

Stream Environment and Water

Reconnaissance and Targeted Flora and Vegetation Survey: Lot 2919 Rosa Brook Road

NOVEMBER, 2020

PREPARED FOR SW HYDROLOGY

Stream Environment and Water Pty Ltd

PO Box 606, Dunsborough WA 6281

info@streamew.com.au

www.streamew.com.au

Document Status

Document title: Reconnaissance and Targeted Flora and Vegetation Survey: Lot 2919 Rosa Brook Road

Document reference: 202001 Rosa Br Road flora & vegetation_R0

Version	Author	Issued	Reviewed by	Approved by	Date
Draft_V1	MB	09/11/20	JW	MB	09/11/20
Final	MB	16/11/20		MB	16/11/20

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1 Introduction

1.1 Scope and objectives

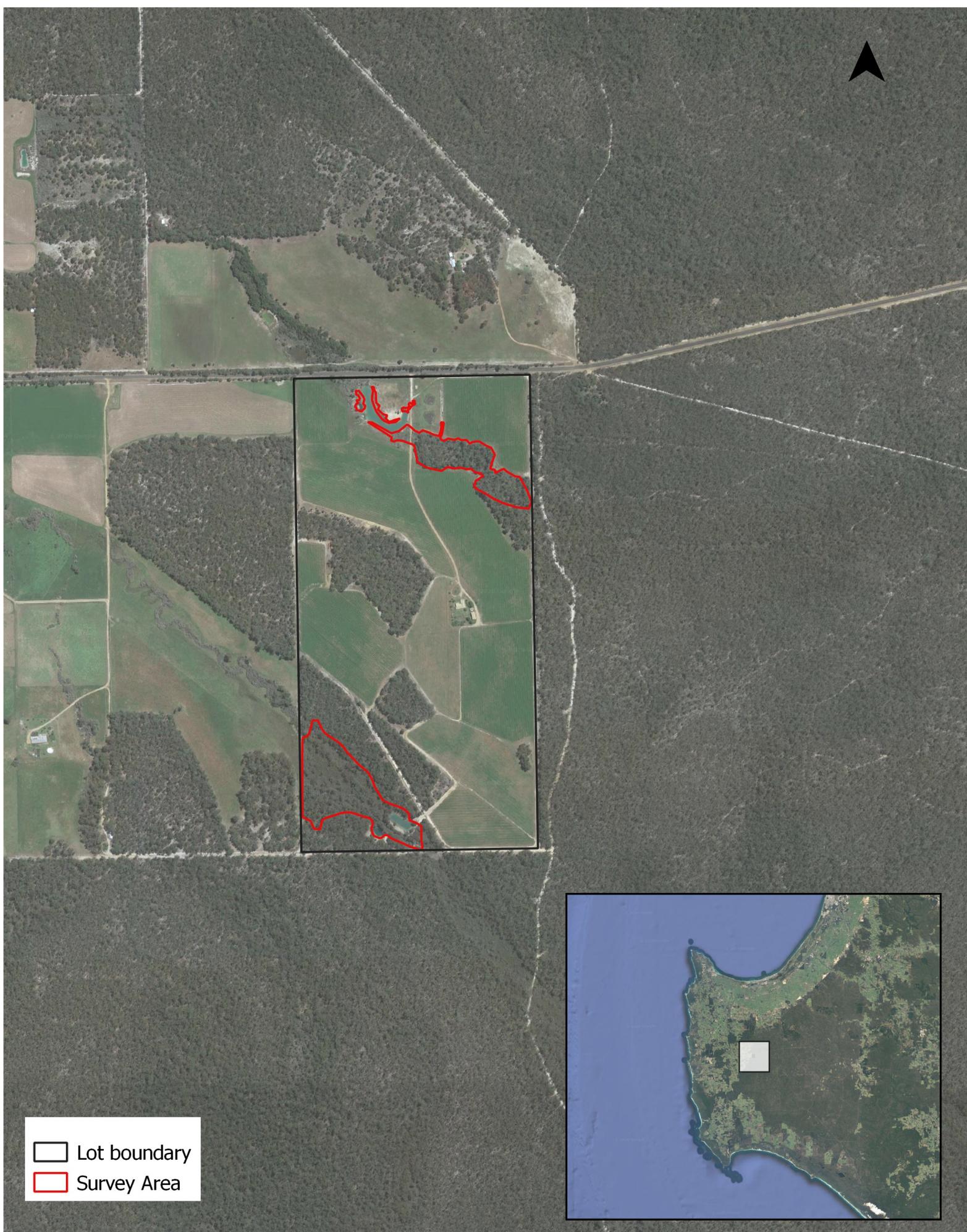
Stream Environment and Water Pty Ltd (Stream Environment and Water) were commissioned by SW Hydrology to undertake a flora and vegetation survey, incorporating both a reconnaissance and targeted flora survey of vegetation within proposed development areas on Lot 2919 Rosa Brook Road, Rosa Brook.

In accordance with the proposal by Stream Environment and Water, the scope of the Flora and Vegetation Survey is as follows:

- Undertake a Desktop Review to identify soil types, vegetation types, significant flora and ecological communities using information from the Department of the Environment and Energy's (DAWE's) Protected Matters Search Tool, Department of Biodiversity, Conservation and Attractions (DBCA) NatureMap and FloraBase, and other sources as appropriate;
- Carry out a flora and vegetation survey, incorporating both reconnaissance and targeted flora surveys, in accordance with EPA Technical Guidance (EPA, 2016) and other relevant State and Commonwealth guidelines
- Provide a report appropriate to support the application for clearing permits for the proposed works.

1.2 Site location and details

The survey was conducted at Lot 2919 Rosa Brook Road, Rosa Brook in the Shire of Augusta Margaret River. The desktop review included all of Lot 2919 (and adjoining areas) and the field surveys focused on two proposed development areas which contain native vegetation totalling approximately 5.1 ha. These two development areas are referred to as the northern and southern survey areas or the survey area (Figure 1).



□ Lot boundary
▭ Survey Area

Figure 1: Survey area location

0 100 200 m



Projection: GDA zone 50
Source: Base map © ESRI and its data suppliers.
Landgate (2020).



2 Background information

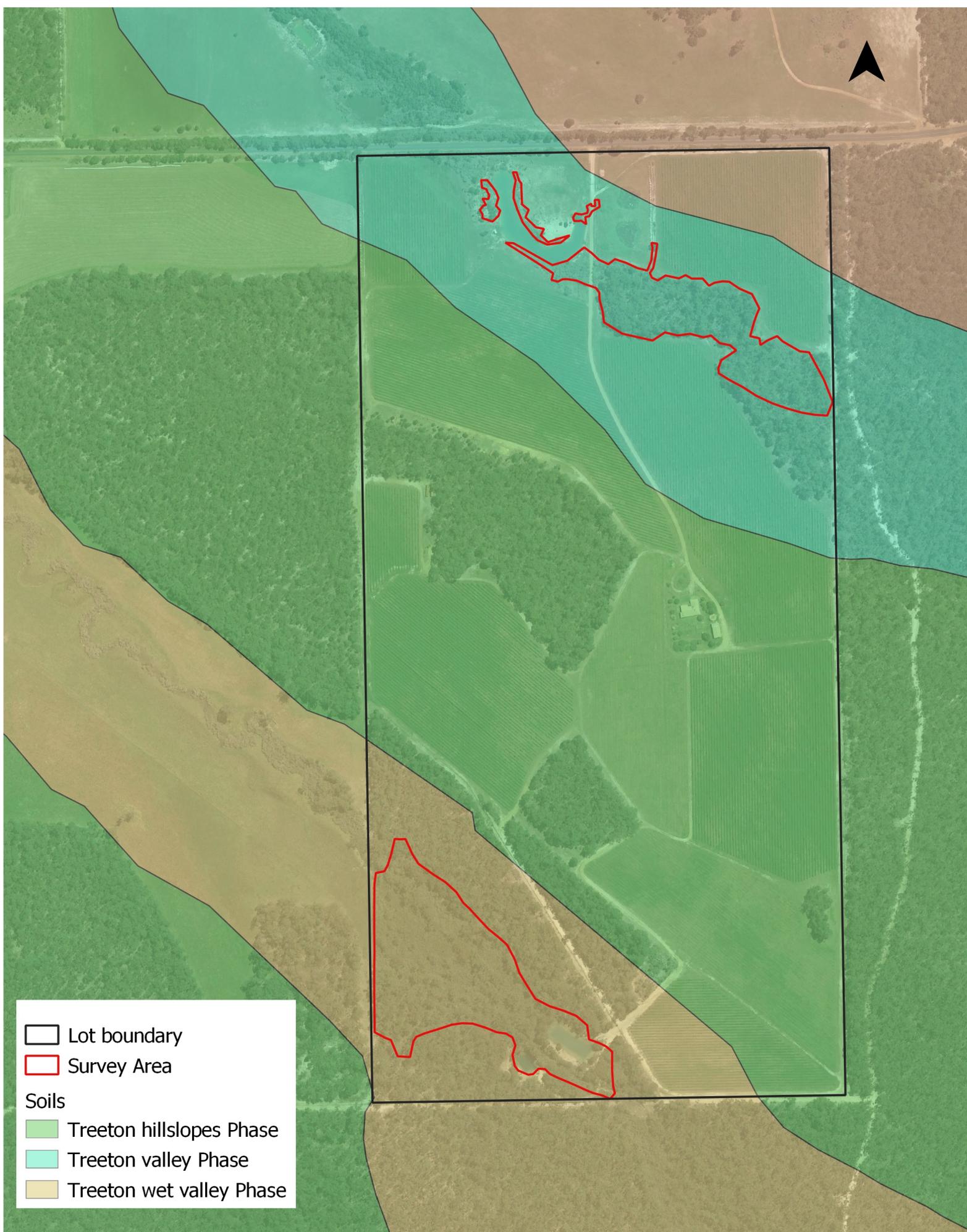
2.1 Climate

The southwest of Western Australia has a Mediterranean climate with mild wet winters and hot dry summers. Rosa Brook (BOM 2020, Climate Data Station 9600) has an average annual rainfall of 1150.4mm (1925 to current), with most of the rain falling between May and September (BOM, 2020). Climate statistics for nearby town of Witchcliffe show a temperature range from an average maximum of 27.2°C in the hottest month of February to an average minimum of 8.2°C in July and August (BOM 2020, Climate Data Station 009746).

2.2 Soils and landforms

Soil mapping by the Department of Agriculture and Food (Tille and Lantzke 1990) identifies four soil units within Lot 2919 (Figure 2):

- Treeton hillslopes phase – slopes with gradients generally ranging from 2-15% and gravelly duplex (Forest Grove) and pale grey mottled (Mungite) soils.
- Treeton valley phase – narrow V shaped drainage depressions.
- Treeton wet valley phase – broad U shaped drainage depressions with swampy floors.
- Treeton sandy slopes phase – slopes with deep bleached sands.



Lot boundary
 Survey Area
Soils
 Treeton hillslopes Phase
 Treeton valley Phase
 Treeton wet valley Phase

Figure 2: Survey area soils



2.3 Vegetation

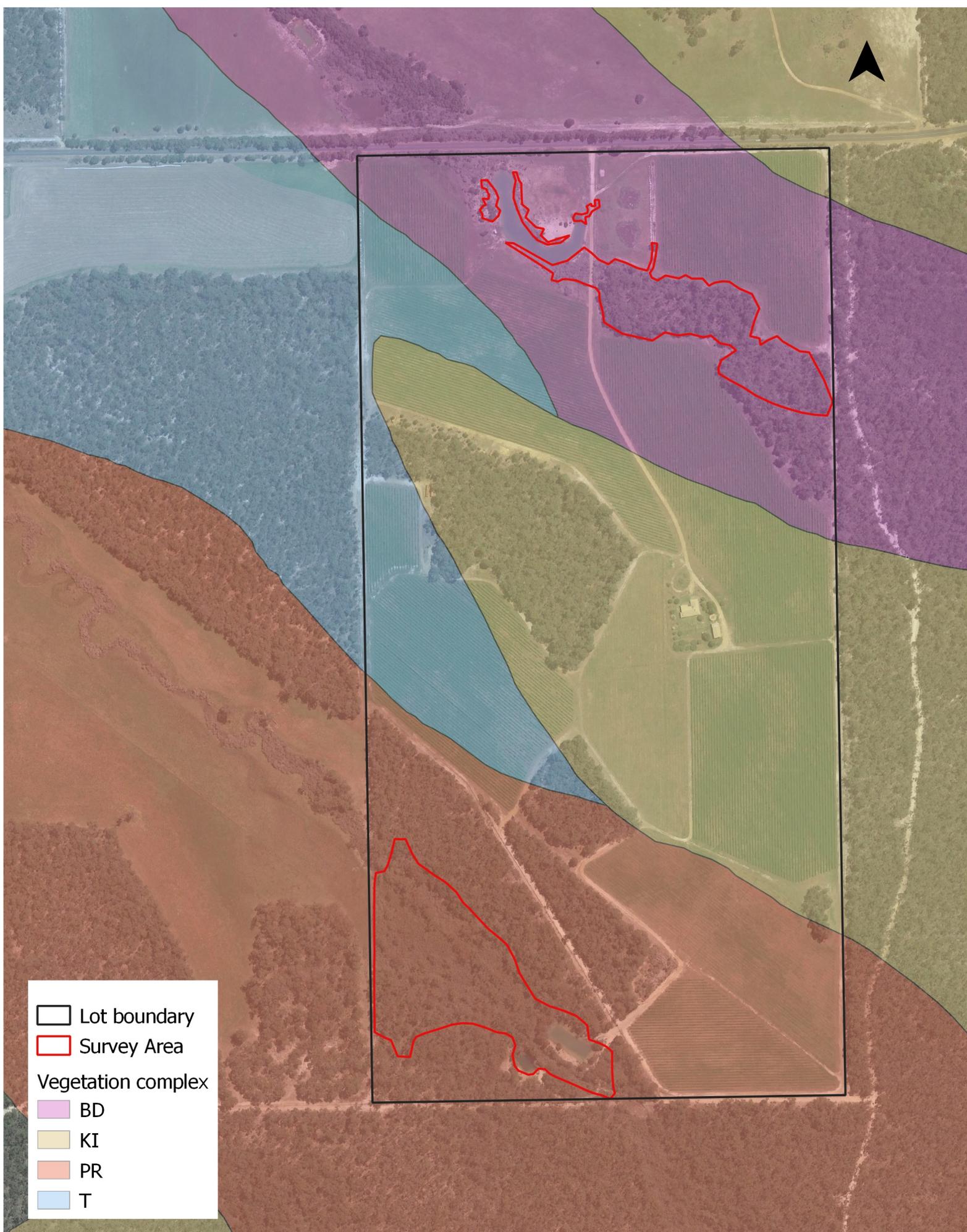
The vegetation within Lot 2919 is comprised of remnant native vegetation and completely cleared pasture areas vegetated by introduced weeds and grasses. Adjoining land is used for agricultural purposes including dairy and cropping and State Forest. The Blackwood State Forest (F32) borders Lot 2919 to the east.

Vegetation complexes in the south west forest zone were mapped by Mattiske and Havel (1998) as part of the regional forest assessment (RFA). Four vegetation complexes are mapped and described across Lot 2919, two of which occur within the survey area (Figure 3, Table 1). The State and Federal governments' policies to manage environmental impacts and clearing, apply a target to retain >30% of pre-clearing extent for ecological communities (DER 2014). Vegetation complex mapping is used to represent ecological communities in the south west of Western Australia.

All of the vegetation complexes occurring within Lot 2919 have greater than 30% of their pre-clearing extent intact. Within Shire of Augusta Margaret River LGA the Bidella complex has 95.0% of its pre-clearing extent remaining and the Preston complex has 79.3% remaining.

Table 1: Vegetation Complexes mapped within proposed development area Lot 2919 Rosa Brook Road.

Vegetation complex	Description	Within development area	% pre-European extent remaining
Bidella Complex	Low woodland of <i>Melaleuca preissiana</i> - <i>Banksia littoralis</i> - <i>Hakea lasianthoides</i> on valley floors and open forest to woodland of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia calophylla</i> - <i>Eucalyptus patens</i> on slopes in perhumid and humid zones.	Yes	92.2
Kingia Complex:	Open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia calophylla</i> - <i>Allocasuarina fraseriana</i> - <i>Banksia grandis</i> - <i>Xylomelum occidentale</i> on lateritic uplands in perhumid and humid zones.	No	94.3
Preston Complex	Woodland of <i>Eucalyptus rudis</i> - <i>Agonis flexuosa</i> - <i>Banksia seminuda</i> along streams, open forest of <i>Corymbia calophylla</i> - <i>Eucalyptus patens</i> on slopes in the humid zone.	Yes	53.0
Treeton Complex	Woodland of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia calophylla</i> with some <i>Allocasuarina fraseriana</i> on mild slopes in the perhumid zone.	No	43.7



Lot boundary
 Survey Area
 Vegetation complex
 BD
 KI
 PR
 T

Figure 3: Survey area vegetation complexes



2.4 Threatened Ecological Communities

Ecological communities are defined as a naturally occurring group of plants, animals and other organisms interacting in a unique habitat. The Department of Biodiversity, Conservation and Attractions (DBCA) identifies and lists ecological communities as a threatened ecological community (TEC) if the community is presumed to be totally destroyed or at risk of becoming totally destroyed. Threatened communities can be classed as critically endangered (CR), endangered (EN), vulnerable (VU) or presumed totally destroyed (PD) (see Appendix A for details).

Where communities are considered rare but not (currently) threatened or there is insufficient information available for the community to be considered a TEC, communities can be listed as priority ecological communities (PECs) (definitions of priority classes are provided in Appendix A).

The EPBC Act provides statutory listing and protection for TECs at a Federal level. Under the EPBC Act TECs can be listed as critically endangered, endangered, or vulnerable (Appendix A). Communities listed under the EPBC Act as threatened have statutory protection.

2.5 Threatened and priority flora

All native flora in Western Australia is protected under the EP Act by virtue of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (WA). Specific flora species may be afforded special protection under the BC Act 2016 for flora taxa declared as 'Rare Flora'. In addition, DBCA also classifies flora under four Priority codes where they are under consideration for future listing as declared rare flora but there is insufficient information or they are not currently threatened but could become so if circumstances change (Appendix B).

Flora species can also be listed under the EPBC Act as threatened species and are classed as either extinct, extinct in the wild, critically endangered, endangered, vulnerable or conservation dependant (Appendix B). Any actions likely to have significant impact on species (or communities) listed under the EPBC Act require referral for assessment and approval from the Federal Minister for the Environment.

3 Survey methods

3.1 Desktop survey

A desktop review was completed ahead of field surveys using publicly available datasets to identify potential environmentally significant flora species and vegetation types occurring within the survey area. Database searches were performed using the DAWE Protected Matters Search Tool (Appendix C) and using Nature Map (Appendix D). Key features of threatened flora species identified as likely to occur in the survey area were reviewed as part of preparation for the targeted field survey.

Mapping of vegetation associations (e.g. Beard 1981) and vegetation complexes (Mattiske and Havel 1998), and other available regional studies, were reviewed to identify potential vegetation types occurring within the survey area. Potential threatened ecological communities were identified through searches of NatureMap (DBCA 2020) and the Protected Matters Search Tool (DAWE 2020) and supplemented through review of relevant literature.

Soil mapping from Tille and Lantzke (1990) was used to identify soil types and relevant literature utilised to develop a description of the landforms and geomorphology of the survey area.

3.2 Field survey

A field survey incorporating reconnaissance level survey and targeted flora searches was completed by Stream Environment and Water, Principal Mike Braimbridge on 18 September 2020.

Description of vegetation communities was completed using unmarked relevé sampling. At each location the following information was recorded using standardised field sheets:

- Location and Coordinates
- Soil description and landforms
- Vegetation structure and community description in accordance with the National Vegetation Information System (NVIS) structure and floristics (ESCAVI 2003)
- Vascular plant species (denoting native and introduced species)
- Vegetation condition (according to Keighery 1994)

Targeted searching for potential threatened flora species was completed through foot traverses of the survey area and immediately adjoining areas. Where located, the coordinates of potential threatened flora species were recorded along with the number of plants.

Observations on changes in vegetation condition were recorded opportunistically during foot traverses and species lists for community descriptions were supplemented by opportunistic recording of additional species.

Any flora species that were not able to be identified in the field were collected or photographed. Relevant taxonomic literature and databases were used to identify collected specimens.

3.3 Survey limitations

The survey limitations were considered consistent with EPA Technical Guidance (EPA 2016) and are summarised in Table 2.

Table 2: Assessment of survey limitations

Aspect	Constraint	Comment
Available regional and local information	Negligible	The region is well surveyed with regional vegetation association and complex mapping available.
Competency of personnel	Negligible	The survey was completed by Mike Braimbridge who has >20 years' experience in conducting flora and vegetation surveys in the Western Australia, including the south west.
Proportion of flora identified	Low	The survey was completed during spring flowering period. Where required specimens were collected or photographed and identified using relevant taxonomic literature.
Survey effort and extent	Negligible	The survey area is relatively small. Targeted searching covered the entire proposed development area. A single site visit was conducted which was considered adequate with timing to coincide with peak spring flowering period. Relevés were considered suitable given the scale of the proposed disturbance and size of the project area.
Accessibility	Negligible	Site is on private land with access permitted by the current owner.
Survey timing and season	Negligible	The survey was completed in mid September.
Disturbance	Negligible	No recent disturbances within the proposed development areas.

4 Results

4.1 Desktop survey

4.1.1 Potential threatened communities and species

The desktop survey found there are no federally listed threatened ecological communities (TEC) or state listed TEC or priority ecological communities present within 5 km of the survey area.

The results of the database searches identified one threatened flora species and six priority flora species potentially occurring within Lot 2919 (based on Nature Map search results for 5 km radius). Based on a review of the soils, landforms and previous vegetation mapping, four species were identified with a high likelihood, and one with a moderate likelihood of occurring in habitats found within the survey area (Table 3).

Table 3: Potential threatened and Priority flora species and their likelihood of occurring

Species Name	Status (WA)	Status (EPBC)	Description and Habitat	Likelihood of occurrence
<i>Drakaea micrantha</i>	T	VU	Tuberous, perennial, herb, 0.15-0.3 m high. Small (10-12mm long) heart shaped leaf silver with prominent green veins. Fl. red & yellow, Sep to Oct. White-grey sand.	Low
<i>Gastrolobium formosum</i>	P3	-	Small, trailing shrub, to 1 m high. Fl. red, Nov. Clay loam. Along river banks or in swamps.	High
<i>Grevillea bronwenae</i>	P3	-	Slender, erect shrub, 0.5-1.6 m high. Fl. red, Jun to Dec. Grey sand over laterite, lateritic loam. Hillslopes	Low
<i>Hybanthus volubilis</i>	P2	-	Twining perennial, herb, 0.3-1(-4) m high. Fl. blue-purple-white, Sep to Dec. Clay or sandy clay. River banks.	Moderate
<i>Lambertia rariflora</i> subsp. <i>rariflora</i>	P4	-	Small tree or shrub, to 10 m high. Fl. green/yellow/orange-yellow, Nov to Dec or Jan to May. Yellow-grey sand, black loam, red-brown clay, gravel, laterite, granite. Ridges, creeksides.	High
<i>Pultenaea pinifolia</i>	P3	-	Erect, slender shrub, 1-3 m high. Fl. yellow-orange, Oct to Nov. Loam or clay. Floodplains, swampy areas.	High
<i>Stylidium hygrophilum</i>	P1	-	Reed-like rhizomatous, perennial, herb, 0.25-0.65 m high. White-grey peaty sand. Winter-wet flats. Agonis shrubland.	High

4.2 Field survey

4.2.1 Flora

The field survey recorded 84 taxa of vascular plants from 27 families (Appendix E). Eight of the 84 taxa are introduced. The most common families were Cyperaceae (12 taxa), Fabaceae (11 taxa) Myrtaceae (10 taxa) and Proteaceae (10 taxa). The representation of these families is consistent with the flora of the area and the location in the landscape of the survey area.

Threatened species

No state listed declared rare flora species, or federally listed threatened flora species were recorded in the survey area.

One priority species *Pultenaea pinifolia* (P3) was recorded from two locations during the survey. Approximately 28 plants were recorded outside of the southern survey area near the western border of the property on the interface between the Jarrah/Marri woodland (CcEmBg) and the drainage line community (EmeEpTI) (Figure 4). An additional two plants were found within the southern survey area within the drainage line community (EmeEpTI).

An additional priority species *Dampiera heteroptera* (P3) was recorded from four locations, 3 of which were within the southern survey area (including 11 individual plants in total) and one adjacent to it (including 5 individual plants).

No species of other conservation significance (e.g. range extensions) were recorded.

Declared weeds

None of the eight introduced flora species are listed as declared pest plants under the *Biosecurity and Agriculture Management Act 2007*.

The introduced species recorded were predominantly weedy grasses and herbs common in agricultural setting. These are considered environmental weeds and potentially require management during any earth works. In particular, *Watsonia meriana* subsp. *bulbillifera* which was recorded within the northern survey area, has the potential to spread through transfer of bulbs in soil and is a potentially invasive weed species. Weedy grasses and herbs occurred predominantly at the edges of intact native vegetation and were more common in the northern block of native vegetation.

4.2.2 Vegetation communities

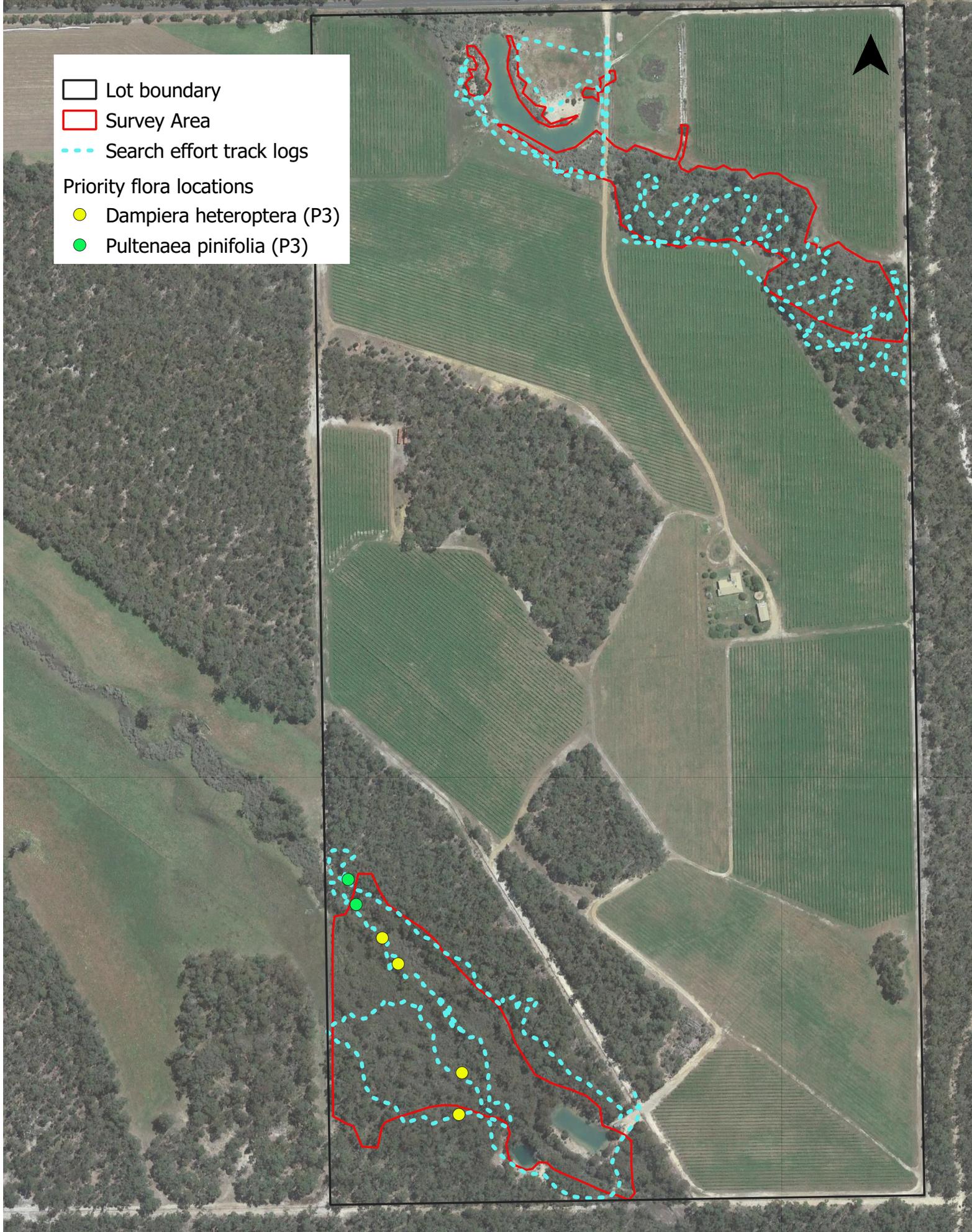
Two native vegetation units and one revegetation shrubland unit were identified within the survey area (Figure 5). Cleared (pasture) and open water areas also occurred within the survey area. Community descriptions (Table 4) are based on the results of relevés surveyed in each, supplemented by opportunistic recording of additional species during targeted searches.

The vegetation communities are consistent with the broader vegetation complex descriptions of Matiske and Havel (1998) for the desktop area. The drainage line community was variable in its shrub and sedge layer density and composition, particularly within the southern survey area. Multiple relevés (five) were sampled in this community to characterise this variability. In the northern survey area where this community was also recorded, the overstorey elements *Eucalyptus megacarpa* and *Eucalyptus patens*, were largely absent although the dominant shrub and sedge species were present.

The condition of vegetation was mapped during the field survey and included areas classed as completely degraded to excellent (Figure 6). Vegetation condition was generally higher in the

southern survey area and comparatively poorer in the northern survey area. The poorer condition of the northern survey area is likely due to the impact of adjoining agricultural land use and historic disturbance resulting in greater ingress of weed species.

None of the vegetation communities described were considered to have affinities with threatened or priority ecological communities.



□ Lot boundary
 □ Survey Area
 - - - Search effort track logs
 Priority flora locations
 ● *Dampiera heteroptera* (P3)
 ● *Pultenaea pinifolia* (P3)

Figure 4: Priority flora recorded within survey area

Lot 2919 Rosa Brook Road - Flora and vegetation

Ref: 202001

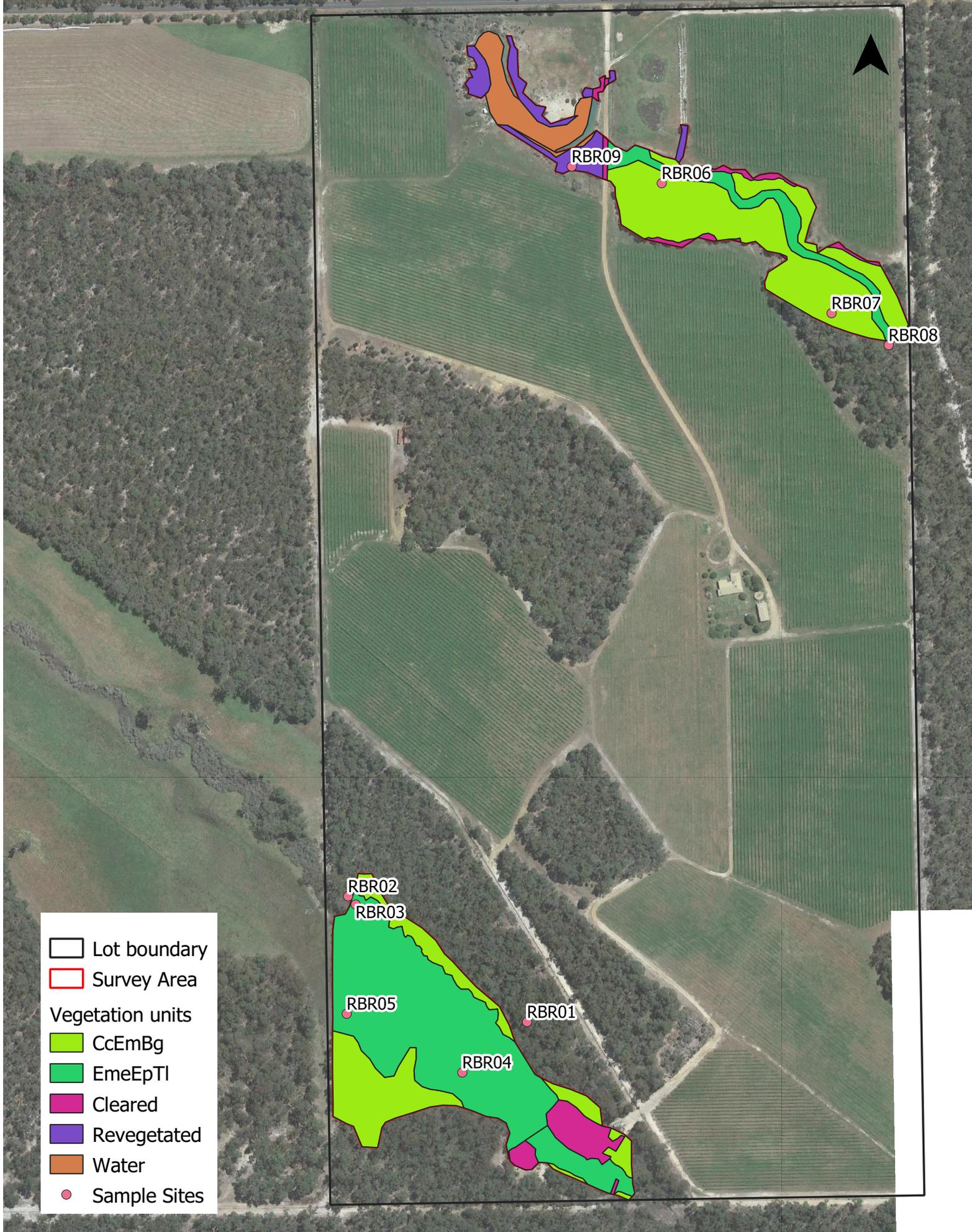
Date: 09/11/20 Author: MB

0 100 200 m

Projection: GDA zone 50

Source: Base map © ESRI and its data suppliers. Landgate (2020).





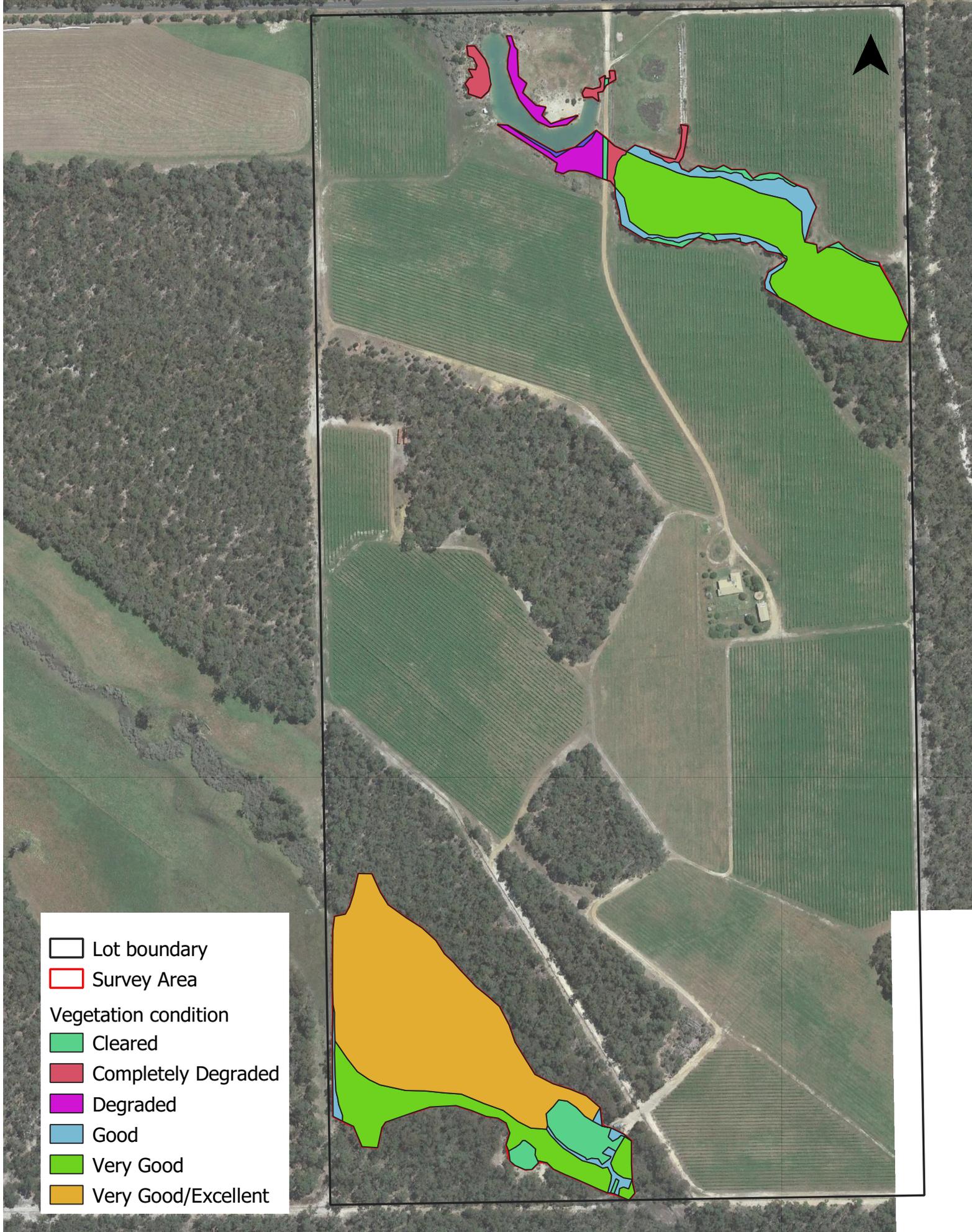
Lot boundary
 Survey Area
 Vegetation units
 CcEmBg
 EmeEpTI
 Cleared
 Revegetated
 Water
● Sample Sites

Figure 5: Vegetation units within survey area

Lot 2919 Rosa Brook Road - Flora and vegetation
 Ref: 202001
 Date: 09/11/20 Author: MB



Projection: GDA zone 50
 Source: Base map © ESRI and its data suppliers.
 Landgate (2020).



- Lot boundary
- Survey Area
- Vegetation condition**
- Cleared
- Completely Degraded
- Degraded
- Good
- Very Good
- Very Good/Excellent

Figure 6: Vegetation condition within survey area

Lot 2919 Rosa Brook Road - Flora and vegetation
 Ref: 202001
 Date: 09/11/20 Author: MB

0 100 200 m

Projection: GDA zone 50
 Source: Base map © ESRI and its data suppliers.
 Landgate (2020).

Table 4: Vegetation communities described for the project area.

Community Code	Description	Condition	Site reference	Example photo of community
Cl	Cleared or parkland cleared	NA	NA	NA
RevTI	Revegetated shrubland	Completely Degraded	RBR09	
CcEmBg	Open forest of <i>Corymbia calophylla</i> and <i>Eucalyptus marginata</i> over open woodland of <i>Banksia grandis</i> and <i>Allocasuarina fraseriana</i> over sparse shrubland of <i>Hovea elliptica</i> and <i>Taxandria parviceps</i> over shrubland/sedgeland of <i>Hibbertia commutata</i> , <i>Tetraria capillaris</i> and <i>Patersonia umbrosa</i> var. <i>xanthina</i> .	Range from Good to Very Good/Excellent.	RBR01, RBR06, RBR07	

<p>EmeEpTI</p>	<p>Open woodland of <i>Eucalyptus megacarpa</i> and <i>Eucalyptus patens</i> over (closed) shrubland of <i>Taxandria linearifolia</i> over mixed sedgeland.</p>	<p>Range from Very Good to Very Good/Excellent</p>	<p>RBR02, RBR03, RBR04, RBR05, RBR08</p>	
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5 Discussion and Conclusions

The survey of the proposed development areas within Lot 2919 Rosa Brook Road identified both intact native vegetation and previously cleared areas. The southern survey area contains vegetation predominantly in very good to excellent condition. This area adjoins intact native vegetation, including areas of State Forest. The condition of the northern survey area was generally poorer. Adjoining land use for agricultural purposes and historic disturbance is likely to have contributed to the introduction of weeds into this area of remnant native vegetation.

One population of priority species *Pultenaea pinifolia* (P3) totalling an estimated 30 individual plants was identified during the survey. Two of the individual plants were located within the southern survey area. The desktop survey identified this species as highly likely to occur based on a previous record from State Forest (collection from 1974) south of the survey area and likely suitable habitat. In addition to the Shire of Augusta Margaret River, *Pultenaea pinifolia* is known to occur within the Albany, Bridgetown-Greenbushes, Busselton, Capel, Manjimup and Nannup local government areas (Western Australian Herbarium 1998).

A second species was identified as priority species *Dampiera heteroptera* (P3). Approximately 11 individual plants of this species were recorded at three locations within the EmeEpTI community in the drainage lines within the southern survey area. An additional 5 plants were recorded from one location to the south survey area. The species prefers swampy areas with sandy soils (Western Australian Herbarium 1998). In addition to the Shire of Augusta Margaret River, *Dampiera heteroptera* is known to occur within the Bridgetown-Greenbushes, Busselton and Nannup local government areas.

No additional conservation significant flora species were recorded. The timing of the initial survey was considered appropriate to coincide with the flowering period of the majority of threatened flora species potentially occurring within the survey area.

Two native vegetation communities were mapped and described within the survey area. Where intact the native vegetation communities, particularly in the southern survey area were in very good to excellent condition. Neither of the communities were considered to have affinities to threatened or priority ecological.

The vegetation communities were broadly consistent with the vegetation complexes mapped and described for the area. Both vegetation complexes occurring within the proposed development areas have greater than 30% of the pre-European extent intact and are well represented outside of the survey area (Government of Western Australia 2019).

In conclusion:

- Two priority species *Pultenaea pinifolia* (P3) totalling an estimated 2 individual plants and *Dampiera heteroptera* (P3) totalling an estimated 11 plants were identified within the southern development area. Whilst not specifically protected under legislation priority flora are considered to be of elevated conservation significance. Additional plants of both species were recorded nearby but outside of the proposed development area.
- No state listed or federally listed threatened or priority ecological communities were identified within the proposed development areas.
- The condition of vegetation communities, particularly in the southern development area was very good to excellent. The vegetation communities broadly align with the mapped

vegetation complexes for the study area. The two vegetation complexes occurring within the proposed development areas both retain greater than 30% of their predicted extent intact and are well represented outside of the survey area.

- Given the very good to excellent condition of native vegetation present on the site and occurrence of priority flora species adjacent to the proposed development area, disturbance to remnant vegetation identified during the survey should be minimised where possible and suitable management measures developed to minimise potential indirect impacts to adjoining areas of intact native vegetation (i.e. adjoining State Forest).
- No weeds of national environmental significance were found during the survey. Several environmental weeds including *Watsonia meriana* subsp. *bulbillifera*, were recorded and should be managed appropriately during any proposed clearing and earthworks to avoid further spread and introduction of weeds.

6 References

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Appendix A: Categories and definitions for threatened and priority ecological communities

State Threatened and Priority Ecological Community Categories

Category	Description
Threatened	
Presumed totally Destroyed (PD)	An ecological community that has been adequately searched for but for which no representative occurrences have been located.
Critically Endangered (CR)	An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future.
Endangered (EN)	An ecological community will be listed as Endangered when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future.
Vulnerable (VU)	An ecological community will be listed as Vulnerable when it 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 (within approximately 50 years) to long-term future.
Priority	
Priority 1 (P1) – Poorly known	Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤ 5 occurrences or a total area of ≤ 100 ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist.
Priority 2 (P2) – Poorly known	Communities that are known from few occurrences with a restricted distribution (generally ≤ 10 occurrences or a total area of ≤ 200 ha). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) of destruction or degradation.
Priority 3 (P3) – Poorly known	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: 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; 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
Priority 4 (P4) – Adequately known	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.
Priority 5 (P5) – Conservation dependent	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.

EPBC Act conservation categories for threatened ecological communities

Category	Description
Critically Endangered (CR)	An ecological community that is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years)
Endangered (EN)	An ecological community that is not critically endangered but is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).
Vulnerable (VU)	an ecological community is not critically endangered or endangered, but is facing a high risk of extinction in the wild in the medium-term future (indicative timeframe being the next 50 years).

Appendix B: Categories and definitions for threatened and priority flora species

CONSERVATION CODES FOR WESTERN AUSTRALIAN FLORA

<p>T: Threatened Flora - Specially protected under the BC Act, listed under Schedules 1, 2 and 3 of the Wildlife Conservation (Rare Flora) Notice 2018 (which may also be referred to as Declared Rare Flora). Taxa which have been adequately searched for and are deemed to be, in the wild, either rare, at risk of extinction, or otherwise in need of special protection, and have been gazetted as such. The assessment of the conservation status of these species is based on their national extent. Ranking: CR · Schedule 1 - taxa that are extant and considered likely to become extinct or rare, as critically endangered flora, and therefore in need of special protection. EN · Schedule 2 - taxa that are extant and considered likely to become extinct or rare, as endangered flora, and therefore in need of special protection. VU · Schedule 3 - taxa that are extant and considered likely to become extinct or rare, as vulnerable flora, and therefore in need of special protection.</p>
<p>EX: Presumed extinct Flora - Specially protected under the BC Act, listed under Schedule 4 of the Wildlife Conservation (Rare Flora) Notice (which may also be referred to as Declared Rare Flora). Taxa which have been adequately searched for and there is no reasonable doubt that the last individual has died, and have been gazetted as such. Threatened flora are ranked according to their level of threat using IUCN Red List categories and criteria. EX · Schedule 4 - taxa that are presumed to be extinct in the wild and therefore in need of special protection.</p>
<p>Priority Flora</p> <p>Taxa that may be threatened or near threatened, but are data deficient or have not yet been adequately surveyed to be listed under the Wildlife Conservation (Rare Flora) Notice, are added to the Priority Flora List under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status, so that consideration can be given to their declaration as threatened flora. Taxa 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 for other than taxonomic reasons, are placed in Priority 4. These taxa require regular monitoring.</p>
<p>1: Priority One: Poorly-known species</p> <p>Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations, but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.</p>
<p>2: Priority Two: Poorly-known species</p> <p>Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations, but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.</p>
<p>3: Priority Three: Poorly-known species</p> <p>Species that are known from several locations, and the species do not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations, but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.</p>
<p>4: Priority Four: Rare, Near Threatened and other species in need of monitoring</p>

- (a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.
- (b) Near Threatened. Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.
- (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

EPBC Act conservation categories (follow IUCN Red List categories)

Category	Description
Extinct (EX)	A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual.
Extinct in the wild (EW)	A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual.
Critically Endangered (CR)	A taxon is Critically Endangered when the best available evidence indicates that it is considered to be (according to specified criteria) facing an extremely high risk of extinction in the wild.
Endangered (EN)	A taxon is Endangered when it is considered (according to specified criteria) to be facing a very high risk of extinction in the wild.
Vulnerable (VU)	A taxon is Vulnerable when the best available evidence indicates that it is considered (according to specified criteria) to be facing a high risk of extinction in the wild.
Conservation dependent (CD)	A taxon is conservation dependent if, at a particular time, it is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered.

Appendix C: EPBC Protected Matters database search results



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 04/09/20 00:14:20

[Summary](#)

[Details](#)

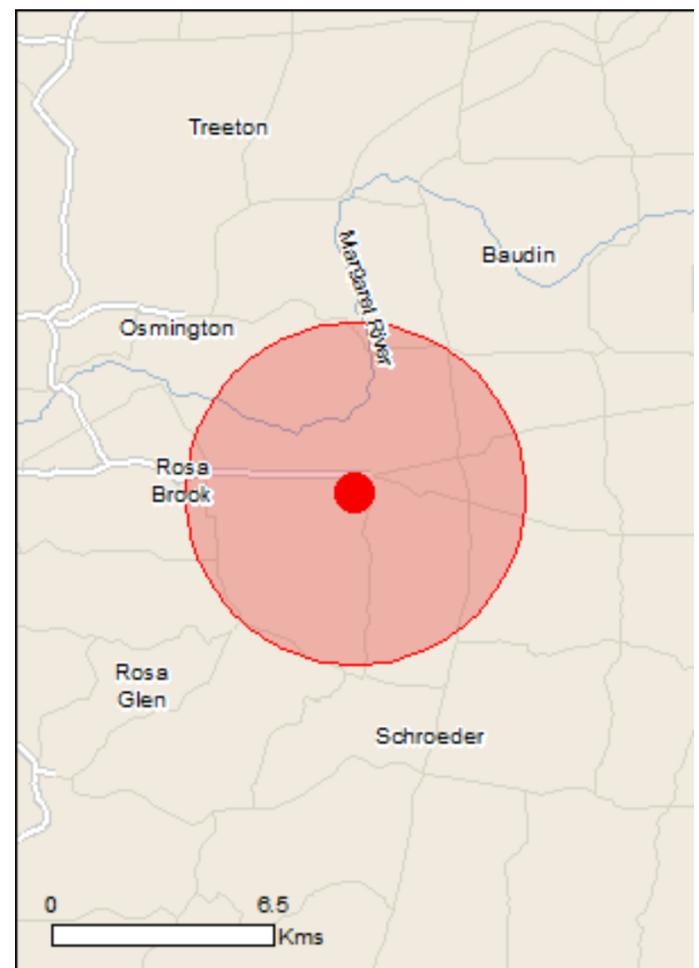
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

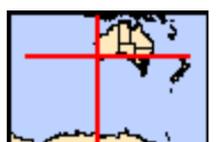
[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

Buffer: 5.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	19
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	13
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	3
Regional Forest Agreements:	1
Invasive Species:	20
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Calyptorhynchus baudinii Baudin's Cockatoo, Long-billed Black-Cockatoo [769]	Endangered	Breeding likely to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Breeding likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Crustaceans		
Cherax tenuimanus Hairy Marron, Margaret River Hairy Marron, Margaret River Marron [78931]	Critically Endangered	Species or species habitat may occur within area
Fish		
Nannatherina balstoni Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat known to occur within area
Mammals		
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat may occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat may occur within area
Other		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Plants		
Banksia nivea subsp. uliginosa Swamp Honeypot [82766]	Endangered	Species or species habitat likely to occur within area
Banksia squarrosa subsp. argillacea Whicher Range Dryandra [82769]	Vulnerable	Species or species habitat likely to occur within area
Caladenia hoffmanii Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat likely to occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat known to occur within area
Gastrolobium papilio Butterfly-leaved Gastrolobium [78415]	Endangered	Species or species habitat may occur within area
Lambertia echinata subsp. occidentalis Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat may occur within area
Sphenotoma drummondii Mountain Paper-heath [21160]	Endangered	Species or species habitat may occur within area

Listed Migratory Species

[\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

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

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

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

Name	State
NTWA Bushland covenant (0170A)	WA
NTWA Bushland covenant (0170B)	WA
Rapids	WA

Regional Forest Agreements [\[Resource Information \]](#)

Note that all areas with completed RFAs have been included.

Name	State
South West WA RFA	Western Australia

Invasive Species

[[Resource Information](#)]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within

Name	Status	Type of Presence area
<p>Lycium ferocissimum African Boxthorn, Boxthorn [19235]</p>		<p>Species or species habitat likely to occur within area</p>
<p>Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]</p>		<p>Species or species habitat may occur within area</p>
<p>Rubus fruticosus aggregate Blackberry, European Blackberry [68406]</p>		<p>Species or species habitat likely to occur within area</p>
<p>Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]</p>		<p>Species or species habitat likely to occur within area</p>

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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

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

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

Coordinates

-33.94508 115.28423

Acknowledgements

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

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

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

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

Appendix D: DBCA Naturemap database search results

NatureMap Species Report

Created By Mike Braimbridge on 25/09/2020

Kingdom Plantae
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 115° 17' 02" E, 33° 56' 43" S
Buffer 5km

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
1.	3428 <i>Acacia luteola</i>			
2.	13101 <i>Amperea simulans</i>			
3.	6306 <i>Andersonia caerulea</i> (Foxtails)			
4.	1117 <i>Aphelia cyperoides</i>			
5.	20283 <i>Astartea scoparia</i> (Common Astartea)			
6.	4401 <i>Asterolasia squamuligera</i>			
7.	4422 <i>Boronia gracilipes</i> (Karri Boronia)			
8.	4429 <i>Boronia molloyae</i> (Tall Boronia)			
9.	4442 <i>Boronia stricta</i>			
10.	20392 <i>Boronia tenuior</i>			
11.	3714 <i>Bossiaea ornata</i> (Broad Leaved Brown Pea)			
12.	15335 <i>Caladenia brownii</i>			
13.	15341 <i>Caladenia citrina</i>			
14.	1590 <i>Caladenia ferruginea</i> (Rusty Spider Orchid)			
15.	10883 <i>Caladenia magniclavata</i> (Big Clubbed Spider Orchid)			
16.	10830 <i>Caladenia rhomboidiformis</i>			
17.	18040 <i>Caladenia thincicola</i>			
18.	5394 <i>Callistemon glaucus</i>			
19.	28290 <i>Cheiranthra parviflora</i>			
20.	4564 <i>Comesperma virgatum</i> (Milkwort)			
21.	1872 <i>Conospermum flexuosum</i> (Tangled Smokebush)			
22.	768 <i>Cyathochaeta avenacea</i>			
23.	7444 <i>Dampiera hederacea</i> (Karri Dampiera)			
24.	3799 <i>Daviesia cordata</i> (Bookleaf)			
25.	7487 <i>Diaspasis filifolia</i> (Thread-leaved Diaspasis)			
26.	13635 <i>Drakaea micrantha</i>		T	
27.	13547 <i>Eucalyptus marginata</i> subsp. <i>marginata</i> (Jarrah)			
28.	902 <i>Gahnia decomposita</i>			
29.	20504 <i>Gastrolobium formosum</i>		P3	
30.	6150 <i>Gonocarpus diffusus</i>			
31.	7495 <i>Goodenia berardiana</i>			
32.	7538 <i>Goodenia pulchella</i>			
33.	12219 <i>Grevillea bronwenae</i>		P3	
34.	2037 <i>Grevillea manglesioides</i>			
35.	15990 <i>Grevillea pulchella</i> subsp. <i>ascendens</i>			
36.	908 <i>Gymnoschoenus anceps</i>			
37.	2128 <i>Hakea amplexicaulis</i> (Prickly Hakea)			
38.	2174 <i>Hakea linearis</i>			
39.	2203 <i>Hakea ruscifolia</i> (Candle Hakea)			
40.	1294 <i>Hodgsoniola junciformis</i>			
41.	5816 <i>Homalospermum firmum</i>			
42.	5222 <i>Hybanthus volubilis</i>		P2	
43.	5818 <i>Hypocalymma cordifolium</i>			
44.	43120 <i>Hypocalymma minus</i>			
45.	5827 <i>Hypocalymma strictum</i>			
46.	2222 <i>Isopogon attenuatus</i>			
47.	16879 <i>Lambertia rariflora</i> subsp. <i>rariflora</i>		P4	
48.	7572 <i>Lechenaultia expansa</i>			
49.	936 <i>Lepidosperma leptostachyum</i>			
50.	29150 <i>Lepidosperma</i> sp. Margaret River (B.J. Lepschi 1841)			
51.	46376 <i>Leptocarpus denmarkicus</i>			
52.	2355 <i>Leptomeria squarrolosa</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
53.	19662 <i>Leucopogon</i> sp. Margaret River (J. Scott 207)			
54.	6515 <i>Logania vaginalis</i> (White Spray)			
55.	13273 <i>Melaleuca incana</i> subsp. <i>incana</i>			
56.	5946 <i>Melaleuca pauciflora</i>			
57.	953 <i>Mesomelaena graciliceps</i>			
58.	4090 <i>Mirbelia dilatata</i> (Holly-leaved Mirbelia)			
59.	46316 <i>Orianthera serpyllifolia</i> subsp. <i>angustifolia</i>			
60.	5264 <i>Pimelea spectabilis</i> (Bunjong)			
61.	20195 <i>Pultenaea brachytropis</i>			
62.	4179 <i>Pultenaea pinifolia</i>		P3	
63.	978 <i>Schoenus brevisetis</i>			
64.	4206 <i>Sphaerolobium macranthum</i>			
65.	30278 <i>Stylidium androsaceum</i>			
66.	7718 <i>Stylidium diversifolium</i> (Touch-me-not)			
67.	25805 <i>Stylidium hygrophilum</i>		P1	
68.	7796 <i>Stylidium scandens</i> (Climbing Triggerplant)			
69.	7802 <i>Stylidium squamosotuberosum</i> (Fleshy-rhizomed Trigger Plant)			
70.	15827 <i>Taraxis grossa</i>			
71.	20114 <i>Taxandria fragrans</i>			
72.	20113 <i>Taxandria inundata</i>			
73.	20135 <i>Taxandria linearifolia</i>			
74.	4544 <i>Tetralochea setigera</i>			
75.	5092 <i>Thomasia pauciflora</i> (Few Flowered Thomasia)			
76.	6110 <i>Verticordia plumosa</i> (Plumed Featherflower)			
77.	1151 <i>Xyris laxiflora</i>			

Conservation Codes

T - Rare or likely to become extinct
 X - Presumed extinct
 IA - Protected under international agreement
 S - Other specially protected fauna
 1 - Priority 1
 2 - Priority 2
 3 - Priority 3
 4 - Priority 4
 5 - Priority 5

¹ For NatureMap's purposes, species flagged as endemic are those whose records are wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

Appendix E: Species list site matrix

Family	Genus	Species	Introduced	Cons. Status	R1	R2	R3	R4	R5	R6	R7	R8	R9
Asparagaceae	<i>Lomandra</i>	<i>nigricans</i>									+		
	<i>Lomandra</i>	<i>pauciflora</i>									+		
Asparagaceae	<i>Lomandra</i>	<i>sonderi</i>			+					+			
Asteraceae	<i>Hypochaeris</i>	<i>glabra</i>	*							+	+		+
	<i>Lagenophora</i>	<i>huegelii</i>			+					+			
Casuarinaceae	<i>Allocasuarina</i>	<i>fraseriana</i>			+			+					+
Cyperaceae	<i>Baumea</i>	<i>acuta</i>							+				
	<i>Baumea</i>	<i>juncea</i>					+						
	<i>Baumea</i>	sp. (MB12)				+							
	<i>Carex</i>	sp.			+								
	Cyperaceae	sp. (MB19)					+						
	Cyperaceae	sp. (MB33)										+	
	<i>Gahnia</i>	<i>trifida</i>						+					
	<i>Lepidosperma</i>	<i>pubisquameum</i>								+			+
	<i>Lepidosperma</i>	<i>tenue</i>			+					+	+		
	<i>Mesomelaena</i>	<i>tetragona</i>			+		+	+	+		+		
	<i>Tetraria</i>	<i>capillaris</i>			+						+		
	<i>Tetraria</i>	<i>octandra</i>								+	+	+	
Dasygogonaceae	<i>Kingia</i>	<i>australis</i>			+	+	+			+	+		
Dilleniaceae	<i>Hibbertia</i>	<i>commutata</i>			+					+	+		
Epacridaceae	<i>Leucopogon</i>	<i>australis</i>			+					+	+	+	
	<i>Leucopogon</i>	<i>verticillatus</i>			+					+			
Euphorbiaceae	<i>Ricinocarpos</i>	<i>glaucus</i>			+								
Fabaceae	<i>Acacia</i>	<i>cyclops</i>								+			+

Family	Genus	Species	Introduced	Cons. Status	R1	R2	R3	R4	R5	R6	R7	R8	R9
	<i>Acacia</i>	<i>divergens</i>				+	+		+				+
	<i>Acacia</i>	<i>lateriticola</i>			+					+			+
	<i>Acacia</i>	<i>pulchella</i>							+				
	<i>Bossiaea</i>	<i>ornata</i>			+					+			
	<i>Eutaxia</i>	<i>epacridoides</i>				+	+						
	<i>Hovea</i>	<i>chorizemifolia</i>			+								
	<i>Hovea</i>	<i>elliptica</i>			+					+	+	+	
	<i>Mirbelia</i>	<i>dilatata</i>			+	+						+	+
	<i>Pultenaea</i>	<i>brachytropis</i>					+					+	
	<i>Pultenaea</i>	<i>pinifolia</i>		P3		+							
Goodeniaceae	<i>Dampiera</i>	<i>heteroptera</i>		P3			+	+					
	<i>Dampiera</i>	<i>linearis</i>			+					+	+	+	
Haemodoraceae	<i>Haemodorum</i>	<i>spicatum</i>									+		
Hemerocallidaceae	<i>Agrostocrinum</i>	<i>scabrum</i>								+			
	<i>Johnsonia</i>	<i>lupulina</i>			+								
Iridaceae	<i>Patersonia</i>	<i>umbrosa</i> var. <i>xanthina</i>			+		+			+	+		
	<i>Watsonia</i>	<i>meriana</i> var. <i>bulbillifera</i>	*							+			
Juncaceae	<i>Juncus</i>	<i>articulatus</i>	*										+
Lindsaeaceae	<i>Lindsaea</i>	<i>linearis</i>			+					+			
Malvaceae	<i>Thomasia</i>	<i>pauciflora</i>				+	+	+					
Myrtaceae	<i>Astartea</i>	<i>scoparia</i>				+							
	<i>Corymbia</i>	<i>calophylla</i>			+		+	+		+	+	+	
	<i>Eucalyptus</i>	<i>marginata</i>			+	+		+		+	+		
	<i>Eucalyptus</i>	<i>megacarpa</i>				+	+	+	+				
	<i>Eucalyptus</i>	<i>patens</i>				+	+		+				
	<i>Homalospermum</i>	<i>firmum</i>					+	+	+				
	<i>Hypocalymma</i>	<i>cordifolium</i>				+	+	+				+	

Family	Genus	Species	Introduced	Cons. Status	R1	R2	R3	R4	R5	R6	R7	R8	R9
	<i>Melaleuca</i>	<i>thymoides</i>			+								
	<i>Taxandria</i>	<i>linearifolia</i>				+	+	+				+	+
	<i>Taxandria</i>	<i>parviceps</i>			+	+	+	+		+	+	+	+
Pinaceae	<i>Pinus</i>	sp.	*							+	+		+
Plantaginaceae	<i>Plantago</i>	<i>lanceolata</i>	*										+
Poaceae	<i>Anthoxanthum</i>	<i>odoratum</i>	*								+		
	<i>Avena</i>	<i>fatua</i>	*										+
	<i>Cenchrus</i>	<i>clandestinus</i>	*										+
	<i>Tetrarrhena</i>	<i>laevis</i>			+					+	+		
Podocarpaceae	<i>Podocarpus</i>	<i>drouynianus</i>			+					+	+		
Proteaceae	<i>Banksia</i>	<i>grandis</i>			+					+			
	<i>Grevillea</i>	<i>trifida</i>										+	
	<i>Hakea</i>	<i>amplexicaulis</i>			+					+	+		
	<i>Hakea</i>	<i>ceratophylla</i>						+					
	<i>Hakea</i>	<i>lasianthoides</i>				+	+	+		+			
	<i>Hakea</i>	<i>linearis</i>					+						
	<i>Persoonia</i>	<i>elliptica</i>									+		
	<i>Persoonia</i>	<i>longifolia</i>								+			
	<i>Petrophile</i>	<i>diversifolia</i>			+								
	<i>Xylomelum</i>	<i>occidentale</i>			+					+	+		
Restionaceae	<i>Anarthria</i>	<i>prolifera</i>								+			
	<i>Desmocladius</i>	<i>flexuosus</i>			+								
	<i>Empodesma</i>	<i>gracillimum</i>							+				
	<i>Hypolaena</i>	<i>exsulca</i>								+			
	<i>Leptocarpus</i>	<i>scariosus</i>				+	+						
	<i>Loxocarya</i>	<i>cinerea</i>								+	+		

Family	Genus	Species	Introduced	Cons. Status	R1	R2	R3	R4	R5	R6	R7	R8	R9
	<i>Sporodanthus</i>	<i>strictus</i>				+							
Rutaceae	<i>Boronia</i>	<i>crenulata</i>					+						
	<i>Boronia</i>	<i>gracilipes</i>										+	
Xanthorrhoeaceae	<i>Xanthorrhoea</i>	<i>gracilis</i>								+			
	<i>Xanthorrhoea</i>	<i>preissii</i>					+			+			
Xyridaceae	<i>Xyris</i>	<i>gracillima</i>						+					
Zamiaceae	<i>Macrozamia</i>	<i>riedlei</i>								+	+		