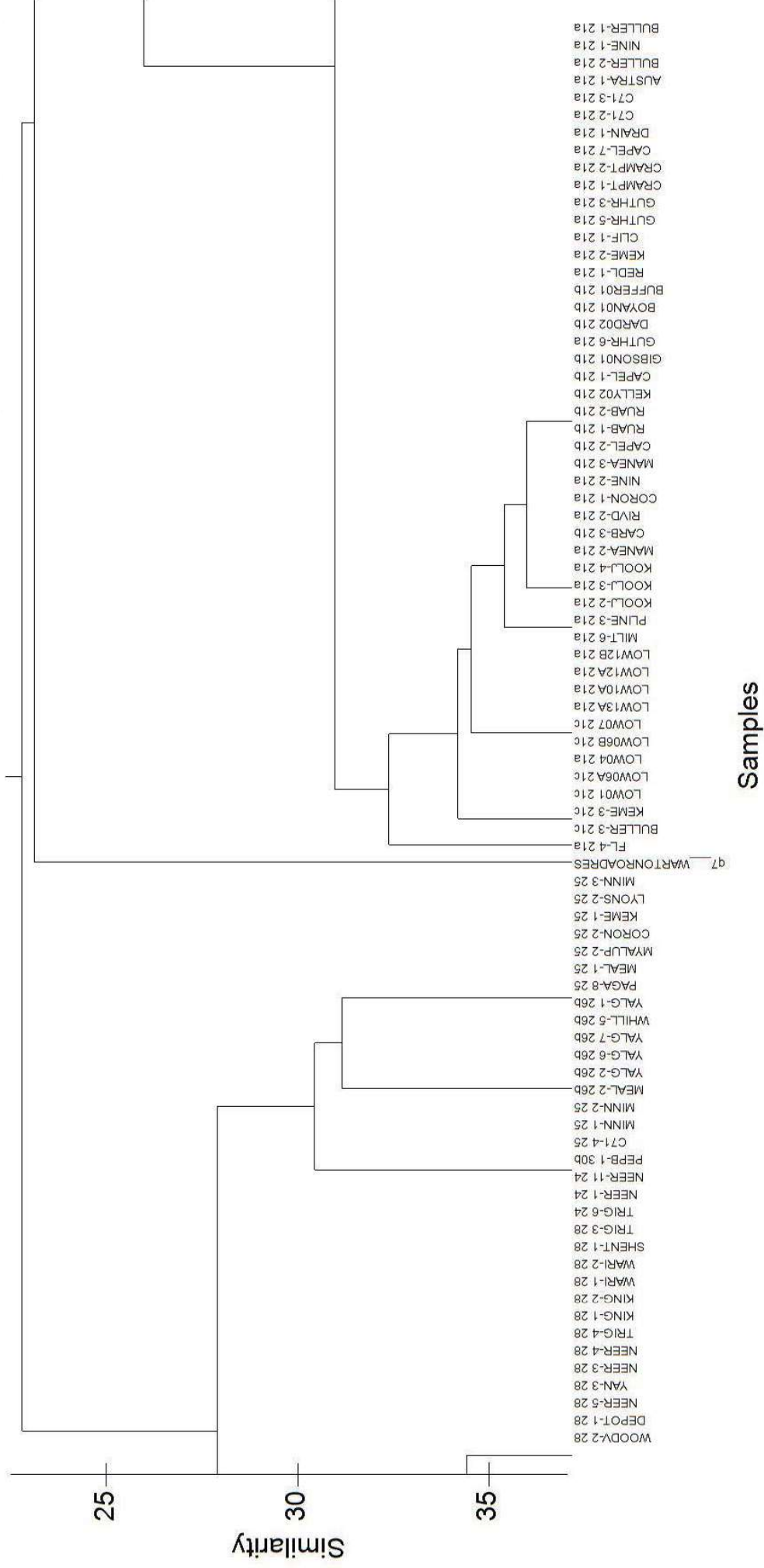


Group average



Group average

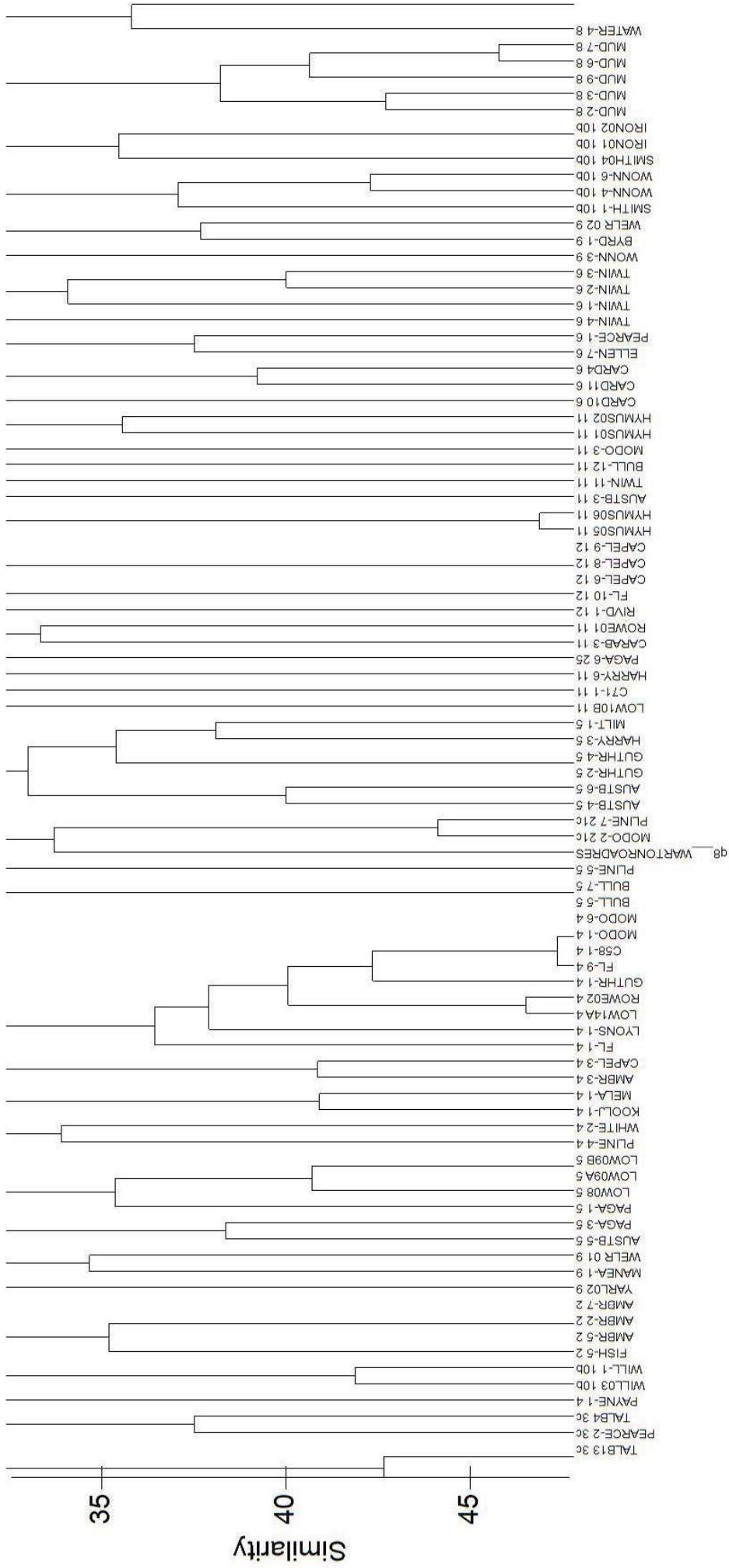
Resemblance: S17 Bray Curtis similarity





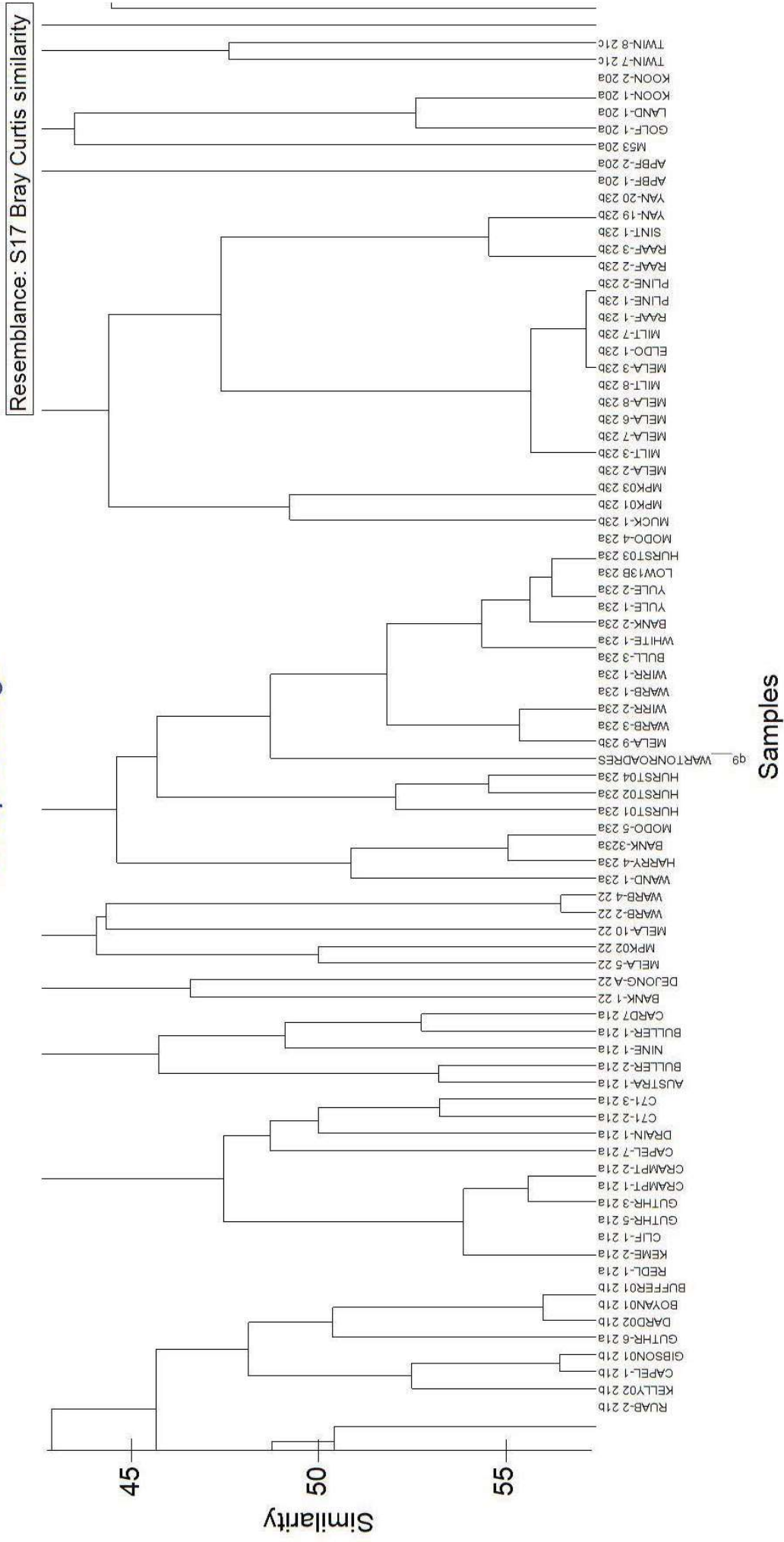
Group average

Resemblance: S17 Bray Curtis similarity



Samples

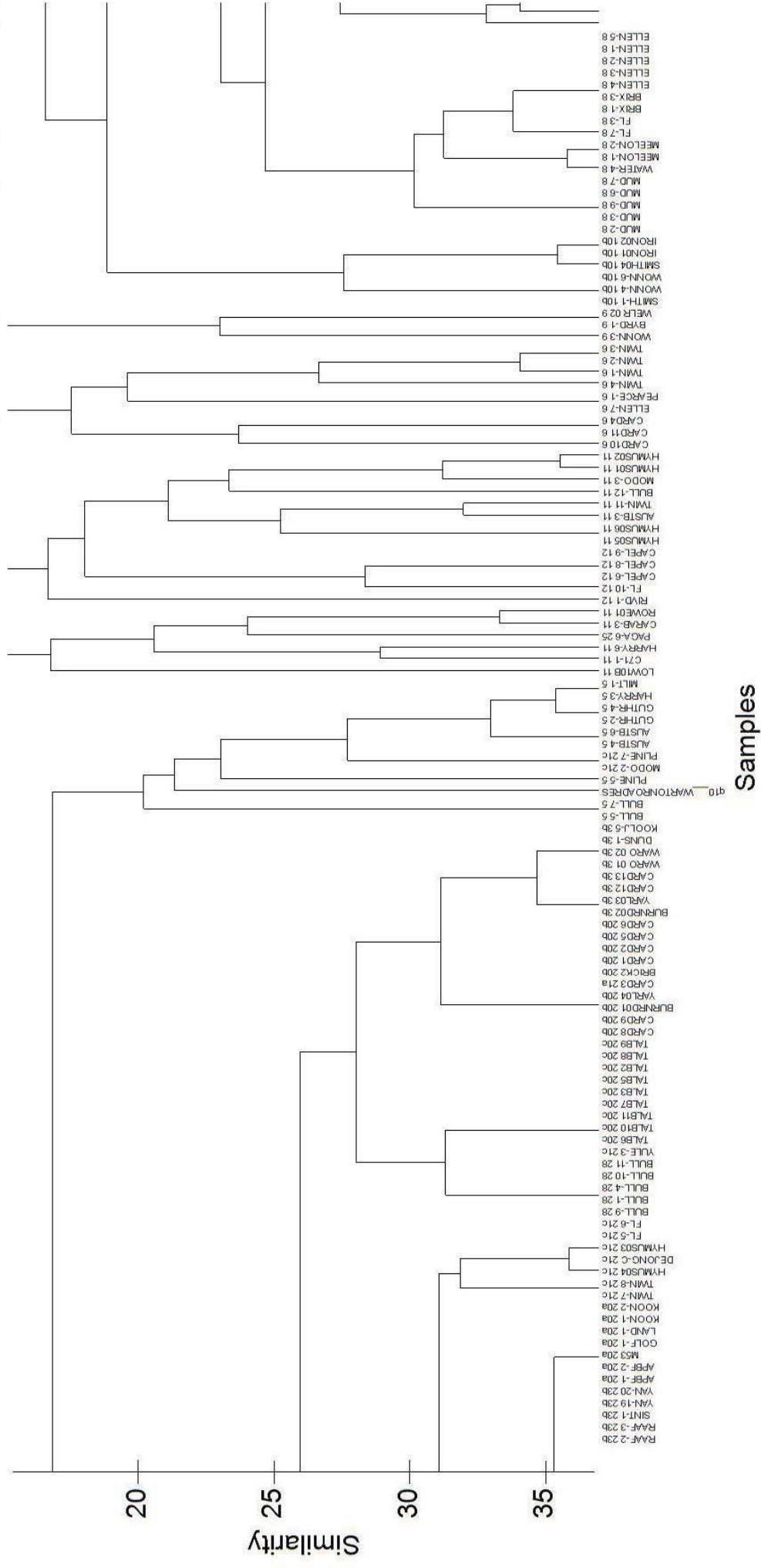
Group average





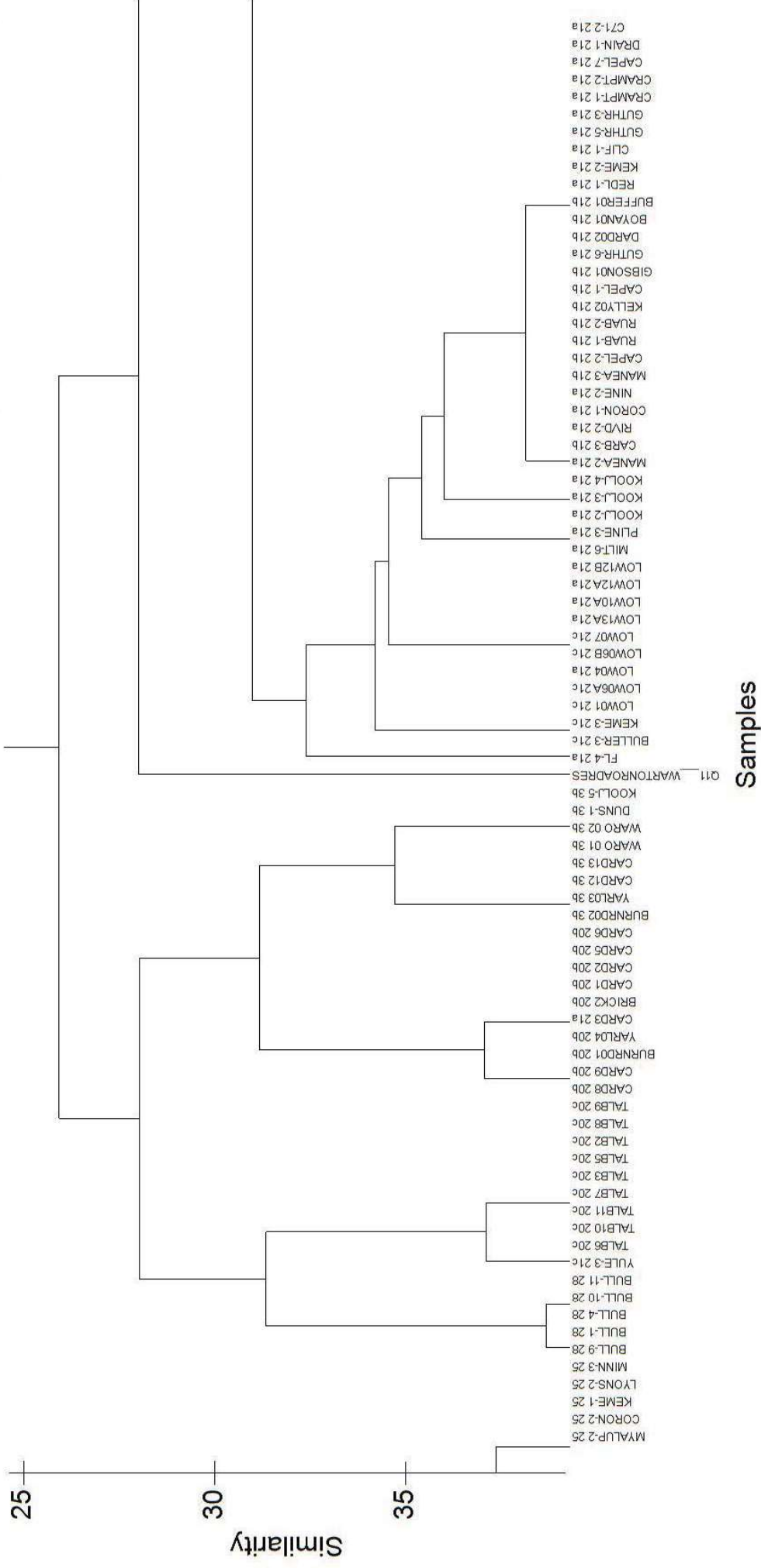


Resemblance: S17 Bray Curtis similarity



Group average

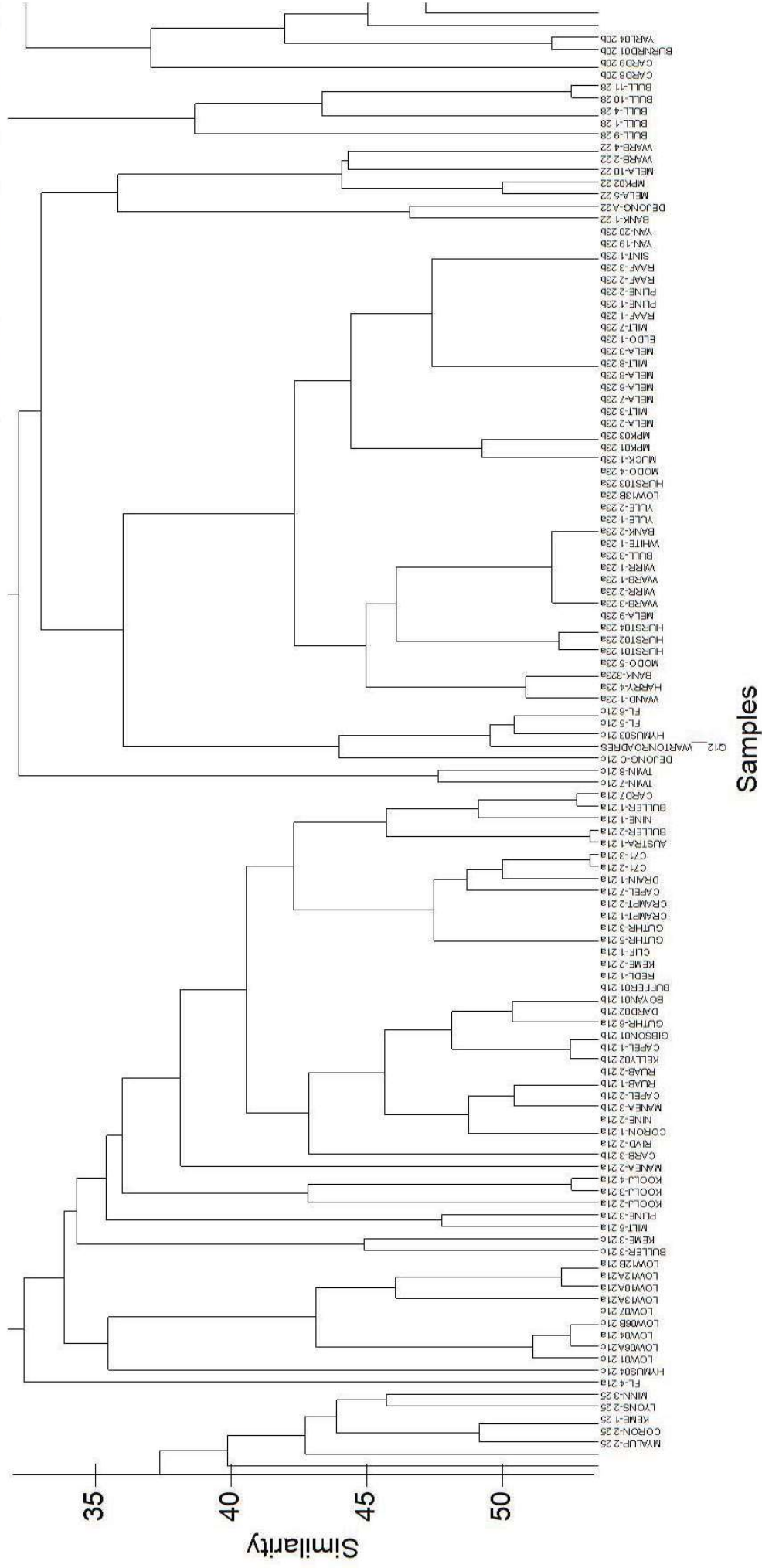
Resemblance: S17 Bray Curtis similarity





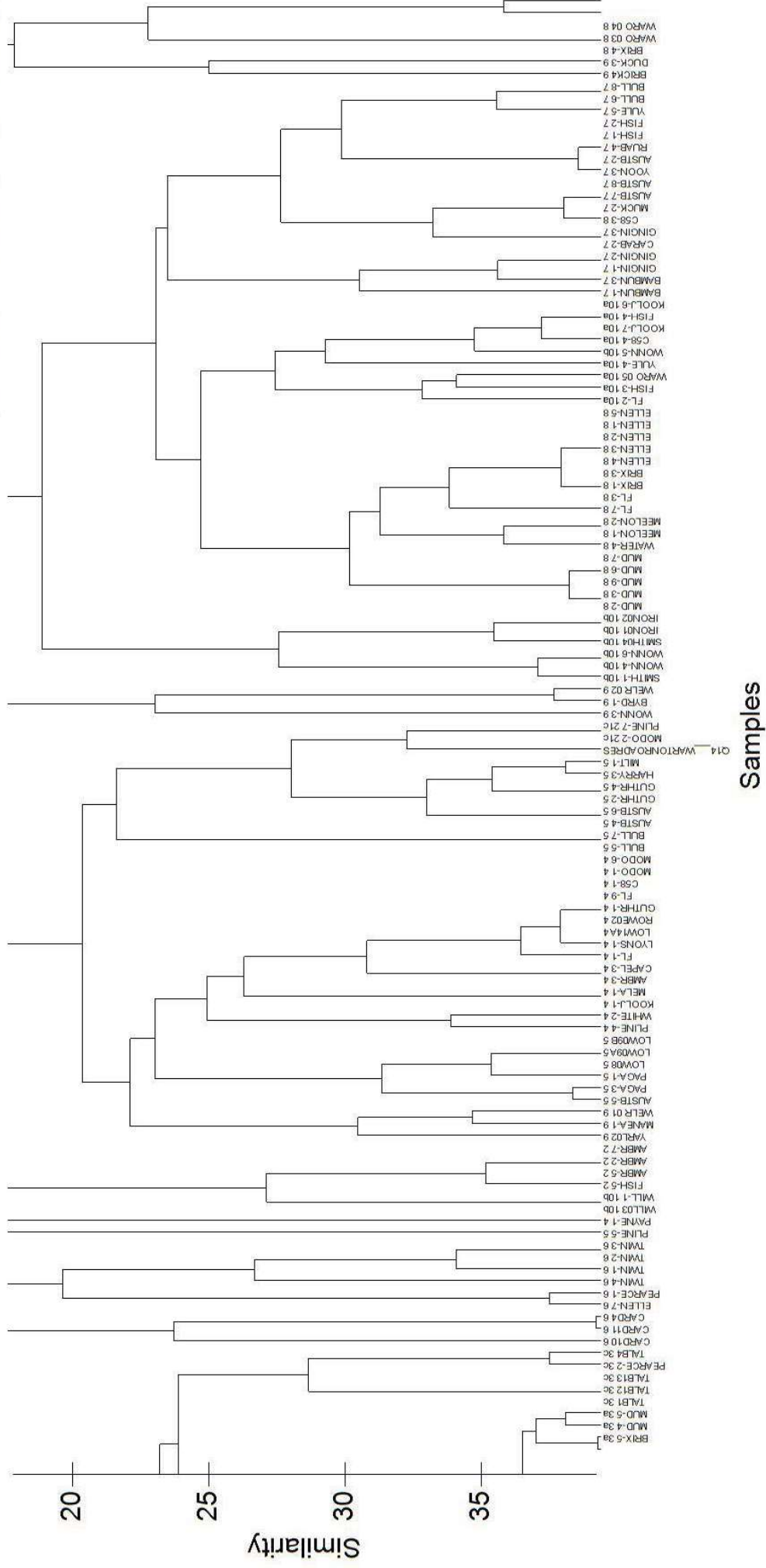
Group average

Resemblance: S17 Bray Curtis similarity



Group average

Resemblance: S17 Bray Curtis similarity





# Appendix H

Significant Tree Details







Tag No.	Eastings	Northing	DBH (cm)	Species	Category	Notes
Works area						
73	398544	6447078	183	<i>Allocasuarina fraseriana</i>	No hollows	Bifurcated
74	398498	6447030	168	<i>Allocasuarina fraseriana</i>	No hollows	
76	398507	6447041	253	<i>Allocasuarina fraseriana</i>	No hollows	
79	398477	6447011	246	<i>Allocasuarina fraseriana</i>	No hollows	
81	398189	6446707	289	<i>Allocasuarina fraseriana</i>	No hollows	
85	398484	6447022	300	<i>Allocasuarina fraseriana</i>	No hollows	
86	398323	6446849	320	<i>Allocasuarina fraseriana</i>	No hollows	Bifurcated 5 times, large base
94	398871	6447427	237	<i>Allocasuarina fraseriana</i>	No hollows	
95	398244	6446765	250	<i>Allocasuarina fraseriana</i>	No hollows	
90	398633	6447170	222	<i>Banksia ilicifolia</i>	No hollows	Bifurcated at 1m
67	398459	6446986	76	<i>Eucalyptus todtiana</i>	No hollows	
63	398574	6447106	100	Stag	No suitable hollows	Bees at base, hollow too shallow for black cockatoo
Additional trees within survey area						
100	398322.25	6446821.28	194	<i>Melaleuca preissiana</i>	No hollows	
60	398871.97	6447382.08	60	<i>Eucalyptus todtiana</i>	No hollows	Partly burnt trunk
61	398557.84	6447069.42	75	<i>Eucalyptus marginata</i>	No hollows	
62	398563.70	6447087.11	70	<i>Eucalyptus marginata</i>	No hollows	
63	398602.88	6447113.66	54	<i>Eucalyptus marginata</i>	No hollows	Nest
64	398602.78	6447113.77	0	<i>Eucalyptus marginata</i>	No hollows	
66	398523.35	6447026.51	72	<i>Eucalyptus marginata</i>	No hollows	
68	398614.43	6447118.99	80	Stag	No hollows	Burnt
69	398064.19	6446547.42	50	<i>Eucalyptus todtiana</i>	No hollows	
70	398554.05	6447080.14	230	<i>Allocasuarina fraseriana</i>	No hollows	
71	398524.24	6447051.46	262	<i>Allocasuarina fraseriana</i>	No hollows	
75	398533.42	6447058.43	380	<i>Allocasuarina fraseriana</i>	No hollows	
77	398183.86	6446695.18	203	<i>Allocasuarina fraseriana</i>	No hollows	
78	398328.01	6446839.97	274	<i>Melaleuca preissiana</i>	No hollows	
80	398540.39	6447068.47	260	<i>Allocasuarina fraseriana</i>	No hollows	
83	398301.12	6446810.76	287	<i>Melaleuca preissiana</i>	No hollows	
87	398611.82	6447144.13	226	<i>Allocasuarina fraseriana</i>	No hollows	

Tag No.	Easting	Northing	DBH (cm)	Species	Category	Notes
88	398619.91	6447146.65	245	<i>Allocasuarina fraseriana</i>	No hollows	
89	398606.62	6447136.54	198	<i>Banksia attenuata</i>	No hollows	
91	398905.81	6447471.67	170	<i>Allocasuarina fraseriana</i>	No hollows	
92	398644.82	6447175.50	270	<i>Allocasuarina fraseriana</i>	No hollows	
93	398593.76	6447119.45	169	<i>Banksia attenuata</i>	No hollows	
96	398275.18	6446790.99	241	<i>Nuytsia floribunda</i>	No hollows	
97	398322.24	6446840.80	165	<i>Melaleuca preissiana</i>	No hollows	
99	398279.61	6446782.50	311	<i>Melaleuca preissiana</i>	No hollows	



# Appendix I

Monitoring Data







Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Acacia pulchella</i> var. <i>glaberrima</i>	Native	5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Adenanthos cygnorum</i>	Native	5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Austrostipa compressa</i>	Native	1
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Banksia attenuata</i>	Native	2
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Briza maxima</i>	Non-native	4
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Burchardia congesta</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Calytrix fraseri</i>	Native	10
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Centrolepis drummondiana</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Conostylis juncea</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Crassula colorata</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Dampiera linearis</i>	Native	5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Dasypogon bromeliifolius</i>	Native	2
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Desmodcladus flexuosus</i>	Native	5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Desmodcladus flexuosus</i>	Native	1
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Ehrharta calycina</i>	Non-native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Eremaea asterocarpa</i> subsp. <i>asterocarpa</i>	Native	5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Gladiolus caryophyllaceus</i>	Non-native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Gompholobium tomentosum</i>	Native	1
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Hibbertia subvaginata</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Hyalosperma cotula</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Hypochoeris glabra</i>	Non-native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Isolepis marginata</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Jacksonia furcellata</i>	Native	3
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Laxmannia ramosa</i> subsp. <i>ramosa</i>	Native	3
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Lechenaultia floribunda</i>	Native	5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Levenhookia stipitata</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Lomandra caespitosa</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Lomandra micrantha</i>	Native	1
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Lomandra sonderi</i>	Native	1
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Lyginia barbata</i>	Native	5

Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Melaleuca thymoides</i>	Native	1
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Melaleuca trichophylla</i>	Native	15
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Patersonia occidentalis</i>	Native	1
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Pelargonium capitatum</i>	Non-native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Pentameris airoides subsp. airoides</i>	Non-native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Phlebocarya ciliata</i>	Native	5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Phyllangium paradoxum</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Podothera angustifolia</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Poranthera microphylla</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Scholtzia involucreata</i>	Native	1
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Siloxerus filifolius</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Trachymene pilosa</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Tricoryne elatior</i>	Native	0.5
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Ursinia anthemoides</i>	Non-native	7
20/10/2020	ML1 (Q4)	Very good	Good	Low	No	Rabbit diggings	<i>Wahlenbergia capensis</i>	Non-native	0.5
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Acacia longifolia</i>	Non-native	0.5
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Allocasuarina fraseriana</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Banksia attenuata</i>	Native	20
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Banksia menziesii</i>	Native	20
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Bossiaea eriocarpa</i>	Native	2
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Briza maxima</i>	Non-native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Burchardia congesta</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Caesia occidentalis</i>	Native	0.5
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Caladenia flava subsp. flava</i>	Native	0.5
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Chamaecilla corymbosa</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Comesperma calymega</i>	Native	5
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Conostephium pendulum</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Conostylis juncea</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Cyperaceae sp.</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Dasyopogon bromeliifolius</i>	Native	10



Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Dianella revoluta</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Drosera erythrorhiza</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Gompholobium tomentosum</i>	Native	3
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Hovea trisperma</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Hypochaeris glabra</i>	Non-native	0.5
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Jacksonia furcellata</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Kunzea glabrescens</i>	Native	30
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Lepidosperma pubisquamum</i>	Native	3
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Lomandra hermaphrodita</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Lomandra sonderi</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Lomandra sp.</i>	Native	0.5
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Lyginia barbata</i>	Native	3
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Melaleuca thymoides</i>	Native	2
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Microtis media</i>	Native	0.5
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Patersonia occidentalis</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Petrophile linearis</i>	Native	0.5
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Phlebocarya ciliata</i>	Native	20
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Styphelia conostephioides</i>	Native	0.5
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Thysanotus manglesianus</i>	Native	1
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Trachymene pilosa</i>	Native	0.5
20/10/2020	ML2 (Q5)	Very good	Good	Absent	No	Rabbit diggings	<i>Xanthorrhoea brunonis</i>	Native	3
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Acacia pulchella var. glaberrima</i>	Native	2
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Banksia attenuata</i>	Native	15
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Banksia menziesii</i>	Native	10
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Briza maxima</i>	Non-native	3
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Burchardia congesta</i>	Native	0.5

Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Caladenia flava subsp. flava</i>	Native	0.5
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Conostylis aculeata subsp. aculeata</i>	Native	5
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Dasypogon bromeliifolius</i>	Native	10
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Desmodadus flexuosus</i>	Native	2
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Disa bracteata</i>	Non-native	0.5
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Ehrharta calycina</i>	Non-native	1
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Ehrharta longiflora</i>	Non-native	1
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Gladiolus caryophyllaceus</i>	Non-native	0.5
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Gompholobium tomentosum</i>	Native	1
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Hypochaeris glabra</i>	Non-native	1
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Hypolaena exsulca</i>	Native	2
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Jacksonia furcellata</i>	Native	1
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Kunzea glabrescens</i>	Native	25
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Laxmannia ramosa subsp. ramosa</i>	Native	1
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Lomandra caespitosa</i>	Native	0.5
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Lomandra preissii</i>	Native	2



Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Lyginia imberbis</i>	Native	2
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Melaleuca thymoides</i>	Native	2
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Patersonia occidentalis</i>	Native	1
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Phlebocarya ciliata</i>	Native	5
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Sonchus oleraceus</i>	Non-native	2
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Stylidium repens</i>	Native	0.5
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Thysanotus manglesianus</i>	Native	0.5
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Trachymene pilosa</i>	Native	1
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Ursinia anthemoides</i>	Non-native	10
20/10/2020	ML3 (Q6)	Very good	Moderate	Low	Partial clearing southern portion	Rabbit diggings	<i>Wahlenbergia capensis</i>	Non-native	0.5
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Acacia pulchella</i> var. <i>glaberrima</i>	Native	1
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Allocasuarina fraseriana</i>	Native	25
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Banksia attenuata</i>	Native	10
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Bossiaea eriocarpa</i>	Native	0.5
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Briza maxima</i>	Non-native	2
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Burchardia congesta</i>	Native	0.5
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Caladenia flava</i> subsp. <i>flava</i>	Native	0.5
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Caladenia paludosa</i>	Native	0.5
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Chamaescilla corymbosa</i>	Native	1
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Comesperma calymega</i>	Native	0.5
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Conostephium pendulum</i>	Native	1
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Conostylis juncea</i>	Native	1

Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Dasypogon bromeliifolius</i>	Native	25
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Drosera erythrorhiza</i>	Native	0.5
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Ehrharta longiflora</i>	Non-native	1
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Eucalyptus marginata subsp. marginata</i>	Native	15
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Gladiolus caryophyllaceus</i>	Non-native	0.5
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Gompholobium tomentosum</i>	Native	1
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Hibbertia racemosa</i>	Native	0.5
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Hovea trisperma</i>	Native	1
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Jacksonia furcellata</i>	Native	1
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Kunzea glabrescens</i>	Native	15
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Lomandra nigricans</i>	Native	0.5
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Lomandra preissii</i>	Native	1
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Lomandra sonderi</i>	Native	1
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Macrozamia fraseri</i>	Native	2
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Microtis media</i>	Native	0.5
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Phlebocarya ciliata</i>	Native	3
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Prasophyllum parvifolium</i>	Native	0.5
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Pterostylis sanguinea</i>	Native	0.5
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Tricoryne elatior</i>	Native	1
20/10/2020	ML4 (Q7)	Very good	Good	Absent	No	Rabbit diggings	<i>Xanthorrhoea brunonis</i>	Native	10
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Acacia pulchella var. glaberrima</i>	Native	2
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Adenanthos obovatus</i>	Native	1
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Amphipogon turbinatus</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Austrostipa compressa</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Banksia attenuata</i>	Native	2
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Briza maxima</i>	Non-native	1
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Calytrix fraseri</i>	Native	2
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Chamaescilla corymbosa</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Conostylis juncea</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Cyanothamnus ramosus subsp. anethifolius</i>	Native	0.5



Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Dampiera linearis</i>	Native	1
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Dasypogon bromeliifolius</i>	Native	40
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Ehrharta calycina</i>	Non-native	1
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Eucalyptus todtiana</i>	Native	20
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Gladiolus caryophyllaceus</i>	Non-native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Gompholobium tomentosum</i>	Native	1
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Hemiandra pungens</i>	Native	1
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Hyalosperma cotula</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Hypocalymma angustifolium</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Hypochoeris glabra</i>	Non-native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Jacksonia furcellata</i>	Native	1
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Kunzea glabrescens</i>	Native	5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Laxmannia squarrosa</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Lepidosperma pubisquamum</i>	Native	1
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Levenhookia stipitata</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Lomandra caespitosa</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Lomandra preissii</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Melaleuca preissiana</i>	Native	5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Melaleuca seriata</i>	Native	20
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Melaleuca thymoides</i>	Native	1
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Nuytsia floribunda</i>	Native	4
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Patersonia occidentalis</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Phlebocarya ciliata</i>	Native	5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Phyllangium paradoxum</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Platytheca galioides</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Poranthera microphylla</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Rhodanthe citrina</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Schoenus subfascicularis</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Schoenus unispiculatus</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Siloxerus filifolius</i>	Native	0.5

Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Stylium repens</i>	Native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Trachymene pilosa</i>	Native	1
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Tricoryne elatior</i>	Native	1
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Ursinia anthemoides</i>	Non-native	0.5
20/10/2020	ML5 (Q8)	Very good	Good	Absent	No	Rabbit diggings	<i>Xanthorrhoea brunonis</i>	Native	2
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Acacia huegelii</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Acacia pulchella var. glaberrima</i>	Native	2
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Alexandria nitens</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Allocasuarina huegeliana</i>	Native	5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Amphipogon turbinatus</i>	Native	1
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Arnocrinum preissii</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Austrostipa compressa</i>	Native	1
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Banksia attenuata</i>	Native	20
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Banksia menziesii</i>	Native	5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Bossiaea eriocarpa</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Briza maxima</i>	Non-Native	3
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Burchardia congesta</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Caladenia flava subsp. flava</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Calytrix ?flavescens</i>	Native	2
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Calytrix fraseri</i>	Native	4
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Cassytha flava</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Chaetospira curvifolia</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Conostephium pendulum</i>	Native	1
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Conostylis aculeata subsp. aculeata</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Conostylis juncea</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Cyanothamnus ramosus subsp. anethifolius</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Dasyopogon bromeliifolius</i>	Native	2
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Desmodium flexuosus</i>	Native	1
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Drosera pallida</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Ehrharta calycina</i>	Non-native	1

Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Eremaea pauciflora</i> var. <i>pauciflora</i>	Native	25
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Gladiolus caryophyllaceus</i>	Non-native	1
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Gompholobium tomentosum</i>	Native	1
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Hemianthra pungens</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Hibbertia hypericoides</i>	Native	20
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Hibbertia subvaginata</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Hyalosperma cotula</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Hypochoeris glabra</i>	Non-native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Hypochoeris glabra</i>	Non-native	1
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Laxmannia ramosa</i> subsp. <i>ramosa</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Lechenaultia floribunda</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Levenhookia stipitata</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Lomandra hermaphrodita</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Lyginia barbata</i>	Native	1
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Patersonia occidentalis</i>	Native	1
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Pentameris airoides</i> subsp. <i>airoides</i>	Non-native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Petrophile linearis</i>	Native	1
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Phlebocarya filifolia</i>	Native	1
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Scholtzia involucreata</i>	Native	1
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Stylidium piliferum</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Stylidium repens</i>	Native	1
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Styphelia xerophylla</i>	Native	2
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Trachymene pilosa</i>	Native	0.5
20/10/2020	ML6 (Q9)	Very good	Good	Absent	No	Rabbit diggings	<i>Ursinia anthemoides</i>	Non-native	2
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Acacia pulchella</i> var. <i>glaberrima</i>	Native	1
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Adenanthos obovatus</i>	Native	2
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Austrostipa compressa</i>	Native	1
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Avena barbata</i>	Non-native	1
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Briza maxima</i>	Non-native	5
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Caladenia flava</i> subsp. <i>flava</i>	Native	0.5



Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Calytrix fraseri</i>	Native	2
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Ehrharta calycina</i>	Non-native	2
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Ehrharta longiflora</i>	Non-native	2
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Fumaria capreolata</i>	Non-native	1
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Gastrolobium capitatum</i>	Native	1
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Gladiolus caryophyllaceus</i>	Non-native	1
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Hyalosperma cotula</i>	Native	0.5
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Hypocalymma angustifolium</i>	Native	5
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Hypochoeris glabra</i>	Non-native	2
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Isolepis marginata</i>	Native	0.5
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Lomandra hermaphrodita</i>	Native	0.5
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Lomandra nigricans</i>	Native	1
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Lomandra preissii</i>	Native	0.5
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Patersonia occidentalis</i>	Native	1
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Pentameris airoides subsp. airoides</i>	Non-native	0.5
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Phlebocarya ciliata</i>	Native	25
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Phyllangium paradoxum</i>	Native	0.5
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Platytheca galloides</i>	Native	0.5
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Podotheca gnaphalioides</i>	Native	3
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Poranthera microphylla</i>	Native	0.5
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Pterostylis sanguinea</i>	Native	0.5
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Regelia inops</i>	Native	20
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Schoenus sp.</i>	Native	0.5
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Schoenus subfascicularis</i>	Native	1
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Sonchus oleraceus</i>	Non-native	1
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Trachymene pilosa</i>	Native	2
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Tricoryne elatior</i>	Native	1
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Ursinia anthemoides</i>	Non-native	2
20/10/2020	ML7 (Q10)	Very good	Good	Absent	No	Rabbit diggings	<i>Wahlenbergia preissii</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Acacia pulchella var. glaberrima</i>	Native	2

Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Adenanthos cygnorum</i>	Native	2
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Amphipogon turbinatus</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Austrostipa compressa</i>	Native	1
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Avena barbata</i>	Non-native	4
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Brassica tournefortii</i>	Non-native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Briza maxima</i>	Non-native	3
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Burchardia congesta</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Conostephium pendulum</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Crassula colorata</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Dampiera linearis</i>	Native	2
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Dasypogon bromeliifolius</i>	Native	5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Desmodium flexuosus</i>	Native	10
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Diuris corymbosa</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Ehrharta calycina</i>	Non-native	4
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Eremaea asterocharpa subsp. asterocharpa</i>	Native	10
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Euphorbia terracina</i>	Non-native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Gladiolus caryophyllaceus</i>	Non-native	1
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Gompholobium tomentosum</i>	Native	1
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Hemianthus puniceus</i>	Native	1
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Hensmania turbinata</i>	Native	1
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Hypochaeris glabra</i>	Non-native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Hypolaena exsulca</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Isolepis marginata</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Jacksonia furcellata</i>	Native	2
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Laxmannia squarrosa</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Lechenaultia floribunda</i>	Native	2
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Levenhookia stipitata</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Lomandra sonderi</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Lotus subbiflorus</i>	Non-native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Lyginia imberbis</i>	Native	5

Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Melaleuca thymoides</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Melaleuca trichophylla</i>	Native	10
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Microtis media</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Patersonia occidentalis</i>	Native	3
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Philotheca spicata</i>	Native	2
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Phlebocarya ciliata</i>	Native	20
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Phlebocarya filifolia</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Phyllangium paradoxum</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Romulea rosea</i>	Non-native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Scholtzia involucreata</i>	Native	2
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Styphelia conostephioides</i>	Native	2
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Thysanotus triandrus</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Trachymene pilosa</i>	Native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Tricoryne elatior</i>	Native	2
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Ursinia anthemoides</i>	Non-native	5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Vulpia bromoides</i>	Non-native	0.5
27/10/2020	ML8 (Q11)	Very good	Good	Low	No	Rabbit diggings	<i>Wahlenbergia capensis</i>	Non-native	0.5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Anigozanthos manglesii</i>	Native	0.5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Austrostipa compressa</i>	Native	0.5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Avena barbata</i>	Non-native	5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Banksia attenuata</i>	Native	20
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Banksia menziesii</i>	Native	10
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Bossiaea eriocarpa</i>	Native	5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Briza maxima</i>	Non-native	5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Burchardia congesta</i>	Native	0.5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Calytrix ?flavescens</i>	Native	1
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Calytrix fraseri</i>	Native	5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Chaetospora curvifolia</i>	Native	0.5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Conostylis aculeata subsp. aculeata</i>	Native	5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Corynotheca micrantha</i>	Native	1



Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Dasypogon bromeliifolius</i>	Native	2
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Desmodcladus flexuosus</i>	Native	20
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Drosera pallida</i>	Native	0.5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Ehrharta calycina</i>	Non-native	1
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Eremaea pauciflora var. pauciflora</i>	Native	10
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Gladiolus caryophyllaceus</i>	Non-native	1
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Gompholobium tomentosum</i>	Native	1
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Hibbertia subvaginata</i>	Native	1
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Hyalosperma cotula</i>	Native	0.5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Hypochoeris glabra</i>	Non-native	1
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Kunzea glabrescens</i>	Native	5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Lechenaultia floribunda</i>	Native	2
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Levenhookia stipitata</i>	Native	0.5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Lomandra hermaphrodita</i>	Native	0.5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Lyginia barbata</i>	Native	3
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Lyginia imberbis</i>	Native	10
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Macrozamia fraseri</i>	Native	3
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Melaleuca thymoides</i>	Native	3
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Petrophile linearis</i>	Native	0.5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Phlebocarya ciliata</i>	Native	3
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Phlebocarya filifolia</i>	Native	0.5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Stirlingia latifolia</i>	Native	2
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Stylidium repens</i>	Native	0.5
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Styphelia conostephioides</i>	Native	1
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Trachymene pilosa</i>	Native	1
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Tricoryne elatior</i>	Native	1
27/10/2020	ML9 (Q12)	Very good	Moderate	Absent	No	Rabbit diggings	<i>Ursinia anthemoides</i>	Non-native	5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Acacia pulchella var. glaberrima</i>	Native	3
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Adenanthos cygnorum</i>	Native	15
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Arnocrinum preissii</i>	Native	0.5

Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Austrostipa compressa</i>	Native	1
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Banksia attenuata</i>	Native	20
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Banksia menziesii</i>	Native	5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Bossiaea eriocarpa</i>	Native	4
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Briza maxima</i>	Non-native	5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Burchardia congesta</i>	Native	0.5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Calytrix ?flavescens</i>	Native	0.5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Calytrix fraseri</i>	Native	1
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Conostylis aculeata subsp. aculeata</i>	Native	1
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Dasyopogon bromeliifolius</i>	Native	3
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Desmocladius flexuosus</i>	Native	15
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Ehrharta calycina</i>	Non-native	5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Eremaea pauciflora var. pauciflora</i>	Native	10
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Gastrolobium capitatum</i>	Native	0.5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Gladiolus caryophyllaceus</i>	Non-native	1
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Gompholobium tomentosum</i>	Native	1
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Hibbertia hypericoides</i>	Native	3
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Hyalosperma cotula</i>	Native	0.5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Hypochaeris radicata</i>	Non-native	0.5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Laxmannia ramosa subsp. ramosa</i>	Native	0.5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Lechenaultia floribunda</i>	Native	2
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Leucopogon polymorphus</i>	Native	1
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Levenhookia stipitata</i>	Native	0.5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Lomandra hermaphrodita</i>	Native	0.5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Lyginia barbata</i>	Native	10
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Lyginia imberbis</i>	Native	5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Macrozamia fraseri</i>	Native	5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Melaleuca thymoides</i>	Native	0.5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Patersonia occidentalis</i>	Native	1
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Pentameris airoides subsp. airoides</i>	Non-native	0.5

Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Petrophile linearis</i>	Native	1
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Phlebocarya filifolia</i>	Native	0.5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Scholtzia involuocrata</i>	Native	3
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Siloxerus filifolius</i>	Native	0.5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Stirlingia latifolia</i>	Native	1
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Stylidium repens</i>	Native	0.5
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Styphelia xerophylla</i>	Native	2
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Trachymene pilosa</i>	Native	1
27/10/2020	ML10 (Q13)	Very good	Good	Absent	No	Rabbit diggings	<i>Ursinia anthemoides</i>	Non-native	5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Acacia longifolia</i>	Non-native	opp
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Acacia pulchella var. glaberrima</i>	Native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Acacia pulchella var. glaberrima</i>	Native	opp
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Acacia saligna</i>	Native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Adenanthos cygnorum</i>	Native	5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Anigozanthos manglesii</i>	Native	opp
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Astartea scoparia</i>	Native	1
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Asteridea pulverulenta</i>	Native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Austrostipa compressa</i>	Native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Avena barbata</i>	Non-native	1
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Briza maxima</i>	Non-native	3
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Cassya flava</i>	Native	10
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Chamelaucium uncinatum</i>	Non-native	opp
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Cyanothamnus ramosus subsp. anethifolius</i>	Native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Dianella revoluta</i>	Native	1
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Ehrharta calycina</i>	Non-native	3
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Eragrostis curvula</i>	Non-native	opp
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Euchilopsis linearis</i>	Native	1
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Euphorbia terracina</i>	Non-native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Fumaria capreolata</i>	Non-native	1
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Gladiolus caryophyllaceus</i>	Non-native	0.5



Date	Monitoring	Vegetation	Vegetation	Rubbish	Clearing	Pest animals	Species name	Species status	FPC
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Gompholobium tomentosum</i>	Native	1
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Hibbertia stellaris</i>	Native	opp
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Hibbertia subvaginata</i>	Native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Hyalosperma cotula</i>	Native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Hypocalymma angustifolium</i>	Native	50
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Hypochoeris glabra</i>	Non-native	1
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Hypolaena exsulca</i>	Native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Jacksonia furcellata</i>	Native	1
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Kunzea glabrescens</i>	Native	opp
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Laxmannia squarrosa</i>	Native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Lepidosperma longitudinale</i>	Native	1
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Levenhookia stipitata</i>	Native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Lomandra caespitosa</i>	Native	opp
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Lyginia barbata</i>	Native	2
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Melaleuca preissiana</i>	Native	40
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Pelargonium capitatum</i>	Non-native	opp
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Pericalymma ellipticum</i>	Native	1
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Phyllangium paradoxum</i>	Native	1
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Podotherca gnaphalioides</i>	Native	2
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Poranthera microphylla</i>	Native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Schoenus efoliatus</i>	Native	5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Scholtzia involucrata</i>	Native	opp
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Siloxerus filifolius</i>	Native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Stylidium brunonianum</i>	Native	0.5
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Stylidium repens</i>	Native	1
27/10/2020	ML11 (Q14)	Very good	Good	Low	No	Rabbit diggings	<i>Ursinia anthemoides</i>	Non-native	5