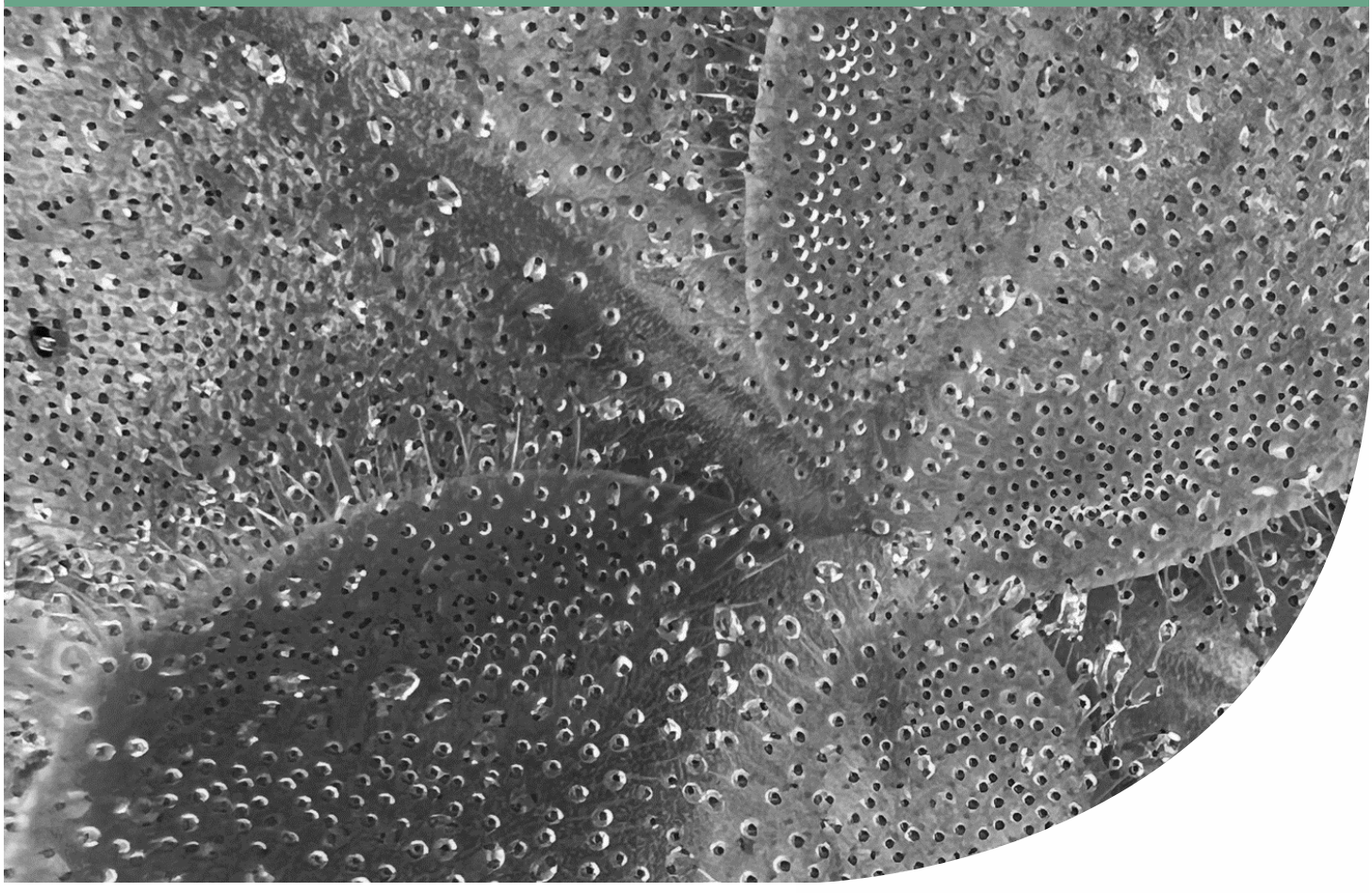
Detailed Flora and Vegetation Assessment

Lot 332 Marginata Crescent and Reserve 26242, Dwellingup

Project No: EP24-104(01)

Prepared for Shire of Murray
February 2025



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Executive Summary

The Shire of Murray engaged Emerge Associates to conduct a detailed flora and vegetation assessment within Lot 332 Marginata Crescent and Reserve 26242 in Dwellingup (referred to herein as the 'site').

The assessment included a desktop study of the environmental context of the site and the likelihood of occurrence of threatened and priority flora and ecological communities. Field surveys were conducted on 19 September and 13 November 2024 during which the composition and condition of vegetation was recorded. Flora and vegetation values were characterised to the standard required of a detailed survey with reference to EPA (2016b).

Outcomes of the flora and vegetation assessment include the following:

- A total of 140 flora species were recorded in the site, comprising 105 native and 35 non-native species.
- Two declared pests were recorded on site: *Asparagus asparagoides* (bridal creeper) and *Moraea flaccida* (one-leaf cape tulip).
- No threatened or priority flora species were recorded. However, one sterile individual may represent *Senecio leucoglossus* (priority 4 in Western Australia).
- The remainder of the threated and priority flora species are not considered to occur in the site as no limitation affecting their detection applies.
- Two native vegetation units, **CcEm** and **mixed shrubland** were mapped ranging in condition from 'very good' to 'degraded', along with non-vegetated areas in 'completely degraded' condition.
- The vegetation units are not representative of any threatened or priority ecological communities.

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Abbreviation Tables

Table A1: Abbreviations – Organisations

Organisations	
BoM	Bureau of Meteorology
CALM	Department of Conservation and Land Management (now DBCA)
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPRID	Department of Primary Industries and Regional Development
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
WALIA	Western Australian Land Information Authority

Table A2: Abbreviations – General terms

General terms	
A	Annual
CR	Critically endangered
EN	Endangered
IBRA	Interim Biogeographic Regionalisation for Australia
MNES	Matters of national environmental significance
NVIS	National Vegetation Information System (ESCAVI 2003)
P	Perennial
P1	Priority 1
P2	Priority 2
P3	Priority 3
P4	Priority 4
PEC	Priority ecological community
T	Threatened
TEC	Threatened ecological communities
VU	Vulnerable
WA	Western Australia
WoNS	Weeds of national significance

Table A3: Abbreviations –Legislation

Legislation	
BAM Act	*Biosecurity and Agriculture Management Act 2007*
BC Act	*Biodiversity Conservation Act 2016*
CALM Act 1984	*Conservation and Land Management Act 1984*
EP Act	*Environmental Protection Act 1986*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
LA Act	*Land Administration Act 1997*
SCRM Act	*Swan and Canning Rivers Management Act 2006*

Table A4: Abbreviations – units of measurement

Units of measurement	
°C	Celsius
ha	Hectare
km	Kilometre
m	Metre
m AHD	m in relation to the Australian height datum

1 Introduction

1.1 Purpose

Emerge Associates (Emerge) were engaged by Shire of Murray to conduct a flora and vegetation assessment within Reserve 26242 and the extension of Forrest Street and Lot 332 Marginata Crescent (including a 6 m wide Asset Protection Zone) in Dwellingup as shown in **Figure 1** (referred to herein as the 'site').

Flora and vegetation assessments are required to characterise vegetation values and, in particular, confirm the presence or absence of values relevant to environmental approvals process, such as, 'native vegetation', 'threatened' flora, 'priority' flora, 'threatened ecological communities' (TECs), 'priority ecological communities' (PECs) and weeds.

1.2 Legislation and policy

'Native vegetation' is defined by the *Environmental Protection Act 1986* (EP Act) as indigenous aquatic or terrestrial flora. In the *Environmental Factor Guideline – Flora and Vegetation* the EPA further defines it as native vascular flora and defines vegetation as groupings of flora (EPA 2016a). Native vegetation is protected in Western Australia and can't be cleared without a permit or valid exemption. Biological diversity, habitat function, scarcity, association with wetlands and other ecosystem services influence the value placed on native vegetation (DWER 2018a). Planted flora and vegetation are generally not regarded as native vegetation unless required to be established under the EP Act or other written law or regulation.

Flora and ecological communities may be listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (DCCEEW 2021) and the State *Biodiversity Conservation Act 2016* (BC Act) (DBCA 2022c, 2023c). Threatened flora and TECs are classified as either 'critically endangered'(CR), 'endangered' (EN) and 'vulnerable' (VU) (DCCEEW 2021). Commonwealth and/or State ministerial approval is required to impact threatened flora or TECs.

Native flora and ecological communities that are not listed as threatened, but are otherwise considered rare or under threat, may be added to a Department of Biodiversity, Conservation and Attractions (DBCA) priority list (DBCA 2022b, c). 'Priority flora' and PECs are classified as either 'priority 1' (P1), 'priority 2' (P2), 'priority 3' (P3) or 'priority 4' (P4). They do not have direct statutory protection. However, their priority classification is taken into account during State and Local government approval processes.

Flora that are regarded as having negative environmental or economic impacts are often referred to as weeds (DBCA 2023e). Particularly detrimental weed species may be listed as a 'declared pest' pursuant to the State *Biosecurity and Agriculture Management Act 2007* (BAM Act) or as a 'weed of national significance' (WoNS) (DAFF 2021). Management of weeds, declared pests and WoNS may be required during government approval processes.

Further information on legislation and policy relevant to flora and vegetation assessments is provided in **Appendix A**.

1.3 Scope of work

The Environmental Protection Authority (EPA) *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment* establishes standards for the assessment of flora and vegetation in Western Australia (EPA 2016b).

The scope of work was to undertake a detailed survey with reference to EPA (2016b).

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

- Desktop study to provide contextual information and determine the likelihood of occurrence of threatened and priority flora or ecological communities.
- Field survey(s) to record flora, vegetation units and vegetation condition.
- Analysis and mapping of contextual information, vegetation units, vegetation condition and threatened and priority flora or ecological communities (if present).
- Documentation of the desktop study, methods, results, discussion and conclusions.

2 Desktop Study

2.1 Site context

2.1.1 Location and extent

The site is located in the Shire of Murray in the Peel region of Western Australia and extends over 4.83 hectares (ha) as shown in **Figure 1**. The site is separated into two portions: part of Reserve 26242 including the extension of Forrest Street and Lot 332 Marginata Crescent (referred to herein as the 'site'). The part of Reserve 26242 and the extension of Forrest Street is bounded by Dwellingup State Forest to the east, west and south and Church St to the north while Lot 332 Marginata Crescent is bounded by Dwellingup State Forest to the north and east, Marginata Crescent to the west and Pinjarra-Williams Road to the south.

2.1.2 Climate

The Peel region of Western Australia experiences a Mediterranean climate of hot dry summers and cool wet winters (BoM 2024). Recent rainfall at the closest weather station to the site has been somewhat inconsistent with long term averages (see **Plate 1**) (BoM 2024). Flora and vegetation surveys should be undertaken during the season that is most suitable for detection and identification of the range of flora likely to occur in the area (EPA 2016b). For the south-west and interzone botanical province in which the site lies, the primary survey time is spring (September to November) (EPA 2016b).

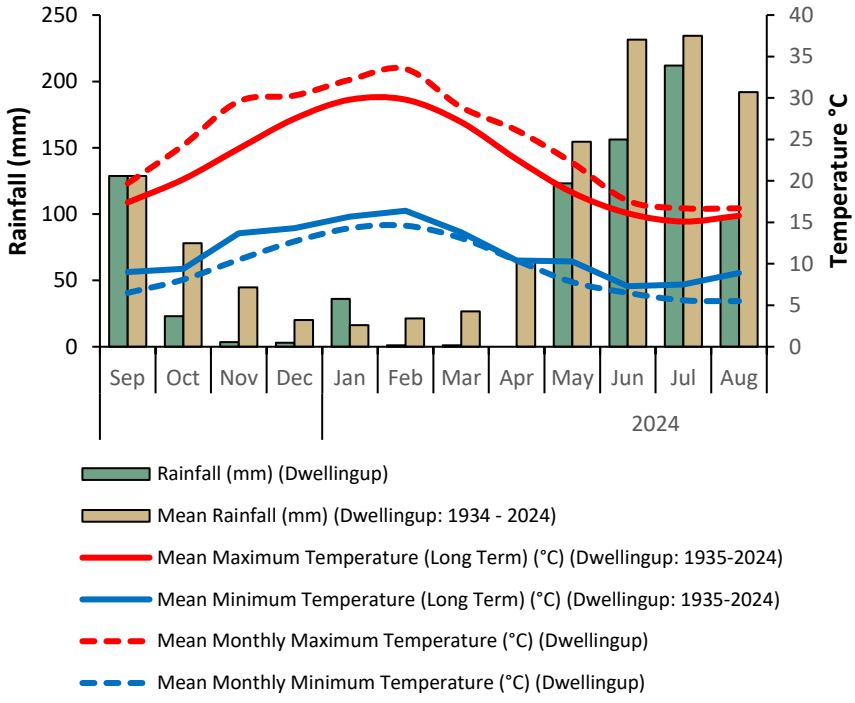

Plate 1: Rainfall and temperature 12 months prior to survey compared to long-term means

2.1.3 Geomorphology and soils

The site occurs on the Darling Plateau which is an ancient erosion surface capped with laterite and dissected by drainage channels (Beard 1990). The eastern part of the Plateau is characterised by flat-topped hills bound by breakaways and more prominent hills (monadnocks) which protrude above the general level of the plateau (Gozzard 2011). The western part comprises valleys with steep, rocky slopes and narrow, flat floors (Gozzard 2011).

Fine scale soil landscape mapping by DPIRD (2022) shows two units as occurring within the site, as described in **Table 1** and shown in **Figure 2.**

Table 1: Soil landscape mapping units within the site (DPIRD 2022)

Soil landscape unit	Location within site	Description
Yarragil Subsystem	Northern portion of Marginata Crescent	Shallow, narrow, upper valleys of the deeply dissected Murray, Bindoon and Helena units. Alluvial, clay and loam soils, moderately well drained, often gravelly, with some sands and loams. Salt prone. Woodland of *E. wandoo, E. accedens.*
Dwellingup 2 Phase	Southern portion of Marginata Crescent and all of Reserve 26242	Divides, lower to upper slopes and hillcrests. Duplex sandy gravels and loamy gravels with minor areas of shallow gravels, deep sandy gravels, yellow deep sands and yellow and pale deep sands, often gravelly.

The site not known to contain any restricted landforms or unique geological features.

2.1.4 Topography

The elevation of Reserve 26242 and the extension of Forrest Street ranges from 265 metres in relation to the Australian height datum (mAHD) on the western side to 275 mAHD on the eastern side. Marginata Crescent sits at 265 mAHD (WALIA 2025) **(Figure 2).**

2.1.5 Hydrology and wetlands

Wetlands are areas of seasonally, intermittently or permanently waterlogged land such as poorly drained soils, ponds, billabongs, lakes, swamps, tidal flats, estuaries, rivers and their tributaries (Wetlands Advisory Committee 1977). Wetlands can 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. Review of the *Ramsar List of Wetlands of International Importance* (DBCA 2017) and *A Directory of Important Wetlands in Australia – Western Australia* (DBCA 2018) indicates that no Ramsar or listed 'important wetlands' are located within or near the site.

The Department of Water and Environmental Regulation (DWER) hydrography linear dataset (DWER 2018b) records that no wetland or water related features occur within the site.

2.1.6 Regional vegetation

Native vegetation is described and mapped at different scales to illustrate patterns in its distribution. At a continental scale the *Interim Biogeographic Regionalisation for Australia* (IBRA) divides Australia into floristic subregions (Environment Australia 2000).

The site is contained within the Jarrah Forest region and within the 'JF1' or northern jarrah forest subregion. The northern jarrah forest subregion is characterised by *Eucalyptus marginata* (jarrah) – *Corymbia calophylla* (marri) forest on laterite gravels with *Eucalyptus wandoo* – marri woodlands in the eastern part (CALM 2003).

Variations in native vegetation can be further classified based on regional vegetation mapping. DBCA (2019) mapping shows the site as comprising the 'Dwellingup, D1' complex which is described as a 'open forest of *Eucalyptus marginata* subsp. *marginata -Corymbia calophylla* on lateritic uplands in mainly humid and subhumid zones'.

The Dwellingup, D1 complex was determined to have 86.83 % of its pre-European extent remaining in the South West in 2018, with 8.35 % protected for conservation purposes (Government of Western Australia 2019).

2.1.7 Threatened and priority flora

The Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) has compiled various datasets relating to 'matters of national environmental significance' (MNES) (DCCEEW 2024). The *Protected Matters Search Tool* provides general guidance on threatened flora listed under the EPBC Act that may occur within a location based on validated records and less reliable unvalidated habitat distribution modelling (DCCEEW 2024).

DBCA's *Threatened and Priority Flora Database* and *WA Herbarium Database* contain records of threatened and priority flora in Western Australia (DBCA 2023d). Searches of these databases provide point data for threatened and priority flora within a location, comprising validated and historical unvalidated records.

The *Protected Matters Search Tool* (DCCEEW 2024) and DBCA's threatened and priority flora databases (reference no. 75-0824FL) identified eight threatened and 15 priority flora occurring or potentially occurring within a 10 km radius of the site (refer **Appendix B**).

2.1.8 Threatened and priority ecological communities

The *Protected Matters Search Tool* provides general guidance on TECs listed as CR and EN under the EPBC Act that may occur within a location based on reliable records and less reliable habitat distribution modelling (DCCEEW 2024).

DBCA's *Threatened and Priority Ecological Community buffers and boundaries in WA* dataset contains validated records of TECs and PECs. Searches of this dataset provides buffered polygons of TEC and PEC records.

The *Protected Matters Search Tool* (DCCEEW 2024) and DBCA's TEC and PEC database (reference no. 46-0824EC) identified nine TECs and one PEC occurring or potentially occurring within a 20 km radius of the site (refer **Appendix C**).

2.1.9 Historical land use

Review of historical images available from 1995 onwards shows that the entirety of the site appears undisturbed prior to 1995 prior to 1995 and the adjacent residential land has been present since this period (WALIA 2024).

2.1.10 DBCA managed or legislated land

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 2023a) and *Lands of Interest* (DBCA 2022a) datasets. The *Legislated Lands and Waters* (DBCA 2023a) dataset includes lands subject to 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 2022a) dataset includes all other lands of which DBCA is recognised as the manager but is not vested under any act.

The site is located within close proximity (<1 km) to the 'A' class reserve known as Dwellingup State Forest, as shown in **Figure 3.**

2.2 Likelihood of occurrence

The distribution and habitat preferences of the threatened and priority flora species and ecological communities listed in **Appendix B** and **Appendix C** was reviewed against site context information described in **Section 2.1**. Likelihood of occurrence of threatened and priority flora species and ecological communities within the site was classified as 'high', 'moderate', 'low' or 'negligible' as outlined in **Table 2**.

Table 2: Decision matrix for likelihood of occurrence of threatened and priority flora and ecological communities

		Distribution[1]	
		Reliable record within search area	No reliable record within search area
Habitat	Suitable	High	Negligible
	Potentially suitable	Moderate	
	Unsuitable	Low	

[1] Reliable record defined as validated, recent (within the last ~40 years) and spatially accurate (refer DBCA search meta data) in order to exclude unverified range or habitat projections.

2.2.1 Threatened and priority flora

Five priority flora were classified as having a 'high' or 'moderate' likelihood of occurrence within the site, as outlined in **Table 3**. The remaining species were classified as having a 'low' or 'negligible'

likelihood of occurrence. The complete likelihood of occurrence assessment is provided as **Appendix B**.

Table 3: Threatened or priority flora species with a high or moderate likelihood of occurrence in the site

Species	Status		Life strategy	Flowering period	Likelihood of occurrence
	WA	EPBC Act			
Acacia horridula	P3	-	P	May-Aug	Moderate
Calothamnus graniticus subsp. *leptophyllus*	P4	-	P	Jun-Aug	Moderate
Pimelea rara	P4	-	P	Dec-Jan	High
Senecio leucoglossus	P4	-	A	Aug-Dec	High
Tetratheca pilifera	P3	-	P	Aug-Oct	High

CR=critically endangered, EN=endangered, VU=vulnerable, P1-P4=Priority 1-Priority 4, P=perennial, A=annual

2.2.2 Threatened and priority ecological communities

All TECs and PECs were classified as having a 'low' or 'negligible' likelihood of occurrence within the site. The complete likelihood of occurrence assessment is provided as **Appendix C**.

3 Methods

3.1 Field survey

Experienced botanists visited the site on 19 September and 13 November 2024 to conduct the field survey. The site was traversed on foot and the composition and condition of vegetation was recorded. Plant specimens were collected where the identity of flora required further confirmation. Photographic images and notes were recorded as required.

3.1.1 Targeted searches

Targeted searches were conducted for threatened and priority flora and ecological communities, with a particular focus on those with a high or moderate likelihood of occurrence (refer **Section 2.2**). Transects for flora were traversed approximately 20 m apart through areas of potentially suitable habitat. Transects and records were marked using a hand-held GPS receiver (±5 m accuracy).

3.1.2 Sampling

Detailed sampling of the vegetation was undertaken using a combination of non-permanent 10 x 10 m quadrats and relevés. The quadrats were established using fence droppers bounded by measuring tape. The relevés were completed over an equivalent 10 x 10 m area without the use of physical markers and were included to provide a more rapid sample of patches of vegetation in poorer condition and/or of smaller size. The position[1] of each sample was recorded with a hand-held GPS receiver (±5 m accuracy).

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, litter layer, topographical position, time since last fire event)
- biological information (species, plant specimens, vegetation structure, vegetation condition, ‘foliage projective cover’, and disturbance).

3.1.3 Vegetation condition

The condition of the vegetation was assessed using the EPA (2016b) scale as adapted from Keighery (1994) **Table 4.**

[1] For quadrats the north-west corner was recorded.

Table 4: Vegetation condition scale applied during the field survey

Category	Definition (EPA 2016b)
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.

^relative to the expected natural diversity for that vegetation.

3.2 Analysis and data preparation

3.2.1 Flora identification

Flora were identified through comparison with named material and through the use of taxonomic keys. Plant specimens collected during the field survey were dried, pressed and named in accordance with requirements of the Western Australian Herbarium (2024).

Flora was classified as native if indigenous to the IBRA region in which the site occurs. Non-native flora is denoted by '*' in text and raw data. The legal or policy status of flora was denoted using codes outlined in **Appendix A**.

3.2.2 Sampling adequacy

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.

Species richness was estimated in PRIMER v6 (Clarke and Gorley 2006). Jacknife1 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). Differences between recorded and estimated species richness was used to evaluate the adequacy of sampling effort.

3.2.3 Threatened and priority flora confirmation

Threatened and priority flora were confirmed as absent from the site where no significant limitation was identified that could have affected their detection (refer **Section 3.3**).

3.2.4 Vegetation unit identification and description

The vegetation units 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) (NVIS Technical Working Group 2017).

3.2.5 TEC and PEC confirmation

Vegetation units were assessed against TEC and PEC diagnostic characteristics and, if available, size and/or vegetation condition thresholds (DBCA 2023b). TECs and PECs were confirmed as absent from the site where no significant limitation was identified that could have affected their detection (refer **Section 3.3**).

3.2.6 Mapping

Environmental features, vegetation units, vegetation condition, threatened or priority flora or ecological communities were mapped on aerial photography using notes and data collected in the field.

3.3 Limitations

It is important to note constraints imposed on assessments and the degree to which these may have limited outcomes. An evaluation of the desktop study and methods applied in the current assessment against standard constraints outlined in the EPA document *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016b) is provided in **Table 5**.

Table 5: Evaluation of assessment against standard constraints outlined in EPA (2016b)

Constraint	Degree of limitation	Details
Availability of contextual information	No limitation	The broad scale contextual information described in **Section 2.1** is adequate to place the site and vegetation in context.
Experience level of personnel	No limitation	This flora and vegetation assessment was undertaken by qualified botanists with between five and 25 years of botanical experience in Western Australia. Technical review was undertaken by a senior environmental consultant with 15 years' experience in environmental science in Western Australia.

Table 6: Evaluation of assessment against standard constraints outlined in EPA (2016b) (continued)

Constraint	Degree of limitation	Details
Suitability of timing	No limitation	In Mediterranean climates some flora spend part of their lifecycle as underground storage organs or seed to avoid excessive heat and drought over the summer period. These species, known as 'geophytes' or 'annuals', tend to re-emerge during winter and are often most visible during spring, which is the flowering period for the majority of plant species. Therefore, spring is the optimal time to complete flora and vegetation surveys in the south-west of WA. The survey was conducted during September and November and thus within the main flowering season for the region. Rainfall in the months prior to the survey was considered sufficient to promote flowering and emergence in spring. 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	Detailed 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 site was visited on two occasions in September and November 2024. As such, the survey is considered to provide a good indication of the flora assemblage present and the condition of the vegetation.
Spatial coverage and access	No limitation	Site coverage was comprehensive (track logged), and all parts of the site could be accessed as required.
Sampling intensity	No limitation	A total of 140 species were recorded, of which 101 were recorded from six sample locations and 39 were recorded opportunistically. Minimum species richness within site is estimated at between 132 (Jacknife1) and 138 (Chao2) species (refer species accumulation curve and estimates shown in **Plate 2**). The number of species recorded in the site is higher than the estimates which demonstrates that survey effort was adequate to prepare a comprehensive species inventory for the site.
Influence of disturbance	Minor limitation	Time since fire is greater than five 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 in parts of the site but disturbance history of the site was considered when undertaking field sampling.
Adequacy of resources	No limitation	All resources required to perform the survey were available.

4 Results

4.1 Flora

4.1.1 Species inventory

A total of 140 were recorded during the field survey. A summary of legal and policy status of flora records is provided in **Table 6**. A complete species list is provided in **Appendix D**.

Table 6: Summary of legal and policy status of taxa recorded in the site

Status	Unlisted	Threatened	Priority	Declared Pest	Planted	Total
Native	105	-	-	-	0	**105**
Non-native	33	-	-	2	0	**35**
Total	138	-	-	2	0	**140**

Sampling recorded 101 species from six samples. A further 39 species were recorded opportunistically across the site. A species accumulation curve derived from sample data is presented in **Plate 2**. Species richness was estimated to be between 132 (Jacknife1) and 138 (Chao2).

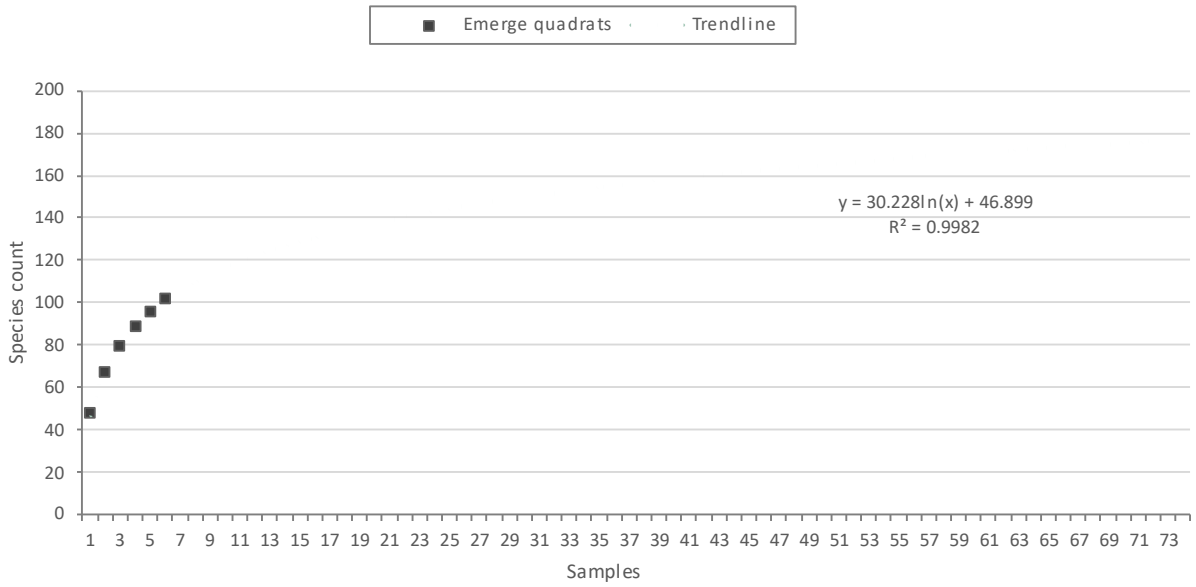

Plate 2: Species accumulation curve derived from sample data (y =30.228ln(x) + 46.899, R^2 = 0.9982)

4.1.2 Threatened and priority flora

No threatened or priority flora species were recorded within the site.

One *Senecio* sp. individual was recorded in the southern portion of the site and has the potential to resemble *Senecio leucoglossus* (priority 4), as discussed in **Section 5.1.1**

The remainder of the threatened and priority flora species identified in **Section 2.2** are not considered to occur in the site as no significant limitation affecting their detection was identified (refer **Section 3.3**).

4.1.3 Declared pests

Two species recorded as a declared pest (C3) pursuant to the BAM Act were recorded within the site: **Moraea flaccida* (one-leaf cape tulip) and *Asparagus asparagoides* (bridal creeper). Bridal creeper is also listed a weed of national significance (WoNS). The one-leaf cape tulip plants were scattered within Reserve 26242 while bridal creeper was recorded in several small populations with Lot 332 Marginata Crescent.

4.2 Vegetation

4.2.1 Vegetation units

Two vegetation units were identified within the site, as mapped from six sample locations, comprised of six quadrats. A description and the area of each vegetation unit is provided in **Table 7**. The location of each vegetation unit and sample location is shown in **Figure 4**. Raw sample data has been provided in **Appendix E**.

Table 7: Description and extent of vegetation units identified within the site

Code	Description	Sample/s	Total area (ha)	Proportion of site (%)	Representative photograph
CcEm	Open forest of *Corymbia calophylla* and *Eucalyptus marginata* with scattered *Banksia grandis* over open shrubland of *Macrozamia riedlei, Xanthorrhoea preissii, and Pteridium esculentum* over low shrubland of *Xanthorrhoea gracilis, Hovea chorizemifolia, and Tetratheca hispidissima* over forbland of *Chamaescilla corymbosa, Xanthosia candida, Scaevola calliptera, Opercularia vaginata,* and *Pentapeltis peltigera* and open grassland of *Tetrarrhena laevis* and *Microlaena stipoides.*	Q1, Q2, Q3, Q4, Q5, Q6	4.28	88.67	
Mixed shrubland	Mixed shrubland of *Pteridium esculentum, Acacia pulchella var. glaberrima, Mirbelia dilatata, *Paraserianthes lophantha, *Chamaecytisus palmensis,* and ** Watsonia meriana var. bulbillifera* over low grassland of *Tetrarrhena laevis, Microlaena stipoides,* and **Briza maxima* over forbland of predominately non-native species and scattered natives.	-	0.24	5.04	

Table 7: Description and extent of vegetation units identified within the site (continued)

Code	Description	Sample/s	Total area (ha)	Proportion of site (%)	Representative photograph
Non-native	Heavily disturbed areas comprising predominantly of cleared tracks/roads, non-native or planted vegetation with occasional scattered shrubs or forbs.	-	0.30	6.29	

4.2.2 Vegetation condition

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

Table 8: Extent of vegetation condition categories within the site

Condition category (Keighery 1994)	Total area (ha)	Proportion of site (%)
Pristine	0	0
Excellent	0	0
Very good	3.68	76.24
Good	0	0
Degraded	0.89	18.38
Completely degraded	0.26	5.38

4.2.3 Threatened and priority ecological communities

No TECs or PECs occur within the site.

5 Discussion

5.1 Flora

5.1.1 Threatened and priority flora

One *Senecio* sp. individual was recorded which may represent *Senecio leucoglossus* (priority 4). This plant was recorded during the September survey and was sterile (non-flowering) so lacked diagnostic characteristics to identify to species level. The plant was not visible during the follow-up survey in November. No other *Senecio* sp. individuals were recorded in the site. *Senecio leucoglossus* is an annual species which flowers from August to December (DBCA 2025) and so was expected to be flowering during the surveys. This species was identified as potentially occurring during the likelihood of occurrence (**Section 2.2.1**) and has been recorded within 3 km of the site. Six other Senecio species occur in the Shire of Murray and so the sterile individual in the site could just as likely represent one of these. Further targeted surveys would be required to confirm the species of the individual.

No other threatened or priority flora species were recorded on site or are considered likely to occur. The absence of perennial species *Acacia horridula, Calothamnus graniticus* subsp. *leptophyllus, Pimelea rara* and *Tetratheca pilifera* was relatively easy to confirm as these were not recorded during the survey and the timing was appropriate to detect them.

5.1.2 Declared pests

No control category is assigned to the two declared pests recorded in the site and as their keeping category is listed as ‘exempt’ under the Act, no management is required.

5.2 Vegetation

5.2.1 Vegetation units

Two vegetation units were recorded, **CcEm** and **mixed shrubland.** Samples Q1 to Q6 were all taken in the **CcEm** vegetation unit and are noted as structurally similar with the same dominant species.

The vegetation unit **mixed shrubland** likely historically resembled **CcEm** however currently lacks any upper storey species and is now largely dominated by y non-native species with small patches of native species remaining. This vegetation largely comprised a midstorey layer with only scattered native understorey vegetation.

5.2.2 Vegetation condition

The vegetation condition across the site ranged from ‘very good’ to ‘completely degraded’. The majority of the site within the **CcEm** vegetation unit has been mapped as ‘very good’ condition as the vegetation structure remains largely intact despite historical disturbances such as logging. This condition category was also appropriate due to the relatively high native species diversity and minimal weed cover presence.

Areas of the site were mapped as ‘degraded’ or ‘completely degraded’ where there is evidence of historic clearing for firebreaks and tracks. These areas exhibit reduced native species diversity and altered vegetation structure, likely due to prolonged disturbance and a lack of natural regeneration.

6 Conclusions

Outcomes of the assessment include the following:

- A total of 105 native and 35 non-native species were recorded within the site
- No threatened or priority flora species were recorded. However, one sterile individual may represent *Senecio leucoglossus* (priority 4 in Western Australia).
- The remainder of the threated and priority flora species are not considered to occur in the site as no limitation affecting their detection applies.
- Two declared pests were recorded on site but no management is required as no control category was assigned under the BAM Act.
- Two native vegetation units, **CcEm** and **mixed shrubland** were mapping within the site ranging in condition from 'very good' to 'degraded', along with non-vegetated areas in 'completely degraded' condition.
- None of the vegetation units are representative of TECs or PECs.

7 References

7.1 General references

The references listed below have been considered as part of preparing this document.

Beard, J. S. 1990, *Plant Life of Western Australia*, Kangaroo Press Pty Ltd., Kenthurst, N.S.W.

Bureau of Meterology (BoM) 2024, *Climate Data Online*, <http://www.bom.gov.au/climate/data/>.

Department of Conservation and Land Management (CALM) 2003, *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002*, Perth, WA.

Clarke, K. R. and Gorley, R. N. 2006, *PRIMER v6: User Manual/Tutorial*, PRIMER-E, Plymouth.

Department of Agriculture, Fisheries and Forestry (DAFF) 2021, *Profiles for Weeds of National Significance*, Centre for Invasive Species Solutions, <https://weeds.org.au/weeds-profiles/>.

Department of Biodiversity, Conservation and Attractions (DBCA) 2017, *Ramsar Sites (DBCA-010)*.

Department of Biodiversity, Conservation and Attractions (DBCA) 2018, *Directory of Important Wetlands in Australia - Western Australia (DBCA-045)*.

Department of Biodiversity Conservation and Attractions (DBCA) 2019, *Vegetation Complexes - South West forest region of Western Australia (DBCA-047)*, Kensington.

Department of Biodiversity, Conservation and Attractions (DBCA) 2022a, *Lands of Interest (DBCA-012)*, <https://catalogue.data.wa.gov.au/dataset/dbca-lands-of-interest>.

Department of Biodiversity, Conservation and Attractions (DBCA) 2022b, *Priority Ecological Communities for Western Australian Version 34*.

Department of Biodiversity, Conservation and Attractions (DBCA) 2022c, *Threatened and Priority Flora List 6 October 2022*, Perth.

Department of Biodiversity, Conservation and Attractions (DBCA) 2023a, *Legislated Lands and Waters (DBCA-011)*, Perth, WA, <https://catalogue.data.wa.gov.au/dataset/dbca-lands-of-interest>.

Department of Biodiversity, Conservation and Attractions (DBCA) 2023b, *Methods for survey and identification of Western Australian threatened ecological communities (draft)*, Perth, Western Australia.

Department of Biodiversity, Conservation and Attractions (DBCA) 2023c, *Threatened Ecological Community List 26 May 2023*, Perth, WA, <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/wa-s-threatened-ecological-communities>.

Department of Biodiversity, Conservation and Attractions (DBCA) 2023d, *Threatened Species and Communities - Data Searches*, Perth, WA, <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities>.

Department of Biodiversity, Conservation and Attractions (DBCA) 2023e, *Weeds*, Perth, WA, <https://www.dbca.wa.gov.au/parks-and-wildlife-service/threat-management/plant-diseases/weeds#:~:text=Weeds%20are%20plants%20(not%20necessarily,detectable%20environmental%20or%20economic%20impacts>.

Department of Biodiversity, Conservation and Attractions (DBCA) 2025, *Western Australian Herbarium*, <https://florabase.dbca.wa.gov.au/>.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2021, *Threatened Ecological Communities*, <https://www.dcceew.gov.au/environment/biodiversity/threatened/communities>.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2024, *Protected Matters Search Tool*, <https://pmst.awe.gov.au/>.

Department of Primary Industries and Regional Development (DPIRD) 2022, *Soil Landscape Mapping - Systems (DPIRD-064)*.

Department of Primary Industries and Regional Development (DPIRD) 2024, *Western Australian Organism List*, <https://www.agric.wa.gov.au/organisms>.

Department of Water and Environmental Regulation (DWER) 2018a, *A Guide to Preparing Revegetation Plans for Clearing Permits*

Department of Water and Environmental Regulation (DWER) 2018b, *Hydrography Linear (Heirarchy) (DWER-031)*, Perth.

Environment Australia 2000, *Revision of the Interim Biogeographic Regionalisation for Australia (IBRA) and Development of Version 5.1 - Summary Report*, Department of Environment and Heritage.

Environmental Protection Authority (EPA) 2016a, *Environmental Factor Guideline: Flora and Vegetation*, Perth.

Environmental Protection Authority (EPA) 2016b, *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment*, Perth.

Gotelli, N. J. and Colwell, R. K. 2011, *Estimating species richness*, Oxford University Press, Oxford.

Government of Western Australia 2019, *2018 South West Vegetation Complex Statistics. Current as of March 2019*, WA Department of Biodiversity, Conservation and Attractions, Perth.

Gozzard, J. 2011, *Sea to scarp - geology, landscape, and land use planning in the southern Swan Coastal Plain*, Geological Survey of Western Australia.

Hill, A. L., Semeniuk, C. A., Semeniuk, V. and Del Marco, A. 1996, *Wetlands of the Swan Coastal Plain: Volume 2A - Wetland Mapping, Classification and Evaluation*, Water and Rivers Commission and the Department of Environmental Protection, Perth.

Keighery, B. 1994, *Bushland Plant Survey: A guide to plant community survey for the community*, Wildflower Society of WA (Inc), Nedlands.

NVIS Technical Working Group 2017, *Australian Vegetation Attribute Manual: National Vegetation Information System*, Department of the Environment and Energy, Canberra.

Western Australian Land Information Authority (WALIA) 2024, *Landgate Map Viewer Plus*, <https://map-viewer-plus.app.landgate.wa.gov.au/index.html>.

Western Australian Land Information Authority (WALIA) 2025, *Landgate Map Viewer Plus*, <https://map-viewer-plus.app.landgate.wa.gov.au/index.html>.

Western Australian Herbarium 2024, *Florabase*, Department of Biodiveristy, Conservation and Attractions (DBCA), <https://florabase.dbca.wa.gov.au/>.

Wetlands Advisory Committee 1977, *The status of reserves in System Six*, Environmental Protection Authority, Perth.

7.2 Online references

The online resources that have been utilised in the preparation of this report are referenced in **Section 7.1**, with access date information provided in **Table R1**.

Table R1 Access dates for online references

Reference	Date accessed	Website or dataset name
BoM (2024)	2 December 2024	Climate Data Online
DAFF (2021)	2 December 2024	Weeds of National Significance (WoNS)
DBCA (2023c)	28 August 2024	Threatened Ecological Communities
DCCEEW (2024)	19 September 2024	Protected Matters Search Tool
DPIRD (2024)	2 December 2024	Western Australian Organism List
WALIA (2024)	2 December 2024	Landgate Map Viewer
Western Australian Herbarium (2024)	December 2024	Florabase

Figures

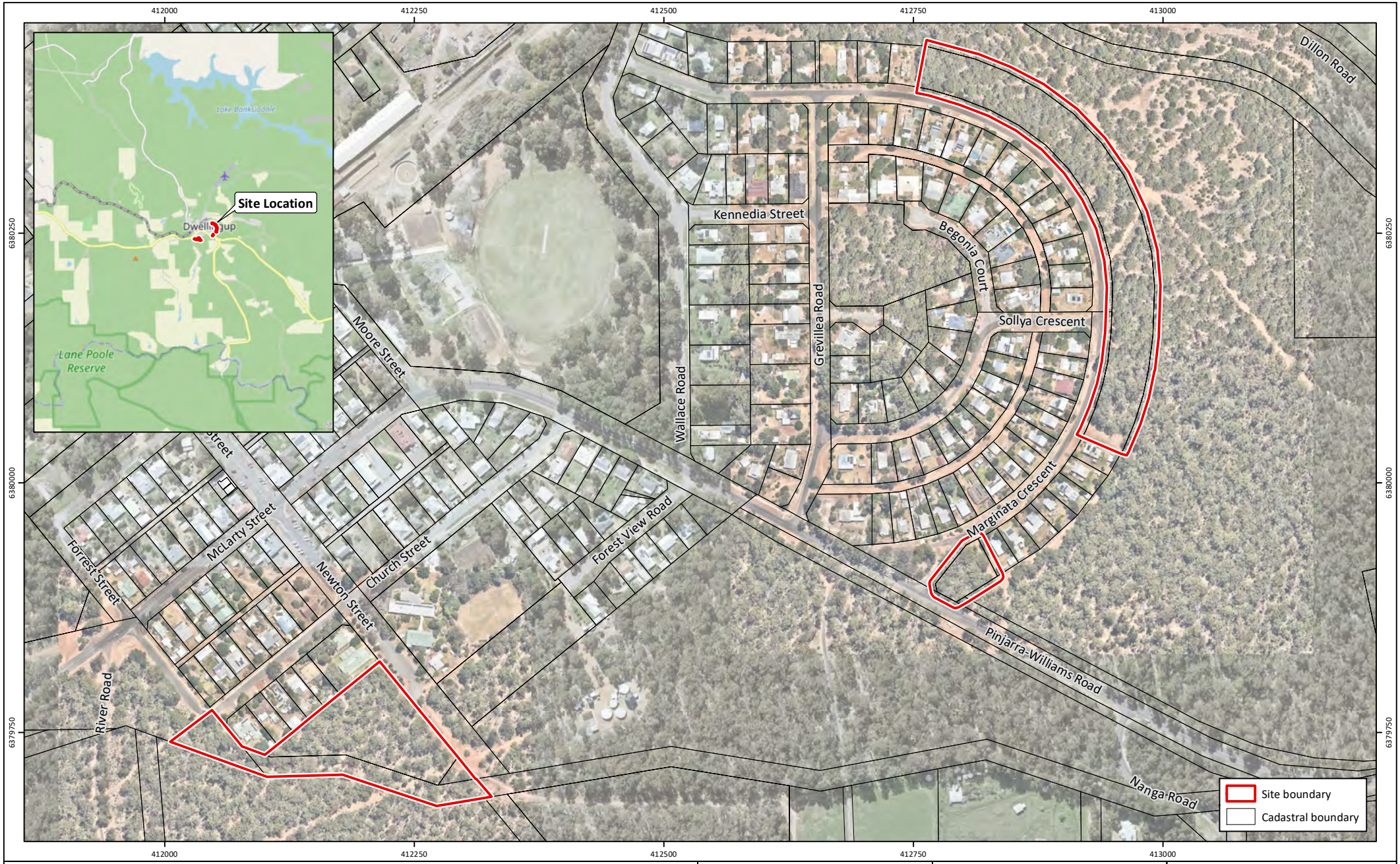

Figure 1: Site Location

Project:	Detailed Flora and Vegetation Assessment Lot 332 Marginata Crescent and Reserve 26242, Dwellingup
Client:	Shire of Murray

Plan Number:
EP24-104(01)--F08

Drawn:	WJC
Date:	27/02/2025
Checked:	KLG
Approved:	RAW
Date:	04/03/2025

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Metres

Scale: 1:5,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

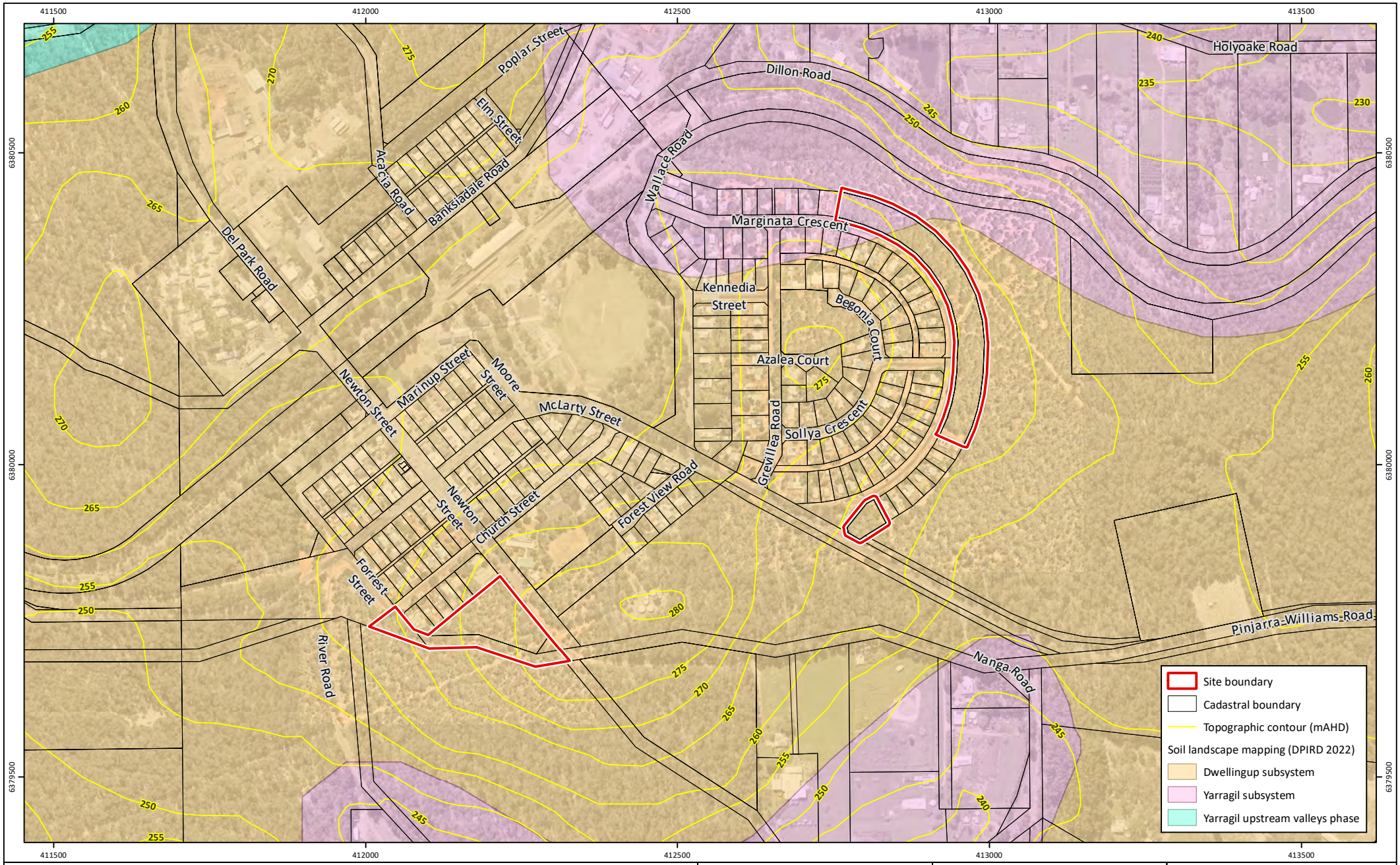

Figure 2: Soils and Topography

Project:	Detailed Flora and Vegetation Assessment Lot 332 Marginata Crescent and Reserve 26242, Dwellingup
Client:	Shire of Murray

Plan Number:
EP24-104(01)--F09

Drawn:	WJC
Date:	27/02/2025
Checked:	KLG
Approved:	RAW
Date:	04/03/2025

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Metres

Scale: 1:8,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

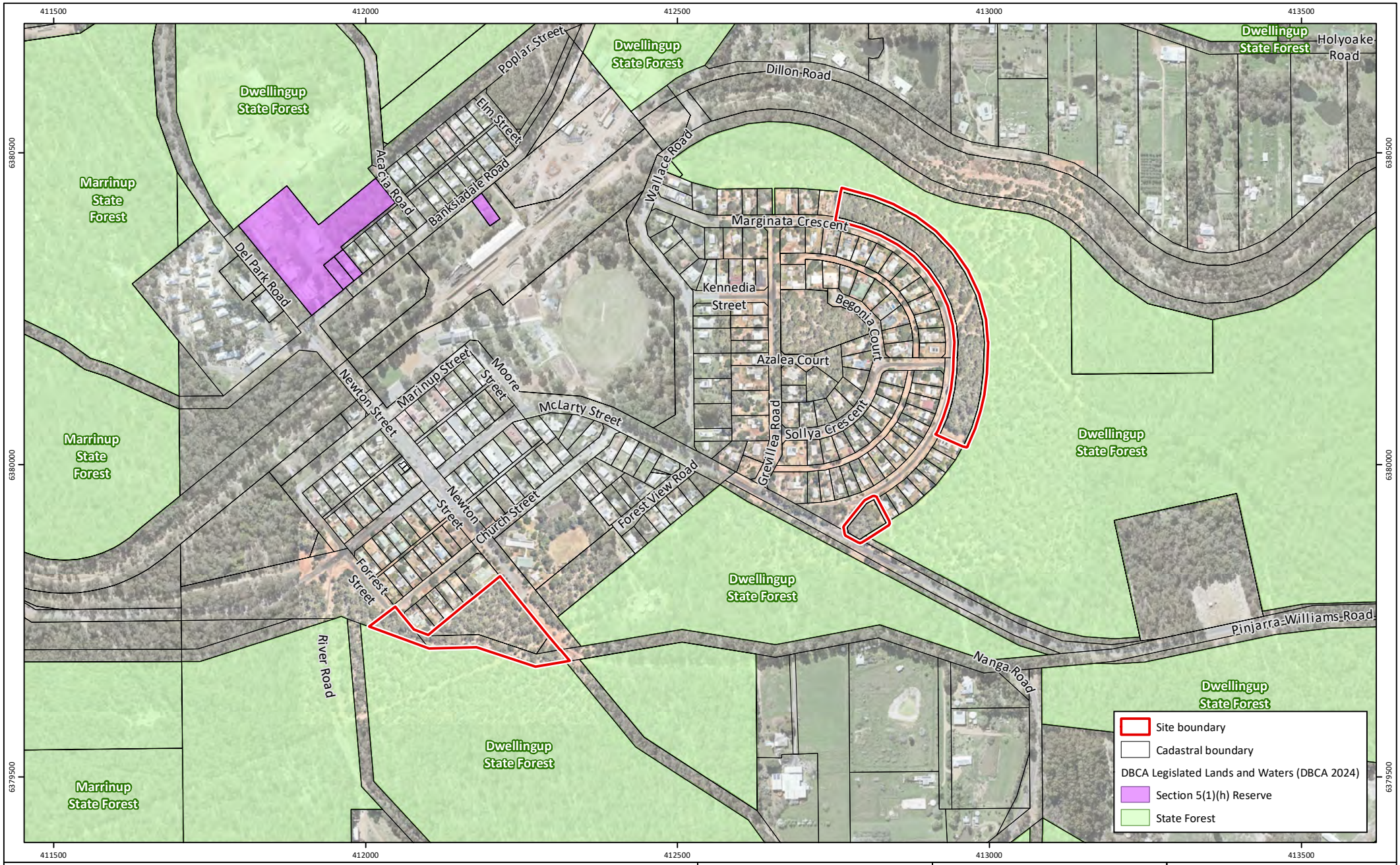

Figure 3: Environmental Features

Project: Detailed Flora and Vegetation Assessment
Lot 332 Marginata Crescent and Reserve 26242, Dwellingup

Client: Shire of Murray

Plan Number:
EP24-104(01)--F12

Drawn:	WJC
Date:	04/03/2025
Checked:	KLG
Approved:	RAW
Date:	04/03/2025

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Scale: 1:8,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

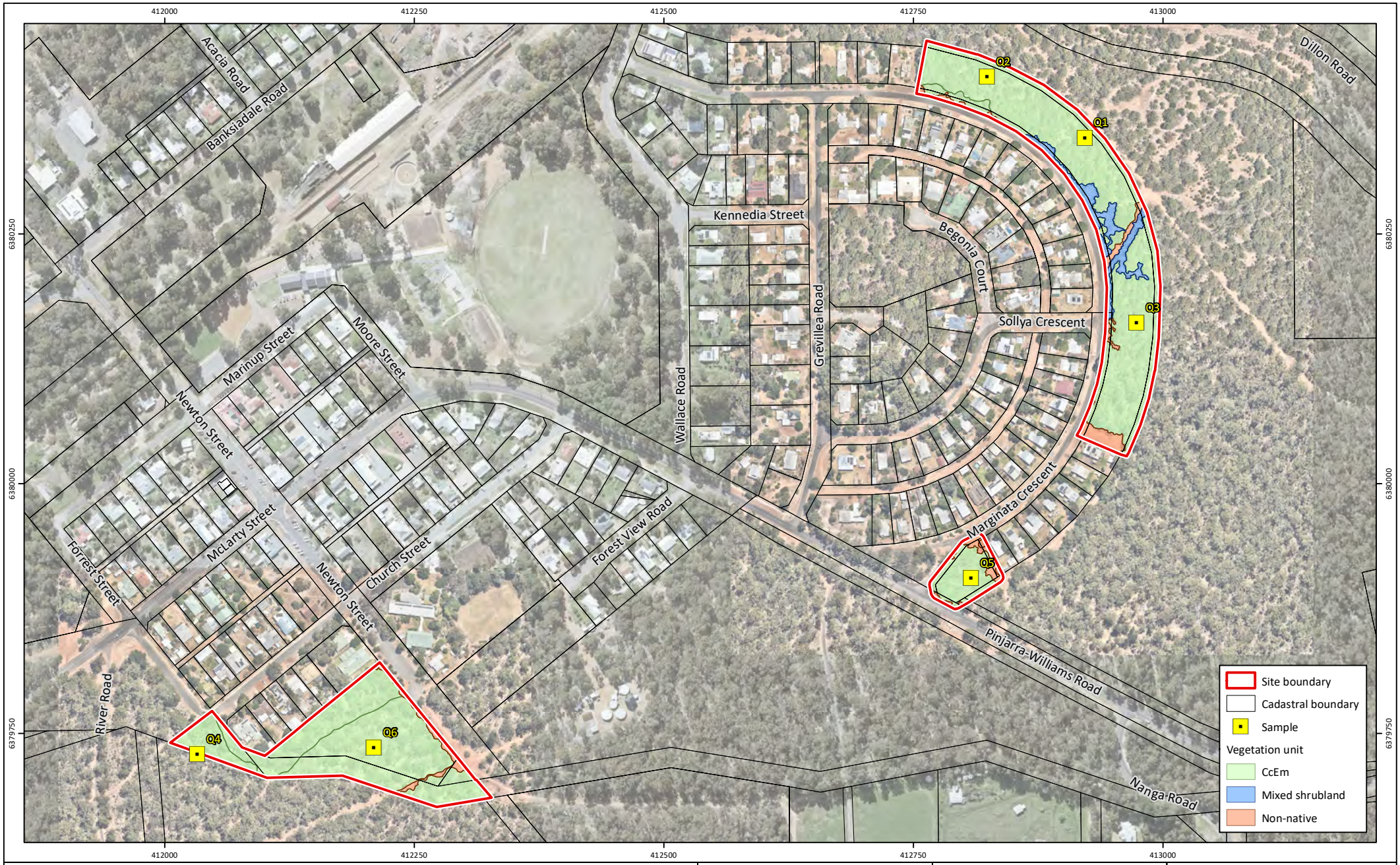

Figure 4: Vegetation Units

Project:	Detailed Flora and Vegetation Assessment Lot 332 Marginata Crescent and Reserve 26242, Dwellingup
Client:	Shire of Murray

Plan Number:
EP24-104(01)--F10

Drawn:	WJC
Date:	27/02/2025
Checked:	KLG
Approved:	RAW
Date:	04/03/2025

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Metres

Scale: 1:5,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

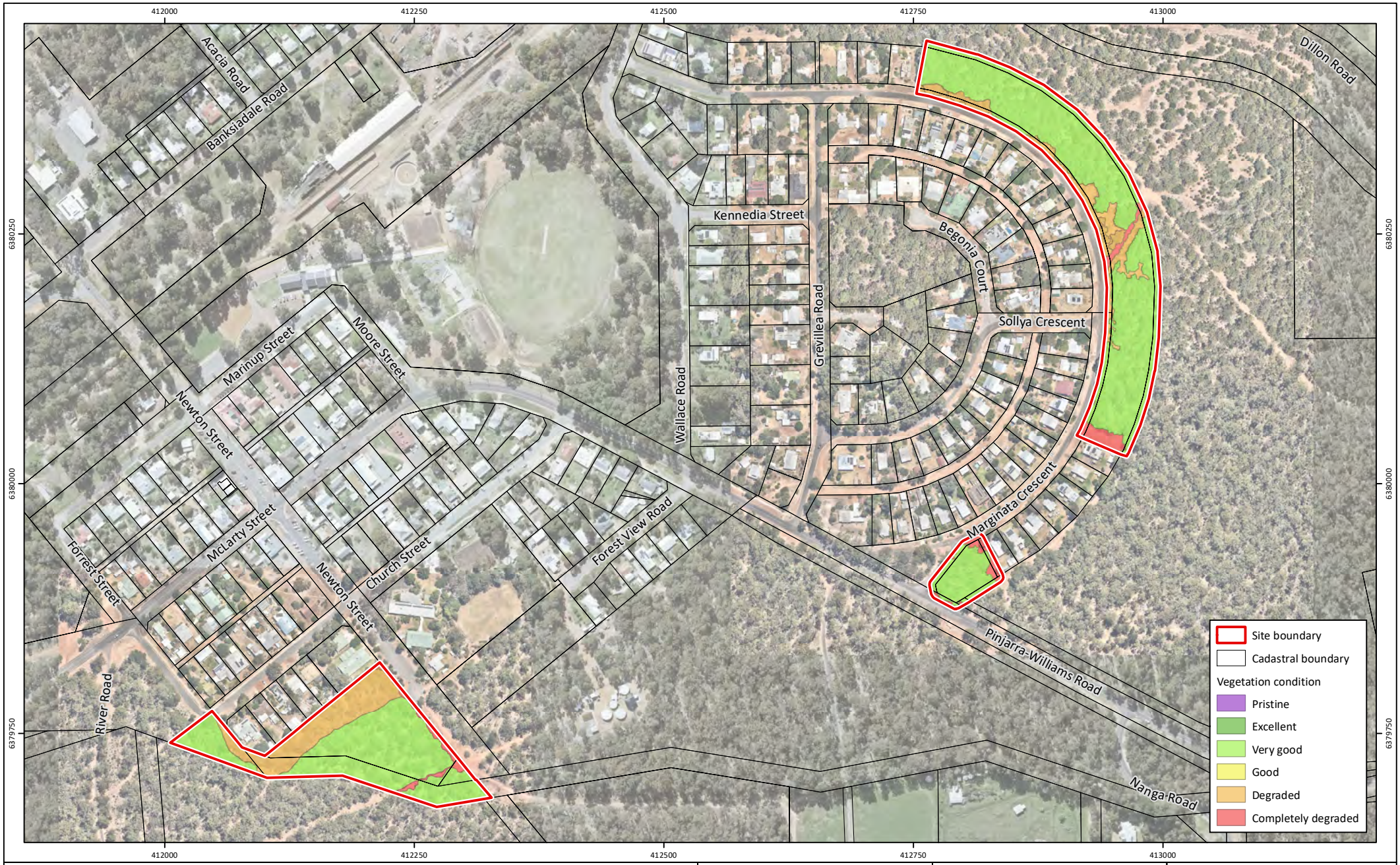

Figure 5: Vegetation Condition

Project:	Detailed Flora and Vegetation Assessment Lot 332 Marginata Crescent and Reserve 26242, Dwellingup
Client:	Shire of Murray

Plan Number:
EP24-104(01)--F11

Drawn:	WJC
Date:	27/02/2025
Checked:	KLG
Approved:	RAW
Date:	04/03/2025

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Metres

Scale: 1:5,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

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 as 'threatened' pursuant to Schedule 1 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

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 and published in the Biodiversity Conservation (Species) Order 2022. 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.

Threatened flora are assigned categories under the EPBC Act and BC Act according to their conservation status, as outlined in **Table 1**.

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 are assigned categories as listed in **Table 1**.

Table 1: Definitions of threatened and priority flora species pursuant to the EPBC Act and BC Act and on DBCA's Priority Flora List (DBCA 2023b)

Conservation code	Description
EX†	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^†	Threatened Flora – Extant Taxa which are declared to be likely to become extinct or is rare, or otherwise in need of special protection.
CR^	Threatened Flora – Critically Endangered Taxa which are considered to be facing an extremely high risk of extinction in the wild.
EN^	Threatened Flora – Endangered Taxa which are considered to be facing a very high risk of extinction in the wild.
VU^	Threatened Flora – Vulnerable Taxa which are considered to be facing a high risk of extinction in the wild.
P1	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	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	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	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.

^pursuant to the EPBC Act, †pursuant to the BC Act, on DBCA's *Priority Flora List*

Threatened and priority ecological communities

'Threatened ecological communities' (TECs) are 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.

In Western Australia TECs are listed under sections 27(1), 31 and 33 of the BC Act. 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 listed under the BC Act are defined in Schedule 1 of the Biodiversity Conservation (Threatened Ecological Communities) Order 2023. State TECs are also acknowledged through other 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*.

TECs are assigned to one of the categories outlined in **Table 2** according to their level of threat.

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 with insufficient information available to be considered a TEC or which are rare but not currently threatened may be listed as a 'priority ecological community' (PEC). PECs are categorised based on a variety of criteria, as described in **Table 3**. Listed PECs are published by DBCA (DBCA 2023a).

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

Priority code	Description
P1	Priority One: Poorly known ecological communities Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤ 100ha). 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.
P2	Priority Two: Poorly known ecological communities Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200ha). 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.
P3	Priority Three: Poorly known ecological communities (i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or: (ii) communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat (within approximately 10 years), or; (iii) 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. 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.
P4	Priority Four: Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring. (i) Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands. (ii) Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for a higher threat category. (iii) Ecological communities that have been removed from the list of threatened communities during the past five years.
P5	Priority Five: Conservation Dependent ecological communities Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Reporting

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.

Weeds

A number of legislative and policy documents exist in relation to weed management at state and national levels. The *Biosecurity and Agriculture Management Act 2007* (BAM Act) is the principle legislation guiding weed management in Western Australia and lists declared pest species. At a national level, the Australian government has compiled a list of 32 Weeds of National Significance (WoNS) (DoEE 2018), of which many are also listed under the BAM Act.

Declared Pests

Part 2.3.23 of the BAM Act requires a person must not; "*a) keep, breed or cultivate the declared pest; b) keep, breed or cultivate an animal, plant or other thing that is infected or infested with the declared pest; c) release into the environment the declared pest, or an animal, plant or other thing that is infected or infested with the declared pest; or d) intentionally infect or infest, or expose to infection or infestation, a plant, animal or other thing with a declared pest*".

Under the BAM Act, all declared pests are assigned a legal status, as described in **Table 7**. Species assigned to the 'declared pest, prohibited - s12' category are placed in one of three control categories, as described in **Table 8**.

The *Biosecurity and Agriculture Management Regulations 2013* specify keeping categories for species assigned to the 'declared pest - s22(2)' category, which relate to the purposes of which species can be kept, as well as the entities that can keep them. The categories are described in **Table 9**.

The Western Australian Organism List (WAOL) provides the status of organisms which have been categorised under the BAM Act (DPIRD 2020).

Table 4: Legal status of declared pest species listed under the BAM Act (DPIRD 2020)

Category	Description
Declared Pest Prohibited - s12	May only be imported and kept subject to permits. Permit conditions applicable to some species may only be appropriate or available to research organisations or similarly secure institutions.
Declared Pest s22(2)	Must satisfy any applicable import requirements when imported, and may be subject to an import permit if they are potential carriers of high-risk organisms. They may also be subject to control and keeping requirements once within Western Australia

Table 5: Control categories of declared pest species listed under the BAM Act (DPIRD 2020)

Category	Description
C1	Exclusion Not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.
C2	Eradication Present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.
C3	Management Established in Western Australia but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.

Table 6: Keeping categories of declared pest species listed under the BAM Act (DPIRD 2020)

Category	Description
Prohibited	Can only be kept under a permit for public display and education purposes, and/or genuine scientific research, by entities approved by the state authority.
Exempt	No permit or conditions are required for keeping.
Restricted	Organisms which, relative to other species, have a low risk of becoming a problem for the environment, primary industry or public safety and can be kept under a permit by private individuals.

Wetland Habitat

Geomorphic wetland types

On the Swan Coastal Plain DBCA (2017) 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) as outlined in **Table 10**.

Table 7: Geomorphic Wetlands of the Swan Coastal Plain classification categories (DBCA 2017)

Level of inundation	Geomorphology			
	Basin	Flat	Channel	Slope
Permanently inundated	Lake	-	River	-
Seasonally inundated	Sumpland	Floodplain	Creek	-
Seasonally waterlogged	Dampland	Palusplain	-	Paluslope

Wetland management categories

DBCA maintains the *Geomorphic Wetland of the Swan Coastal Plain* dataset (DBCA 2018a), which also categorises individual wetlands into specific management categories as described in **Table 11**.

Table 8: Geomorphic Wetlands of the Swan Coastal Plain classification categories (DBCA 2017)

Management category	Description of wetland	Management objectives
Conservation (CCW)	Support high levels of attributes	Preserve wetland attributes and functions through reservation in national parks, crown reserves and state owned land. Protection provided under environmental protection policies.
Resource enhancement (REW)	Partly modified but still supporting substantial functions and attributes	Restore wetland through maintenance and enhancement of wetland functions and attributes. Protection via crown reserves, state or local government owned land, environmental protection policies and sustainable management on private properties.
Multiple use (MUW)	Few wetland attributes but still provide important hydrological functions	Use, development and management considered in the context of water, town and environmental planning through land care.

The management categories of wetland features are determined based on hydrological, biological and human use features. The DBCA document *A methodology for the evaluation of specific wetland types on the Swan Coastal Plain, Western Australia* (DBCA 2017) details the methodology by which wetlands on the Swan Coastal Plain are assigned management categories based on a two tiered evaluation system, with preliminary and secondary evaluation stages. The preliminary evaluation aims to identify any features of conservation significance that would immediately place the wetland within the CCW management category. Examples of these significant features include presence on significant wetland lists, presence of TECs or PECs (Priority 1 and 2), presence of threatened flora and

over 90% of vegetation in good or better condition based on the Keighery (1994) scale. If such environmental values are identified the wetland would be categorised as CCW without further evaluation.

Should the preliminary evaluation indicate that no such features occur, the secondary evaluation and site assessment are then applied. In the secondary evaluation, an appropriate management category is determined through the assessment of a range of environmental attributes, functions and values.

Wetland reclassification

DBCA have a protocol for proposing changes to the wetland boundaries and management categories of the existing geomorphic wetland dataset (DEC 2007). The procedure involves a wetland desktop evaluation and site assessment which culminates in a recommended management category. Relevant information should be obtained in the optimal season for vegetation condition and water levels, which is usually spring (DEC 2007). In the case of larger wetlands that have undergone a degree of disturbance, a separate management category may be assigned to parts of the wetland in order to reflect the current values.

References

General references

Department of Biodiversity, Conservation and Attractions (DBCA) 2017, *A methodology for the evaluation of wetlands on the Swan Coastal Plain*, draft prepared by the Wetlands Section of the Department of Biodiversity, Conservation and Attractions and the Urban Water Branch of the Department of Water and Environmental Regulation, Perth.

Department of Biodiversity, Conservation and Attractions (DBCA) 2018a, *Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)*.

Department of Biodiversity, Conservation and Attractions (DBCA) 2018b, *Threatened and Priority Flora List 16 January 2018*, Perth.

Department of Biodiversity, Conservation and Attractions (DBCA) 2023a, *Priority Ecological Communities for Western Australia Version 35*, Perth.

Department of Biodiversity, Conservation and Attractions (DBCA) 2023b, *Threatened and Priority Flora List July 2023* Perth.

Department of Environment and Conservation (DEC) 2007, *Protocol for proposing modifications to the Geomorphic Wetlands Swan Coastal Plain dataset*, Perth.

Department of Environment and Conservation (DEC) 2009, *Definitions, Categories and Criteria for Threatened and Priority Ecological Communities*, Perth.

Department of Conservation (DEC) 2013, *Definitions, Categories and Criteria for Threatened and Priority Ecological Communities*, Perth.

English, V. and Blyth, J. 1997, *Identifying and Conserving Threatened Ecological Communities in the South West Botanical Province*, ANCA National Reserves System Cooperative Program, Project Number N702, Perth.

Keighery, B. 1994, *Bushland Plant Survey: A guide to plant community survey for the community*, Wildflower Society of WA (Inc), Nedlands.

Semeniuk, C. A. 1987, *Wetlands of the Darling System - a geomorphic approach to habitat classification*, Journal of the Royal Society of Western Australia, 69: 95-112.

Semeniuk, C. A. and Semeniuk, V. 1995, *A Geomorphic Approach to Global Classification for Inland Wetlands*, Vegetatio, 118(1/2): 103-124.

Online references

Department of Environment and Energy (DoEE) 2018, Weeds of National Significance, <http://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html>.

Department of Primary Industries and Regional Development (DPIRD) 2020, The Western Australian Organism List (WAOL), < https://www.agric.wa.gov.au/bam/western-australian-organism-list-waol>.

Appendix B

Conservation Significant Flora Species and Likelihood of Occurrence Assessment

Species name	Level of significance		Life strategy	Habitat	Flowering period	Likelihood of occurrence
	WA	EPBC Act				
Acacia horridula	P3	-	P	Gravelly soils over granite, sand, rocky hillsides.	May-Aug	Moderate
Acacia oncinophylla subsp. oncinophylla	P3	-	P	Granitic soils	Aug-Oct	Low
Anthocercis gracilis	VU	VU	P	Steep granite slopes along the Darling Scarp in shallow, humis-rich sandy or loamy soils.	Sep-Oct, Apr	Negligible
Banksia mimica	VU	EN	P	Flat to gentle slopes in grey and white sand in open woodlands.	Dec-Jan	Negligible
Boronia capitata subsp. gracilis	P3	-	P	White/grey or black sand in winter-wet swamps, hillslopes.	Jun-Nov	Low
Calothamnus graniticus subsp. leptophyllus	P4	-	P	Clay over granite, lateritic soils. Hillsides.	Jun-Aug	Moderate
Chorizema ulotropis	P4	-	P	Outcrops, winter damp to dry areas, flats.	Jul-Sep	Negligible
Diuris micrantha	VU	VU	PG	Dark grey-black sandy clay-loam in winter wet depressions or swamps. Often in shallow standing water.	Aug/Sep-early Oct	Negligible
Diuris purdiei	EN	EN	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)	Negligible
Eucalyptus x graniticola	P4	-	P	Open, granite slopes.	Unknown	Low
Grevillea dissectifolia	P3	-	P	White/grey or yellow/brown sand/clay/loam over laterite or granite. Near outcrops, sometimes along creek line or drainage line.	Apr or Jun or Aug-Sep or Nov	Negligible

Species name	Level of significance		Life strategy	Habitat	Flowering period	Likelihood of occurrence
	WA	EPBC Act				
Grevillea ornithopoda	P2	-	P	River bank, creek. Clay, loam and sand.	Sep-Nov	Low
Lasiopetalum membranaceum	P3	-	P	Sand over limestone	Sep-Dec	Negligible
Morelotia australiensis	VU	VU	P	Sand over clay, winter wet depressions and drainage lines.	Nov-Dec	Negligible
Parsonsia diaphanophleba	P4	-	P	Alluvial soils along rivers.	Jan-Feb or Apr-Sep	Low
Pimelea rara	P4	-	P	Lateritic soils.	Dec-Jan	High
Senecio leucoglossus	P4	-	A	Gravelly lateritic or granitic soils on outcrops or slopes.	Aug-Dec	High
Stirlingia divaricatissima	P3	-	P	Yellow sand or sandy loam. Wet depressions.	Oct	Low
Stylidium ireneae	P4	-	P	Sandy loam in valleys near creeklines.	Oct-Dec	Low
Synaphea 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	Negligible
Synaphea sp. Pinjarra Plain (A.S. George 17182)	EN	CR	P	White grey clayey sand on edges of seasonally inundated low lying areas.	Sep-Oct	Negligible
Tetratheca pilifera	P3	-	P	Gravelly soils.	Aug-Oct	High
Thelymitra stellata	EN	EN	PG	Sandy loam, clay or gravel over laterite or gravel.	Sep-Nov	Negligible

Note: CR=critically endangered, EN=endangered, VU=vulnerable, P1=Priority 1, P2=Priority 2, P3=Priority 3, P4=Priority 4, P=perennial, PG=perennial geophyte, A=annual. Species considered to potentially occur within the site are shaded green.

Appendix C

Conservation Significant Communities and Likelihood of Occurrence Assessment

Code	Community name	TEC/ PEC	Level of significance		Likelihood of occurrence
			State	EPBC Act	
SCP09	Dense shrublands on clay flats (floristic community type 9 as originally described in Gibson et al. 1994)	TEC	EN	CR	Negligible
SCP08	Herb rich shrublands in clay pans (floristic community type 8 as originally described in Gibson et al. 1994)	TEC	EN	CR	Negligible
SCP10a	Shrublands on dry clay flats (floristic community type 10a as originally described in Gibson et al. 1994)	TEC	EN	CR	Negligible
SCP20b	Banksia attenuata and/or Eucalyptus marginata woodlands of the eastern side of the Swan Coastal Plain (floristic community type 20b as originally described in Gibson et al. 1994)	TEC	CR	EN	Negligible
SCP3a	Corymbia calophylla - Kingia australis woodlands on heavy soils (floristic community type 3a as originally described in Gibson et al. 1994)	TEC	CR	EN	Negligible
SCP3c	Corymbia calophylla - Xanthorrhoea preissii woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in Gibson et al. 1994)	TEC	EN	EN	Negligible
Banksia WL SCP	Banksia Woodlands of the Swan Coastal Plain ecological community	TEC/ PEC	P3	EN	Negligible
174	Empodisma peatlands of southwestern Australia	TEC	-	EN	Negligible
SCP3b	Corymbia calophylla - Eucalyptus marginata woodlands on sandy clay soils of the southern Swan Coastal Plain (floristic community type 3b as originally described in Gibson et al. 1994)	TEC	EN	-	Negligible

Note: TEC=threatened ecological community, PEC=priority ecological community, CR=critically endangered, EN=endangered, VU=vulnerable, P3=priority 3

Appendix D

Species List

Family	Status	Species
Agapanthaceae		
	*	*Agapanthus praecox*
Apiaceae		
		Daucus glochidiatus
		Pentapeltis peltigera
		Xanthosia candida
		Xanthosia huegelii
Apocynaceae		
	*	*Vinca major*
Araliaceae		
		Trachymene pilosa
Asparagaceae		
	DP	*Asparagus asparagoides*
		Lomandra caespitosa
		Lomandra hermaphrodita
		Lomandra purpurea
		Lomandra sericea
		Lomandra sonderi
		Sowerbaea laxiflora
		Thysanotus multiflorus
		Thysanotus tenellus
Asteraceae		
	*	*Hypochaeris glabra*
	*	*Hypochaeris radicata*
		Lagenophora huegelii
	*	*Osteospermum ecklonis*
		Senecio hispidulus
		Senecio multicaulis
		Senecio sp.
	*	*Sonchus oleraceus*
Brassicaceae		
	*	*Lobularia maritima?*
Campanulaceae		
	*	*Isotoma hypocrateriformis*
Casuarinaceae		
		Allocasuarina fraseriana
Colchicaceae		
		Burchardia congesta
		Burchardia multiflora
Convolvulaceae		
	*	*Ipomoea indica*
Cyperaceae		
		Lepidosperma leptostachyum
		Lepidosperma pubisquameum
		Netrostylis sp. Jarrah Forest
Dennstaedtiaceae		
		Pteridium esculentum

Dilleniaceae		
		Hibbertia amplexicaulis
		Hibbertia pilosa
Droseraceae		
		Drosera erythrorhiza
		Drosera glanduligera
		Drosera stolonifera
Elaeocarpaceae		
		Tetratheca hirsuta
		Tetratheca hispidissima
Ericaceae		
		Leucopogon capitellatus
		Leucopogon verticillatus
		Styphelia pallida
		Styphelia propinqua
Fabaceae		
	*	*Acacia celastrifolia*
		Acacia extensa
	*	*Acacia iteaphylla*
		Acacia lateriticola
		Acacia pulchella var. glaberrima
		Acacia urophylla
		Bossiaea ornata
	*	*Chamaecytisus palmensis*
		Daviesia physodes
		Gompholobium marginatum
		Gompholobium polymorphum
		Hovea chorizemifolia
		Hovea trisperma var. grandiflora
		Kennedia coccinea
		Kennedia prostrata
		Labichea punctata
		Mirbelia dilatata
	*	*Ornithopus compressus*
	*	*Paraserianthes lophantha*
Goodeniaceae		
		Lechenaultia floribunda
		Scaevola calliptera
Haemodoraceae		
		Conostylis aculeata
		Conostylis pusilla
		Conostylis setigera
		Haemodorum laxum
Hemerocallidaceae		
		Agrostocrinum hirsutum
		Caesia micrantha
		Chamaescilla corymbosa
		Dianella revoluta
		Tricoryne elatior

Iridaceae		
	*	*Freesia leichtlinii subsp. alba × leichtlinii subsp. Leichtlinii*
	*	*Iridaceae sp.*
	DP	*Moraea flaccida*
		Patersonia babianoides
	*	*Romulea rosea*
	*	*Watsonia meriana var. bulbillifera*
Juncaceae		
		Luzula meridionalis
Lamiaceae		
	*	*Leonotis leonurus?*
Lauraceae		
		Cassytha racemosa
Liliaceae		
	*	*Scilla peruviana*
Malvaceae		
		Lasiopetalum floribundum
Myrtaceae		
		Corymbia calophylla
		Eucalyptus marginata
	*	*Gaudium laevigatum*
Orchidaceae		
		Caladenia ×spectabilis
		Caladenia flava subsp. Flava
		Caladenia sp.
		Pterostylis barbata
		Pterostylis pyramidalis
		Pterostylis recurva
		Pyrorchis nigricans
		Thelymitra sp.
Orobanchaceae		
	*	*Orobanche minor*
Oxalidaceae		
	*	*Oxalis glabra*
	*	*Oxalis incarnata*
	*	*Oxalis pes-caprae*
Papaveraceae		
	*	*Fumaria capreolata*
	*	*Fumaria muralis*
Phyllanthaceae		
		Lysiandra calycina
Pittosporaceae		
		Billardiera fusiformis
Plantaginaceae		
	*	*Plantago lanceolata*
Poaceae		
		Amphipogon amphipogonoides
	*	*Aristida ramosa*
	*	*Avena barbata*

	*	*Briza maxima*
		Dichelachne crinita
	*	*Ehrharta longiflora*
		Microlaena stipoides
		Neurachne alopcuroidea
		Rytidosperma caespitosum
		Tetrarrhena laevis
Polygalaceae		
		Comesperma virgatum
Primulaceae		
	*	*Lysimachia arvensis*
Proteaceae		
		Adenanthos barbiger
		Adenanthos cygnorum
		Banksia dallanneyi subsp. ?sylvestris
		Banksia grandis
		Grevillea quercifolia
		Hakea amplexicaulis
		Persoonia longifolia
Ranunculaceae		
		Clematis pubescens
Restionaceae		
		Desmocladus asper
		Loxocarya cinerea
Rubiaceae		
		Opercularia hispidula
		Opercularia vaginata
Rutaceae		
		Boronia fastigiata
		Philotheca spicata
Sapindaceae		
		Dodonaea viscosa
Stylidiaceae		
		Stylidium amoenum
		Stylidium androsaceum
		Stylidium scariosum
		Stylidium schoenoides
Xanthorrhoeaceae		
		Xanthorrhoea gracilis
		Xanthorrhoea preissii
Zamiaceae		
		Macrozamia riedlei

*=non-native, Pl=planted

Appendix E

Sample Data

Vegetation Sample Data

Reserve 26242 and Lot 332

Marginata Crescent, Dwellingup

Sample Name: Q1

Project no.: EP24-104
Date: 13.11.24
Author: RAW,TAA

Status Non-permanent
Q1: Page 1 of 3

Quadrat and landform details

Sample type:	quadrat	Size:	10 m x 10 m
NW corner easting:	412921.66	NW corner northing:	6380346.81
Altitude (m):	267	Geographic datum/zone:	GDA94/Zone 50
Soil water content:	damp	Landform:	upper slope
Time since fire:	> 5 yrs	Disturbance:	low - historical logging
Soil type/texture	sand/clay	Bare ground (%):	1
Rocks (%) and type:	2%, laterite	Soil colour:	brown/
Litter:	80% (leaves,branches,logs)	Vegetation condition:	very good

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q1

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q1: Page 2 of 3

Species Data

* denotes non-native species

Status	Confirmed name	September Cover (%)	November Cover (%)
	Acacia extensa	<1	<1
	Acacia pulchella var. glaberrima	<1	<1
	Acacia urophylla	1	1
	Adenanthos barbiger	<1	<1
	Boronia fastigiata	<1	<1
*	*Briza maxima*	<1	<1
	Burchardia congesta	<1	<1
	Caladenia ×spectabilis	<1	0
	Chamaescilla corymbosa	<1	<1
	Comesperma virgatum	<1	<1
	Conostylis pusilla	<1	<1
	Conostylis setigera	<1	<1
	Corymbia calophylla	10	10
	Dichelachne crinita	0	<1
	Drosera glanduligera	<1	0
	Drosera stolonifera	2	crispy
	Eucalyptus marginata	30	30
	Gompholobium marginatum	<1	<1
	Hibbertia amplexicaulis	<1	<1
	Hovea chorizemifolia	<1	<1
	Hovea trisperma var. grandiflora	<1	<1
*	*Hypochaeris glabra*	<1	<1
*	*Isotoma hypocrateriformis*	0	<1
	Kennedia coccinea	<1	<1
	Lasiopetalum floribundum	<1	<1
	Lomandra caespitosa	<1	<1
	Lomandra hermaphrodita	<1	<1
	Lomandra purpurea	<1	<1
	Lomandra sericea	<1	<1
	Loxocarya cinerea	<1	<1
	Luzula meridionalis	<1	<1
	Lysiandra calycina	1	1
	Macrozamia riedlei	5	5
	Microlaena stipoides	<1	<1
	Mirbelia dilatata	1	1

Vegetation Sample Data

Reserve 26242 and Lot 332

Marginata Crescent, Dwellingup

Sample Name: Q1

Project no.: EP24-104
Date: 0/01/1900 **Status** Non-permanent
Author: RAW,TAA Q1: Page 3 of 3

	Netrostylis sp. Jarrah Forest	<1	<1
	Opercularia vaginata	<1	<1
	Pentapeltis peltigera	<1	<1
	Persoonia longifolia	<1	1
	Pteridium esculentum	<1	1
	Pterostylis barbata	<1	<1
	Pterostylis recurva	<1	<1
	Rytidosperma caespitosum	<1	<1
	Scaevola calliptera	<1	0.1
	Senecio hispidulus	<1	<1
*	*Sonchus oleraceus*	<1	<1
	Stylidium amoenum	<1	0
	Stylidium androsaceum	<1	0
	Stylidium scariosum	<1	<1
	Tetratheca hispidissima	<1	<1
	Thelymitra sp.	<1	0
	Thysanotus multiflorus	0	<1
	Thysanotus tenellus	0	<1
	Trachymene pilosa	<1	<1
	Xanthorrhoea gracilis	<1	<1
	Xanthorrhoea preissii	5	5
	Xanthosia candida	<1	<1
	Xanthosia huegelii	<1	<1

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q2

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q2: Page 1 of 3

Quadrat and landform details

Sample type:	quadrat	Size:	10 m x 10 m
NW corner easting:	412823.64	NW corner northing:	6380407.81
Altitude (m):	272	Geographic datum/zone:	GDA94/Zone 50
Soil water content:	damp	Landform:	upper slope
Time since fire:	> 5 yrs	Disturbance:	low -
Soil type/texture	sand/clay	Bare ground (%):	1
Rocks (%) and type:	1%, laterite	Soil colour:	brown/
Litter:	80% (leaves,branches,logs)	Vegetation condition:	very good

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q2

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q2: Page 2 of 3

Species Data

* denotes non-native species

Status	Confirmed name	September Cover (%)	November Cover (%)
	Acacia extensa	<1	<1
	Acacia lateriticola	<1	<1
	Acacia pulchella var. glaberrima	5	5
	Banksia grandis	20	20
	Billardiera fusiformis	<1	<1
	Bossiaea ornata	<1	<1
*	*Briza maxima*	<1	<1
*	*Chamaecytisus palmensis*	<1	<1
	Chamaescilla corymbosa	<1	<1
	Conostylis setigera	<1	<1
	Corymbia calophylla	5	5
	Drosera glanduligera	<1	<1
	Drosera stolonifera	<1	crispy
	Eucalyptus marginata	30	30
*	*Fumaria muralis*	<1	<1
*	*Gaudium laevigatum*	<1	<1
	Gompholobium marginatum	<1	<1
	Gompholobium polymorphum	<1	<1
	Haemodorum laxum	<1	<1
	Hibbertia amplexicaulis	<1	<1
	Hibbertia pilosa	<1	<1
	Hovea chorizemifolia	<1	<1
	Hovea trisperma var. grandiflora	<1	<1
*	*Hypochaeris glabra*	<1	<1
*	*Hypochaeris radicata*	<1	<1
	Kennedia coccinea	<1	1
	Lasiopetalum floribundum	<1	<1
	Leucopogon verticillatus	2	2
	Leucopogon capitellatus	<1	<1
	Lomandra caespitosa	<1	<1
	Lomandra hermaphrodita	<1	<1
	Lomandra purpurea	<1	<1
	Lomandra sericea	<1	<1
	Loxocarya cinerea	<1	<1
	Lysiandra calycina	1	1

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q2

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q2: Page 3 of 3

*	*Lysimachia arvensis*	<1	<1
	Macrozamia riedlei	15	15
	Microlaena stipoides	<1	<1
	Opercularia vaginata	<1	<1
*	*Orobanche minor*	<1	<1
*	*Oxalis incarnata*	<1	<1
	Pentapeltis peltigera	<1	<1
	Pteridium esculentum	2	2
	Rytidosperma caespitosum	<1	<1
	Styphelia pallida	<1	<1
	Styphelia propinqua	<1	<1
	Tetrarrhena laevis	0	<2
	Tetratheca hispidissima	<1	<1
	Thysanotus tenellus	0	<1
*	*Watsonia meriana var. bulbillifer*	<1	<1
	Xanthorrhoea gracilis	<1	1
	Xanthorrhoea preissii	<1	1
	Xanthosia candida	1	1

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q3

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q3: Page 1 of 3

Quadrat and landform details

Sample type:	quadrat	Size:	10 m x 10 m
NW corner easting:	412973.43	NW corner northing:	6380161.56
Altitude (m):	277	Geographic datum/zone:	GDA94/Zone 50
Soil water content:	damp	Landform:	mid-slope
Time since fire:	> 5 yrs	Disturbance:	low -
Soil type/texture	sand/clay	Bare ground (%):	2
Rocks (%) and type:	1%, laterite	Soil colour:	brown/
Litter:	70% (leaves,branches,logs)	Vegetation condition:	very good

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q3

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q3: Page 2 of 3

Species Data

* denotes non-native species

Status	Confirmed name	September Cover (%)	November Cover (%)
*	*Acacia iteaphylla*	<1	<1
	Acacia pulchella var. glaberrima	<1	1
	Acacia urophylla	<1	<1
	Banksia grandis	15	15
	Billardiera fusiformis	<1	<1
	Boronia fastigiata	<1	<1
	Bossiaea ornata	<1	<1
*	*Briza maxima*	<1	<1
	Burchardia congesta	<1	<1
	Caesia micrantha	<1	<1
	Caladenia sp.	<1	0
	Caladenia sp.	<1	<1
	Chamaescilla corymbosa	0	<1
	Corymbia calophylla	5	5
	Drosera glanduligera	<1	0
	Drosera stolonifera	<1	crispy
	Eucalyptus marginata	40	40
	Gompholobium polymorphum	<1	<1
	Hibbertia amplexicaulis	<1	<1
	Hibbertia pilosa	<1	<1
	Hovea trisperma var. grandiflora	<1	<1
*	*Hypochaeris glabra*	<1	<1
	Kennedia coccinea	<1	<1
	Lechenaultia floribunda	<1	<1
	Leucopogon verticillatus	<1	<1
	Lomandra caespitosa	<1	<1
	Lomandra purpurea	<1	<1
	Lomandra sericea	<1	<1
	Loxocarya cinerea	<1	<1
	Lysiandra calycina	<1	1
	Macrozamia riedlei	1	1
	Microlaena stipoides	<1	<1
	Mirbelia dilatata	<1	<1
	Netrostylis sp. Jarrah Forest	<1	<1
	Opercularia vaginata	<1	<1

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q3

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q3: Page 3 of 3

Pentapeltis peltigera	<1	<1
Persoonia longifolia	<1	<1
Pteridium esculentum	2	5
Scaevola calliptera	<1	<1
Sowerbaea laxiflora	<1	<1
Styphelia pallida	<1	<1
Tetrarrhena laevis	<1	<1
Thelymitra sp.	<1	0
Thysanotus multiflorus	0	<1
Trachymene pilosa	<1	<1
Xanthorrhoea gracilis	2	2
Xanthorrhoea preissii	15	15
Xanthosia candida	<1	<1
Xanthosia huegelii	<1	<1

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q4

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q4: Page 1 of 3

Quadrat and landform details

Sample type:	quadrat	Size:	10 m x 10 m
NW corner easting:	412807.61	NW corner northing:	6379905.88
Altitude (m):	284	Geographic datum/zone:	GDA94/Zone 50
Soil water content:	damp	Landform:	mid-slope
Time since fire:	> 5 yrs	Disturbance:	low -
Soil type/texture	sand/clay	Bare ground (%):	1
Rocks (%) and type:	1%, laterite	Soil colour:	brown/
Litter:	80% (leaves,branches,logs)	Vegetation condition:	very good

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q4

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q4: Page 2 of 3

Species Data

* denotes non-native species

Status	Confirmed name	September Cover (%)	November Cover (%)
	Allocasuarina fraseriana	8	8
	Banksia grandis	<1	<1
	Billardiera fusiformis	<1	<1
*	*Briza maxima*	<1	<1
	Burchardia congesta	<1	<1
	Caladenia sp.	<1	<1
	Chamaescilla corymbosa	<1	<1
	Conostylis aculeata	<1	<1
	Corymbia calophylla	10	10
	Drosera stolonifera	<1	<1
	Eucalyptus marginata	30	30
*	*Freesia leichtlinii subsp. alba × leichtlinii subsp. Leichtlinii*	<1	<1
	Gompholobium polymorphum	<1	<1
	Hibbertia amplexicaulis	<1	<1
	Hibbertia pilosa	<1	<1
	Hovea chorizemifolia	<1	<1
	Hovea trisperma var. grandiflora	<1	<1
*	*Hypochaeris glabra*	<1	<1
	Kennedia coccinea	<1	<1
	Kennedia prostrata	<1	<1
	Lepidosperma pubisquameum	<1	<1
	Leucopogon capitellatus	<1	<1
	Leucopogon verticillatus	<1	<1
	Lomandra caespitosa	<1	<1
	Lomandra hermaphrodita	<1	<1
	Lomandra sericea	<1	<1
	Lomandra sonderi	<1	<1
	Loxocarya cinerea	<1	<1
	Lysiandra calycina	<1	<1
	Macrozamia riedlei	<1	<1
	Microlaena stipoides	<1	<1
	Netrostylis sp. Jarrah Forest	<1	<1
	Opercularia vaginata	<1	<1
	Pentapeltis peltigera	<1	<1
	Persoonia longifolia	<1	<1

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q4

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q4: Page 3 of 3

Philotheca spicata	<1	<1
Pteridium esculentum	30	30
Pterostylis recurva	<1	0
Scaevola calliptera	<1	<1
Styphelia pallida	<1	<1
Tetrarrhena laevis	<1	<1
Tetratheca hispidissima	<1	<1
Thelymitra sp.	<1	**0**
Thysanotus multiflorus	0	<1
Xanthosia candida	<1	<1

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q5

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q5: Page 1 of 3

Quadrat and landform details

Sample type:	quadrat	Size:	10 m x 10 m
NW corner easting:	412032.37	NW corner northing:	6379729.19
Altitude (m):	283	Geographic datum/zone:	GDA94/Zone 50
Soil water content:	damp	Landform:	upper slope
Time since fire:	> 5 yrs	Disturbance:	low -
Soil type/texture	sand/clay	Bare ground (%):	1
Rocks (%) and type:	1%, laterite	Soil colour:	brown/
Litter:	80% (leaves,branches,logs)	Vegetation condition:	very good

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q5

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q5: Page 2 of 3

Species Data

* denotes non-native species

Status	Confirmed name	September Cover (%)	November Cover (%)
	Acacia lateriticola	1	1
	Adenanthos cygnorum	<1	<1
	Banksia dallanneyi subsp. ?sylves	<1	<1
	Boronia fastigiata	<1	<1
	Burchardia congesta	<1	<1
	Chamaescilla corymbosa	<1	<1
	Clematis pubescens	<1	1
	Corymbia calophylla	40	40
	Drosera stolonifera	<1	<1
	Eucalyptus marginata	10	10
	Hibbertia amplexicaulis	<1	<1
	Hovea chorizemifolia	<1	<1
	Hovea trisperma var. grandiflora	<1	<1
*	*Hypochaeris glabra*	<1	<1
	Kennedia coccinea	<1	<1
	Lagenophora huegelii	<1	<1
	Leucopogon verticillatus	<1	<1
	Lomandra caespitosa	<1	<1
	Lomandra purpurea	<1	<1
	Lomandra sericea	<1	<1
	Loxocarya cinerea	<1	<1
	Lysiandra calycina	2	2
	Macrozamia riedlei	20	20
	Microlaena stipoides	<1	<1
	Mirbelia dilatata	<1	0
	Netrostylis sp. Jarrah Forest	<1	<1
	Opercularia vaginata	<1	<1
	Pentapeltis peltigera	<1	<1
	Persoonia longifolia	<1	<1
	Philotheca spicata	<1	<1
	Pteridium esculentum	<1	1
	Pyrorchis nigricans	<1	<1
	Senecio sp.	<1	0
	Stylidium androsaceum	<1	0
	Styphelia pallida	1	<1

Vegetation Sample Data

Reserve 26242 and Lot 332

Marginata Crescent, Dwellingup

Sample Name: Q5

Project no.: EP24-104

Date: 13.11.24 **Status** Non-permanent

Author: RAW,TAA Q5: Page 2 of 3

	Styphelia propinqua	2	2
	Tetrarrhena laevis	<1	<1
	Tetratheca hispidissima	<1	<1
*	*Vinca major*	<1	<1
	Xanthorrhoea gracilis	<1	<1
	Xanthorrhoea preissii	1	1
	Xanthosia candida	<1	<1
	Xanthosia huegelii	<1	<1

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q6

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q6: Page 1 of 3

Quadrat and landform details

Sample type:	quadrat	Size:	10 m x 10 m
NW corner easting:	412209.06	NW corner northing:	6379736.29
Altitude (m):	283	Geographic datum/zone:	GDA94/Zone 50
Soil water content:	damp	Landform:	upper slope
Time since fire:	> 5 yrs	Disturbance:	moderate - evidence of clearing
Soil type/texture	sand/clay	Bare ground (%):	2
Rocks (%) and type:	5%, laterite	Soil colour:	brown/
Litter:	70% (leaves,branches,logs)	Vegetation condition:	very good

Vegetation Sample Data
Reserve 26242 and Lot 332
Marginata Crescent, Dwellingup

Sample Name: Q6

Project no.: EP24-104
Date: 13.11.24 **Status** Non-permanent
Author: RAW,TAA Q6: Page 2 of 3

Species Data

* denotes non-native species

Status	Confirmed name		Cover (%)
	Banksia dallanneyi subsp. ?sylves	<1	<1
	Boronia fastigiata	<1	<1
	Burchardia congesta	<1	<1
	Cassytha sp.	<1	<1
	Chamaescilla corymbosa	<1	<1
	Clematis pubescens	2	2
	Corymbia calophylla	35	35
	Daucus glochidiatus	<1	<1
	Drosera erythrorhiza	<1	0
	Drosera stolonifera	<1	<1
	Eucalyptus marginata	5	5
	Hovea chorizemifolia	<1	<1
*	*Hypochaeris glabra*	<1	<1
	Kennedia coccinea	<1	<1
	Lagenophora huegelii	<1	<1
	Lechenaultia floribunda	<1	<1
	Leucopogon capitellatus	<1	<1
	Lomandra caespitosa	<1	<1
	Lomandra sericea	<1	<1
*	*Lysimachia arvensis*	<1	<1
	Macrozamia riedlei	15	15
	Mirbelia dilatata	<1	<1
	Netrostylis sp. Jarrah Forest	1	2
	Neurachne alopcuroidea	<1	<1
	Opercularia vaginata	<1	<1
	Pentapeltis peltigera	<1	<1
	Persoonia longifolia	<1	<1
	Pteridium esculentum	40	40
	Scaevola calliptera	10	10
	Stylidium scariosum	<1	<1
	Styphelia propinqua	5	5
	Tetrarrhena laevis	<1	<1
	Tetratheca hispidissima	<1	<1
	Thelymitra sp.	<1	<1
	Thysanotus multiflorus	<1	<1

Vegetation Sample Data

Reserve 26242 and Lot 332

Marginata Crescent, Dwellingup

Sample Name: Q6

Project no.: EP24-104

Date: 13.11.24 **Status** Non-permanent

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Trachymene pilosa	<1	<1
Xanthorrhoea gracilis	<1	<1
Xanthosia candida	<1	<1
Xanthosia huegelii	<1	<1