SHIRE OF HARVEY
A Breath of Fresh Air

Shire of Harvey
Local Biodiversity Strategy 2025-2035

Part 1 – Strategic Plan

GOVERNMENT OF WESTERN AUSTRALIA
natural resource management program
WALGA
WORKING FOR LOCAL GOVERNMENT

This Strategy is supported by funding from the Western Australian Government's State NRM Program.

Contents

1.0 Introduction

This Local Biodiversity Strategy (Strategy) has been developed through a collaborative Stakeholder Working Group (Working Group) involving Shire of Harvey (Shire) staff from the Planning and Environment Business Units, community and Council member representation. Parkfield Primary School representatives from the Parkfield Learning and Understanding Sustainability class (PLUS) presented to the Working Group highlighting 'the environmental assets the students saw as priorities into the future.' Natural Area Management were contracted to develop a Local Conservation Prioritisation Plan and a Local Natural Area Prioritisation Plan.

This Strategy has been made possible by funding from the possible by funding from the WA Government's State NRM Program, delivered via the WA Local Government Association (WALGA).

This Strategy has been prepared in accordance with the Shire's strategic framework and relevant local, state, and federal guidelines, policies, and procedures.

Part 1 of the Strategy discusses the prioritisation of Local Natural Areas and the goals, objectives and actions to implement the Strategy. Part 2 discusses the background and technical data that has informed the Strategy.

2.0 Strategic Vision

Vision for the community:

"A community where natural areas are valued, protected, retained and enhanced, supporting a rich Biodiversity that enhances the quality of life, work and play for all."

Vision for the Shire of Harvey:

"A landscape where Biodiversity is prioritised in all decisions, ensuring the long-term ecological integrity of the Shire that enhances the quality of life, work and play for all."

3.0 Local Natural Areas

Local Natural Areas (LNAs) are defined as the natural areas that exist outside lands managed by DBCA, Regional Parks and Bush Forever sites (Del Marco *et al*. 2004). These lands contain native species and ecological communities and henceforth Biodiversity. The improved protection of LNAs is consequently vital in retaining and protecting Biodiversity in the Shire. LNAs in the Shire are:

- Natural areas located on private property that the Shire has some management control over through Policy and decision-making processes such as planning approvals.
- Natural areas located on public or regional open space, managed by the Shire of Harvey but not officially recognised as managed for the purpose of conservation.
- State Government freehold land not zoned Parks and Recreation under the Greater Bunbury Regional Scheme GBRS).

Map 1 details LNAs within the Shire of Harvey.

The determination of a LNA for protection or retention is vital in securing an area for the future. Determining a LNA for protection provides the formal protection of the natural area and the management of the area for conservation. Areas determined for retention should be conserved where possible for their environmental values but can be subject to clearing and development as it is not under any formal protection (NAH, 2024a). Retained areas are not typically managed specifically for conservation but are stilled valued highly in Biodiversity.

The Environmental Protection Authority, Position Statement No. 2 Environmental Protection of Native Vegetation in Western Australia (2000) acknowledges that:

- 30 % of the original extent of each vegetation type is regarded as the threshold level at which species loss appears to accelerate exponentially at an ecosystem level.
- 10 % of the original extent of each vegetation type is regarded as the level representing endangered (NAH, 2024a).

The goals for the conservation of LNA considers the national targets for Biodiversity conservation set out in the *National Objectives and Targets for Biodiversity Conservation 2001 – 2005* (Environmental Australia, 2001). The aim of the national objectives and targets are to:

- Prevent the decline in the conservation status of ecological communities as a result of land clearance.
- Prevent the clearance of ecological communities with less than 30 % of the original extent remaining.
- Recover the ecological communities with less than 10 % of the original extent remaining; and
- Protect threatened species and ecological communities.

Due to the limitations on the data available for conservation values and native vegetation extents, a precautionary approach is required when determining the protection or retention of an area. The native vegetation extent statistics are likely an over-estimation of the native vegetation remaining due to the date since the data was last updated and cleared areas that may not have been picked up in the assessment (Environmental Australia, 2001). As such, a buffer is applied to the national targets and thresholds, and when considering protection or retention of LNA to account for this delay. Areas to be assigned a protection category include areas where:

- 15 % of the ecological community is remaining
- those within an ecological linkage and
- LNA containing any threatened species or communities.

Areas assigned for retention included areas where 40 % of the ecological community is remaining. LNA not assigned for retention or protection are placed in the unassigned category, whilst this does not fall directly into a retention or protection category it may be a focus for community protection or restoration (Environmental Australia, 2001).

3.1 Priority of Local Natural Areas

The LNAs within the Shire have been prioritised using a multi-criteria analysis based on a set of weighted ecological criteria. These ecological criteria were derived from the Local Biodiversity Planning Guidelines for Local Governments in the South West Ecoregion (WALGA, 2023) and incorporate Biodiversity considerations including regional and local representation, connectivity, coastal systems, and climate change.

The Working Group assigned the ecological criteria factorial weightings between 0.1 and 1 based on their importance in Biodiversity conservation and protection. The scoring system was calculated using the prioritisation scores submitted by member from the Working Group, where the median values of the submissions for each criterion was used to estimate the central tendency to determine the finalised weighted scoring (NAH, 2024a). The weighted score ranges from 0 to 1, where 1 signifies the highest priority. To determine the prioritisation of each LNA, the weighted score of each criterion relevant to the LNA were summed. The LNA and their summed weighted prioritisation are displayed in Map 2.

The criteria with the highest priority rating from the Working Group included:

1.1 Any natural area with recognised international, national, State or regional conservation value.

2.3 Natural areas containing a Threatened Ecological Community (TEC).

2.4 Natural area containing records of threatened flora, fauna or significant habitat for threatened fauna (NAH, 2024a).

The intention of prioritising LNAs is to determine where ecological values are highest. This assists in determining areas where greater effort of protection, retention, conservation and management of Biodiversity should occur.

The level of priority is depicted on the mapping in a graduated colour scheme of red (highest priority) to green (lowest priority). Highest priority areas have a higher multi criteria analysis result value and are depicted in Map 3.

Priority LNA mapping represents a snapshot in time and must be used in addition to biodiversity values assessments under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999 (*EPBC Act). Assessments are needed in addition to field surveys to reflect any new listings of species and ecological communities and inconsistencies between State and Commonwealth legislation (NAH, 2024a). Additionally, areas mapped as 'Low Priority' may be due to a lack of historical data rather than absence of Biodiversity values.

The Working Group prioritisation did not include the quality of the vegetation, which should be an additional consideration in planning assessments. The prioritisation of LNA does not indicate that only those of highest ecological value should be given management importance.

4.0 Strategic Goals

The Strategy focuses on long-term goals to create a sustainable future for the place and its people and on the protection, retention, enhancement and the education of its Biodiversity within the community. The four overarching Goals of the Strategy are:

PROTECT

RETAIN

ENHANCE

EDUCATE & COLLABORATE

5.0 Strategic Objectives

The following objectives will assist the Shire to achieve the overarching goals of the Strategy:

Goal	Objective
PROTECT	1. Protect areas within an ecological linkage ensuring that ecological linkages remain intact. 2. Protect vegetation complexes with less than 15 % remaining in the Shire. 3. Increase the number of areas under formal protection by the Shire.
RETAIN	1. Retain vegetation complexes with less than 40 % remaining in the Shire. 2. Retain vegetation in good or better condition where possible. 3. Retain vegetation corridors in new development areas. 4. Increase biodiversity through revegetation strategies and weed control. 5. Reduce the number of unauthorised clearing activities.
ENHANCE	1. Increase the native vegetation coverage throughout the Shire through planting of appropriate native and area-specific species within degraded and completely degraded areas. 2. Increase the number of local ecological linkages within the Shire. 3. Develop long term management and revegetation plans that consider the maintenance and upkeep of rehabilitated areas until they are self-sustaining.
EDUCATE & COLLABORATE	1. Increase engagement and collaboration on local biodiversity values. 2. Use technology to increase environmental awareness and education initiatives. 3. Create opportunities for cultural education surrounding the local natural environment. 4. Increasing awareness of the services that the Shire can provide to the local community surrounding environmental values.

6.0 Strategic Actions

This Strategy is not Place Specific. The implementation actions below focus on workable and achievable actions to increase awareness of biodiversity values within the community; increase support for, and involvement by, the community to protect, retain and enhance LNAs; to promote the benefits of LNAs; and increase regeneration values and the interconnectedness of biodiversity, ecosystems and its people.

Action		Goal	Objective
1.	Ensure other relevant Shire strategies and plans reference this Strategy.	Protect Retain Enhance	All objectives All objectives All objectives
2.	Ensure the reservation of land in the Local Planning Scheme identified as an LNA is	Protect	All objectives

Action		Goal	Objective
	reflective of biodiversity and conservation significance.		
3.	Review the reserve purpose of Shire owned and managed land identified as a LNA and request a change of reserve purpose if required.	Protect	Objective 3
4.	Ensure the local planning framework contains sufficient provisions relating to the protection, retention and enhancement of the Shire's biodiversity assets.	Protect Retain	Objectives 1, 2 Objectives 1, 2, 3, 5
5.	Investigate potential for buffers around identified LNAs for incorporation into the local planning framework.	Protect Retain	Objectives 1, 2 Objectives 1, 2, 3
6.	Investigate developing a Significant Tree Register under the local planning framework.	Protect	Objective 1
7.	Investigate opportunities to provide concessional rates when landowners formalise the protection of biodiversity assets and implement formal management regimes.	Protect Retain Enhance	Objectives 1, 2 Objectives 1, 2, 3, 4 Objectives 1, 2
8.	Develop guidelines to assist landowners with revegetation activities.	Retain Enhance	Objective 4 Objective 1
9.	Continue to proactively monitor compliance with approval conditions relating to environmental outcomes and investigate breaches of the *Planning and Development Act 2005* relating to biodiversity.	Retain	Objective 5
10.	Ensure Shire owned and managed land identified as a LNA have appropriate management plans in place.	Enhance	Objective 3
11.	Promote the use of local native plant species throughout the Shire.	Enhance	Objective 1
12.	Continue to provide support for community groups with a focus on environmental sustainability and/or undertaking biodiversity programming.	Educate & Collaborate	Objective 1
13.	Develop educational material to highlight the importance of natural areas.	Educate & Collaborate	Objectives 1, 2, 4
14.	Empower Citizen Science programs and 'Friends of' groups to assist and guide the Shire on future information.	Educate & Collaborate	Objectives 1, 3, 4
15.	Provide capacity building opportunities through events and workshops to support the community in all aspects of biodiversity protection and enhancement.	Educate & Collaborate	Objectives 1, 3, 4
16.	Increase awareness and education across the community, both in formal education	Educate & Collaborate	All objectives

Action		Goal	Objective
	systems and in the wider community, to promote biodiversity.		
17.	Investigate enabling additional community participation and engagement in Reserves.	Educate & Collaborate	Objective 1
18.	Facilitate and promote Threatened and Priority Flora and Fauna reporting by the community to the Department of Biodiversity, Conservation and Attractions.	Educate & Collaborate	Objective 1
19.	Investigate the establishment of collaborative working relationships with other State Government agencies and adjoining Local Government Authorities and private entities.	Educate & Collaborate	Objective 1
20.	Improve Shire employee education and knowledge on the natural environment.	Educate & Collaborate	Objective 1
21.	Ensure sufficient human resources and funds are available within the Shire to adequately implement the Strategy.	All	
22.	Investigate LNAs identified as 'unclassified' to determine if reprioritisation is required.	All	

7.0 Review

A desktop review of this Strategy should be undertaken annually. As vegetation statistics and remnant vegetation extent datasets are not updated regularly, they should be reviewed when new data is available.

The Local Natural Area Prioritisation Plan is to be reviewed every five years to ensure prioritisation scoring is current and relevant with updated datasets and information. The prioritisation scoring of LNAs can assist the Shire in allocating resources for the protection and retention of LNAs.

8.0 Maps

Map 1: Local Natural Areas within the Shire of Harvey

Map 2: Conservation Prioritisation of Local Natural Areas

Map 3: Prioritisation of Local Natural Areas

115.478079 115.559173 115.640267 115.721362 115.802456 115.883550 115.964644 116.045738 116.126832 116.207927 116.289021 116.370115

-32.924228 -33.005322 -33.086416 -33.167510 -33.248604 -33.329698

Yarloop
Cookernup
Warawarrup
Harvey
Myalup
Binningup
Muedela
Brunswick Junction
Roelands

Map 1

Local Natural Areas within the Shire of Harvey

Legend

- Townsite
- Roads
- Local Natural Area
- Shire of Harvey Boundary

Client:	Shire of Harvey
Date:	26/02/2025
Created by:	Z. Stoney
Image Source:	Google Satellite, 2025
Datum:	WGS 84 / Pseudo-Mercator
Scale:	1: 270000

0 5 10 km

N

Shire of Harvey

115.478079 115.559173 115.640267 115.721362 115.802456 115.883550 115.964644 116.045738 116.126832 116.207927 116.289021 116.370115

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Map 2

Prioritisation of Local Natural Areas within the Shire of Harvey

Shire of Harvey

Legend

- Townsite
- Roads

Summed Weighted Prioritisation Score
- 0 - 1.2
- 1.2 - 2.5
- 2.5 - 3.7
- 3.7 - 5
- 5 - 6.2
- Shire of Harvey Boundary

Client:	Shire of Harvey
Date:	27/11/2024
Created by:	Z. Stoney
Image Source:	Google Satellite, 2025
Datum:	WGS 84 / Pseudo-Mercator
Scale:	1: 270000

0 5 10 km

N

115.478079 115.559173 115.640267 115.721362 115.802456 115.883550 115.964644 116.045738 116.126832 116.207927 116.289021 116.370115

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Yarloop
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Map 3

Conservation Prioritisation of Local Natural Areas within the Shire of Harvey

Shire of Harvey

Legend

- Townsite
- Roads
- Protection
- Retention
- Unclassified
- Shire of Harvey Boundary

Client:	Shire of Harvey
Date:	26/02/2025
Created by:	Z. Stoney
Image Source:	Google Satellite, 2025
Datum:	WGS 84 / Pseudo-Mercator
Scale:	1: 270000

0 5 10 km

N

Shire of Harvey
Local Biodiversity Strategy 2025-2035

Part 2 – Background and Technical Data

This Strategy is supported by funding from the Western Australian Government's State NRM Program.

Contents

Figures

Tables

1.0 Introduction

The Shire of Harvey, 125 km from Perth is the gateway to Western Australia's (WA) Southwest Region. It covers an area of approximately 1,766 km^2, stretches along 43km of coastline, and includes the communities of Australind, Binningup, Benger, Brunswick Junction, Cookernup, Harvey, Myalup, Roelands, Warrawarrup, Wokalup and Yarloop. The Shire population is currently 29,625 however it is recognised as one of the fastest growing shires in WA with an increase in population of 35.56% over 10 years or approximately 3.5% per annum (Shire of Harvey, 2025).

The Shire forms part of the Southwest Australia Biodiversity Hotspot and as such has a splendid array of diverse natural assets that extend from the forests of the Darling Plateau to the sandy beaches, wetlands and estuaries of the Swan Coastal Plain. There are 36 Biodiverse Hotspots worldwide that represent just 2.5% of Earth's land surface but support more than half of the world's plant species and nearly 43% of bird, mammal, reptile, and amphibian species as endemics (Conservation International, 2025). To qualify as a Biodiversity Hotspot a region must meet two strict criteria**:**

- at least 1,500 vascular plants as endemics. It must have a high percentage of plant life found nowhere else on the planet. A hotspot is irreplaceable.

- 30% or less of its original natural vegetation. It must be threatened.

Protecting the natural environment and its Biodiversity whilst maintaining community culture and lifestyle is a key and critical planning challenge, today and into the future. In the Shire, the challenge includes the fragmentation, loss and degradation of habitat, and the spread of invasive species in a fast-growing region facing rapid development and urban sprawl (DCCEEW, 2025).

Local Government Authorities (LGAs) as land managers, land use planners, developers, decision makers and educators play a significant role in the protection of Biodiversity. The Shire is committed to the protection of Biodiversity, and this Local Biodiversity Strategy (Strategy), a revision of the 2011 draft Biodiversity Strategy, sets out a future approach to the protection, retention and management of the natural environment, the conservation of Biodiversity, and local community engagement.

The aim of the LBS is to outline the Shire's approach for the protection, retention, and management of priority local natural areas.

2.0 Context

This Strategy has been developed through a collaborative Stakeholder Working Group (Working Group) involving Shire of Harvey staff from the Planning and Environment Business Units, community and Council member representation. Parkfield Primary School representatives from the Parkfield Learning and Understanding Sustainability class (PLUS) presented to the Working Group highlighting 'which environmental assets the students saw as priorities into the future.' Natural Area Management were contracted to develop a Local Conservation Prioritisation Plan and a Local Natural Area Prioritisation Plan.

This Strategy has been prepared in accordance with the Shire's strategic framework and relevant local, state, and federal guidelines, policies, and procedures, and made possible by funding from the WA Government's State NRM Program, delivered via the WA Local Government Association (WALGA).

Shire of Harvey Strategic Direction

The Shire operates in accordance with the Integrated Planning and Reporting Framework (figure 1). The Shire of Harvey Strategic Community Plan 2021 -2031 sets the strategic direction for the Shire that reflects the aspirations, goals and priorities of the community. Strategies relevant to this Strategy include:

- Strategy 3.2 Natural habitats, ecosystems, and reserves are managed and protected
- Strategy 3.4 Healthy waterways and coastal zones

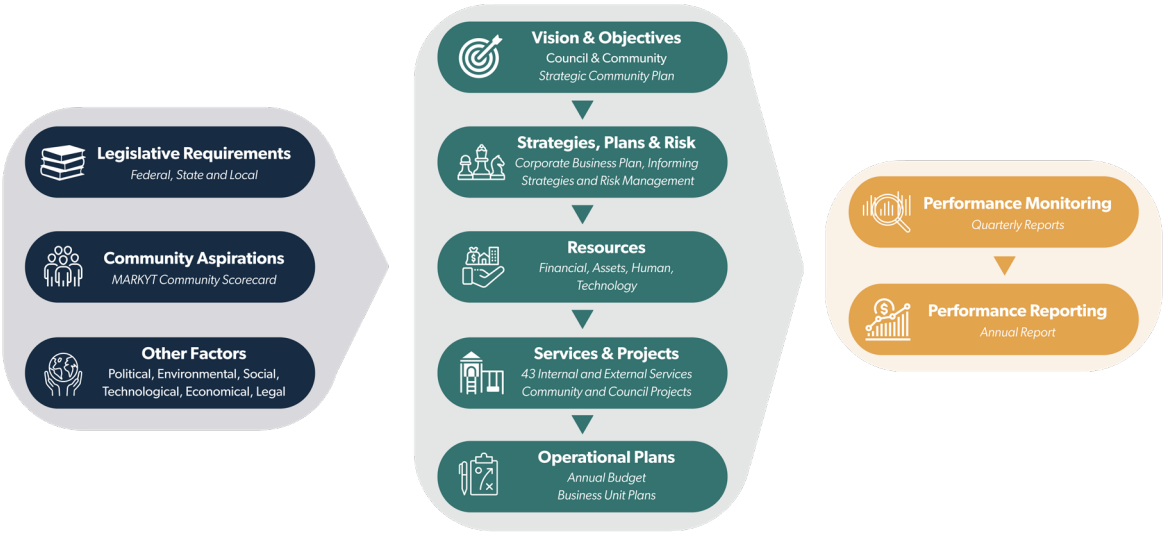


Figure 1: *Planning and Reporting Framework (Shire of Harvey, 2021)*

The Shire's Corporate Business Plan 2021 -2025 is an operational document that outlines the major projects and resources (financial, assets and workforce) required to meet the community's aspirations. It also guides, and is guided by, the development of issue specific strategies that in turn inform Service Area Plans and the Annual Budget. The Strategy has been developed to support the Shire's Strategic Community Plan 2021 -2031 and Corporate Business Plan 2021 -2025.

Commonwealth Legislation

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a legal framework to protect nationally and internationally important flora, fauna, ecological communities, and heritage places that under the EPBC Act are defined as Matters of National Environmental Significance (MNES). The EPBC Act allows for the assessment of actions that may significantly impact on a MNES (DEECCW, 2021).

The MNES relevant to Biodiversity include wetlands listed as Ramsar wetlands of international importance, nationally threatened flora and fauna species and communities listed under the EPBC Act, and migratory species listed under the EPBC Act (DEECCW, 2021).

State Legislation

Environmental Protection Act 1986

The *Environmental Protection Act 1986* (EP Act) provides for "the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing" (Environmental Protection Agency (EPA), 2025). Principally the EP Act protects Biodiversity through the Environmental Impact Assessment process and the refusal or modification of development proposals. The clearing of vegetation is, likewise, assessed under the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Clearing Regulations). Clearing permit applications are applied for under the Clearing Regulations and assessed by the Department of Water and Environment Regulation (DWER) or for resource related proposals the Department of Energy, Mines Industry Regulation and Safety (DEMIRS) (EPA, 2025).

Environmental assessments of scheme amendments (under the regional and local planning schemes) are conducted under Part IV of the EP Act that provides for the opportunity to assess the environmental impacts identified on land affected by the scheme amendment and prior to the land being rezoned (EPA, 2025a).

Both the EPA and DWER administer the EP Act.

Conservation and Land Management Act 1984

The *Conservation and Land Management Act 1984* (CALM Act) includes provisions for the establishment and management of national parks, nature reserves, conservation parks and marine parks (Department of Biodiversity, Conservation and Attractions (DBCA), 2025).

Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) provides protection for Biodiversity particularly threatened species and threatened ecological communities. It establishes a mechanism for protecting the States native plant and animal taxa and enforces the protection of Biodiversity with provisions for ecological communities, critical habitats, threatening processes, environmental pests and introduced plant species (DBCA, 2022). The BC Act provides a legislative framework for listing native species and ecological communities identified as under threat of extinction or collapse. It also establishes responsibilities for land users involved in clearing or other activities that may impact threatened species and threatened ecological communities (DBCA, 2022). The Act is administrated by DBCA.

Planning and Development Act 2005

The *Planning and Development Act 2005* (PD Act) is the overarching legislation, along with its associated Regulations, that sets the scene for planning in WA and aims to achieve an efficient and effective land use planning system that promotes the sustainable use and development of land. It forms the basis of the planning system, including the role and functions of decision-makers.

State Planning Strategy

The State Planning Strategy 2050 provides a basis for Government to plan for the State's physical and social infrastructure, environment, food security, land availability, economic development, housing accessibility, security, education and training. The six principles that underpin and inform that State Planning Strategy are: Community, Economy, Environment, Infrastructure, Regional Development and Governance.

State Planning Policies

State Planning Policies assist to co-ordinate and promote land use planning, transport planning and land development in a sustainable manner, and provide for the guidance of public authorities and local governments on these matters. State Planning Policies are powerful polices, due to their legislative base, and because they must be applied by decision-makers and given effect in local planning strategies and schemes. State Planning Policies focus on matters of State significance, or where there is a need for a co-ordinated or Statewide approach to a planning issue.

Region Planning Scheme

Region Schemes set out requirements for land use and development across a wide area, particularly where local government co-ordination is required. The Region Schemes provide a statutory mechanism to implement strategic planning, by setting out broad land use zones, setting aside areas for regional open space and other regional infrastructure purposes, and assisting in coordinating the provision of major infrastructure like highways and rail lines. Region planning schemes can also preserve and acquire land for public purposes. The Bunbury Greater Bunbury Region Scheme is applicable to the Shire.

Local Context

Local Planning Strategy

A Local Planning Strategy establishes the forward planning intention for local governments and provides the basis for the zoning of land in Local Planning Schemes. It sets out the long-term planning directions for the local government that include environmental matters. This Biodiversity Strategy will form an integral component of the Shire's Local Planning Strategy.

Local Planning Scheme

Local Planning Schemes are the principal statutory tool for achieving the development aims and objectives of a local government. They are used by local governments to implement things like residential density, land use permissibility and development controls for setbacks, car parking, landscaping. The main purpose of a Local Planning Schemes is to:

- set out the local government's planning aims for the scheme area, and implement the Local Planning Strategy

- set aside land as reserves for public purposes, in accordance with the aims of the Scheme and the Local Planning Strategy

- zone land within the scheme area in accordance with the aims of the Scheme and the Local Planning Strategy, and

- control and guide land use and development in accordance with the aims of the Scheme and the objectives of the respective zones and reserves.

Local Planning Policies

Local Planning Policies are prepared by local governments to assist with the exercise of discretion when considering development applications. Local Planning Policies usually express the local government's objectives for certain types of development and may set out matters that need to be addressed when applications are made and indicate what types of conditions may be applied. They are usually specific to certain types of development, or they may apply to a specific area.

3.0 Biodiversity in the Shire of Harvey

3.1 Interim Biogeographic Regionalisation for Australia (IBRA)

IBRA was developed in 1993-94 and is endorsed by all levels of government as a key tool for identifying land for conservation under Australia's Strategy for the National Reserve System 2009-2030. IBRA provides the planning framework for the systematic development of a comprehensive, adequate and representative 'CAR' National Reserve System. The Shire is located within the Swan Coastal Plain (SWA02) and the Northern Jarrah Forest (JAF01) IBRA subregions (DCCEEW, 2024).

The Swan Coastal Plain (SWA02) is characterised as a low-lying coastal plain composed of colluvial and aeolian sands, alluvial river flats and coastal limestone (Mitchell *et al.*, 2002). The vegetation is comprised of heath and Tuart woodlands, Banksia and Jarrah-Banksia woodland and Marri as well as seasonal wetlands. The dominant land use of the region is primarily cultivation, grazing, extraction, forestry, and conservation.

The Northern Jarrah Forest (JAF01) is characterised by overlying Archaean granite and metamorphic rocks capped by extensive lateritic duricrust broken up with occasional granite hills (Mitchell & Williams, 2001). The vegetation is comprised of Jarrah-Marri Forest in the west with the Bullrich and Blackbutt in the valleys; the east has Wandoo and Marri with Paperbark on breakaways. The dominant land use of this region is primarily forestry, conservation, grazing, cultivation, and mining.

3.2 Biodiversity Values

Biodiversity is the variety of all lifeforms, including plants, animals and microorganisms, the genes they contain, and the ecosystems they are a part of. Biodiversity encompasses the diversity of interactions between distinct species, the vegetation they inhabit and includes the ecosystem processes undertaken by each species (Natural Area Holdings, 2024).

The conservation of Biodiversity is important for a variety of reasons including maintaining natural systems and processes, and providing valuable ecosystem services including nutrient cycling, climate regulation, disease control, soil stabilisation, and water production. Biodiversity also affects human well-

being, and sustainable and economic development including supporting sustainable agriculture and providing outdoor recreation (Natural Area Holdings (NAH), 2024).

Biodiversity is conserved for its cultural services, which refer to the non-material benefits people obtain from ecosystems, including recreation, tourism, intellectual development, spiritual enrichment, reflection and aesthetic experiences. Biodiversity is fundamental to cultural ecosystem services because it enriches human experiences and connections to nature by supporting aesthetic, recreational, spiritual and educational needs; Biodiversity fosters cultural identity and well-being (Rolph *et al*. 2024).

The Shire contains Biodiversity that creates a unique sense of place and is intrinsically linked with the cultural values of the Binjareb and Wardandi Noongar people. The Binjareb and Wardandi Noongar people are the traditional custodians of the Australind and Harvey area and have a rich social, spiritual, and historical connection to this country (NAH, 2024).

3.3 Vegetation

Native vegetation comprises plants that are indigenous to Australia, including trees, shrubs, sedges, herbs and grasses, and incorporates lower lifeforms such as mosses, lichens and fungi. Native vegetation is crucial for the health of Australia's environment – it stabilises soil, supports pollinators and other animals, purifies water, stores carbon, and provides food and habitat for Biodiversity (Australian Government, 2021). The unique character of our vegetation is embedded within Australia's cultural identity. From Indigenous peoples' perspective, a sense of place and belonging can be defined by Country (Australian Government, 2021).

Vegetation complexes are a series of plant communities forming regularly repeating groups associated with a particular soil/landform unit (Keighery, B, n.d.). A total of twenty-four vegetation complexes are recorded within the Shire (Heddle *et a*l. 1998). The vegetation complexes compared against the native vegetation extent to determine the pre-European extent remaining regionally within the IBRA subregion and remaining locally are detailed in Table 1. The vegetation complexes across the Shire are displayed in Map 4 with the vegetation complexes remaining displayed in Map 5. The description of each vegetation complex is provided in Appendix 1.

Table 1: *Pre-European extent remaining regionally within the IBRA subregion and remaining locally within the Shire. Red indicates vegetation complexes with less than 10 % and orange indicates vegetation complexes with less than 30 % (Department of Primary Industries and Regional Development (DPIRD), 2023).*

Name	Pre-European extent remaining regionally within the IBRA Subregion (%)	Pre-European extent remaining locally within the Shire (%)
Swan Coastal Plain		
Bassendean Complex-Central and South	28.35	45.11
Cannington Complex	12.45	7.14
Cartis Complex	17.12	8.67
Cottesloe Complex-Central and South	32.75	42.10
Dardanup Complex	5.93	2.53
Forrestfield Complex	13.36	23.35
Guildford Complex	5.55	3.43
Karrakatta Complex-Central and South	23.94	36.37

Name	Pre-European extent remaining regionally within the IBRA Subregion (%)	Pre-European extent remaining locally within the Shire (%)
Quindalup Complex	61.01	84.79
Serpentine River Complex	10.27	12.31
Southern River Complex	19.86	9.09
Swan Complex	14.55	18.21
Vasse Complex	32.55	35.26
Yoongarillup Complex	37.12	32.02
Jarrah Forest		
Cooke	81.57	99.11
Darling Scarp, DS2	42.77	23.07
Dwellingup, D1	86.62	86.97
Goonaping	79.43	95.29
Helena 1	75.80	63.34
Lowdon	37.35	32.89
Murray 1	76.13	61.35
Swamp	75.48	97.43
Yarragil 1	81.01	87.02
Yarragil 2	92.49	84.81

3.4 State and Locally Managed Reserves

Legislated lands and waters include National Parks, Nature Reserves, Conservation Parks, and State Forests. The Shire contains 107 legislated lands and waters that are protected and managed under State Law; a total of 383 reserves are locally managed, with 216 vested in the Shire (NAM, 2024). The location of local and state managed reserves are provided in Map 6.

The portion of vegetation complexes remaining within the Shire that are protected locally by the Shire or under State Government Law are provided in Table 2.

Table 2: *Pre-European extent of vegetation complexes protected within the Shire. Red indicates vegetation complexes with less than 10 % remaining and orange indicates vegetation complexes with less than 30 % remaining (DPIRD, 2023).*

Name	IBRA subregion (%)	Locally, within the Shire (%)
Swan Coastal Plain		
Bassendean Complex-Central and South	3.42	15.75
Cannington Complex	0.00	0.00
Cartis Complex	0.00	0.00
Cottesloe Complex-Central and South	1.08	36.83
Dardanup Complex	0.02	0.04
Forrestfield Complex	0.56	6.18

Name	IBRA subregion (%)	Locally, within the Shire (%)
Guildford Complex	0.00	0.02
Karrakatta Complex-Central and South	1.80	18.68
Quindalup Complex	1.05	14.98
Serpentine River Complex	2.45	7.18
Southern River Complex	0.00	0.00
Swan Complex	0.00	0.00
Vasse Complex	1.17	11.33
Yoongarillup Complex	5.65	14.44
Jarrah Forest		
Cooke	2.92	99.10
Darling Scarp, DS2	0.39	1.58
Dwellingup, D1	18.04	82.60
Goonaping	1.16	95.29
Helena 1	2.45	13.66
Lowdon	4.90	7.94
Murray 1	5.87	53.81
Swamp	0.50	97.43
Yarragil 1	13.85	83.04
Yarragil 2	6.73	84.38

3.5 Ecological Linkages

Ecological linkages provide connectivity between patches of remnant vegetation facilitating the movement of organisms within and across a landscape and therefore the maintenance of ecological processes. In fragmented landscapes, ecological linkages allow wildlife to move including from sites that due to development become unsuitable, and from preventing wildlife becoming isolated in a bushland area (Davis, n.d.).

Regional ecological linkages are predefined linkages mapped out for WALGA (Molloy *et al*., 2009). The location of ecological linkages across the Shire within remnant vegetation are displayed in Map 7.

3.6 Hydrology (Wetlands and Waterways)

Wetlands are areas that are permanently, seasonally or intermittently waterlogged or inundated with water that can be fresh or salty, flowing or still and the wetland can occur naturally, or may be artificially created. Wetlands are natural regulators, mitigating the impacts of flooding, improving water quality, and providing an environmental buffer whilst supporting a variety of habitats for flora and fauna species (DBCA, 2025a).

Wetlands are the sites of the highest Biodiversity on the SCP and the EPA estimated in 2007 that more than 80% of the original wetlands on the SCP have been destroyed since 1829 (Urban Bushland Council, 2022).

In WA, a geomorphic wetland classification system is used, it considers the wetland's landform and hydro-period to define wetlands (Seminuk *et al.,* 2011). Geomorphic wetlands in WA have been mapped by DBCA; The location of wetlands and waterways across the Shire are provided in Map 8.

Ramsar wetlands include sites on the List of Wetlands of International Importance and are considered representative, rare or unique, or important for conserving biological diversity (DEECCW, 2022a). One Ramsar site is located within the Shire, the Peel-Yalgorup System.

Wetland management categories for geomorphic wetlands are determined by the geomorphological, ecological, and hydrological features of the wetland and any impacts of disturbance (NAH, 2024). The three wetland management categories include conservation, resource enhancement and multiple use, table 3. The Shire has 1,937 geomorphic wetlands comprised of 295 conservation category wetlands, 1,371 multiple use category wetlands, and 196 resource enhancement wetlands (Table 4). Conservation category and resource enhancement wetlands are protected during the planning processes due to their ecological significance

Table 3: *Wetland management categories for geomorphic wetlands (DBCA, 2025b)*

Wetland Category	Description
Conservation Category Wetlands	Wetlands which support a high level of attribute and function. Objective is the preserve and protect the existing conservation values
Resource Enhancement Wetlands	Wetlands which may have been partially modified but still support substantial attributes and functions
Multiple Use Wetlands	Wetlands with few remaining important attributes and functions

Table 4: *Geomorphic wetlands within the Shire of Harvey (DBCA, 2025b)*

Category	Number
Conservation Category Wetlands	295
Multiple Use Category Wetlands	1,371
Resource Enhancement Wetlands	196
Not Applicable	7
Not Assessed	68

3.7 Flora

A desktop survey undertaken of online databases indicated the potential for a total of 99 conservation significant species to occur within the Shire (Appendix 2). NatureMap and a DBCA database search indicated 87 conservation significant flora species listed under the BC Act or by the WA Herbarium (1998-), and a review of the Protected Matters Search Tool (PMST) indicated 24 significant flora species listed under EPBC Act (NAH, 2024). The PMST provides general guidance on matters of national environmental significance (MNES), or other matters protected by the EPBC Act.

Conservation code descriptions are provided in Appendix 3. DBCA databases contain all flora species recorded over time at specific points in time; data is only recorded where the data has been provided to

DBCA to incorporate into their dataset (NAH,2024). The location of conservation significant flora species across the Shire are provided in Map 9**.**

3.8 Fauna

A desktop survey undertaken of online databases indicated the potential for a total of 93 conservation significant fauna species to occur within the Shire (refer Appendix 3). NatureMap and DBCA database search indicated 68 conservation significant species listed under the BC Act and the PMST indicated 50 threatened species listed under the EPBC Act as potentially occurring within the Shire (NAH, 2024). Refer Map 9.

3.9 Ecological Communities

A review of the PMST report and a DBCA database search identified 3 listed threatened ecological communities under the EPBC Act and 16 listed threatened and priority ecological communities under the BC Act (NAH, 2024) (Table 5). The location of threatened and priority ecological communities across the Shire are provided in Map 10.

Table 5: *Threatened and Priority Ecological Communities within the Shire*

Name (EPBC Act)	Name (BC Act)	BC Act	EPBC Act
Banksia Woodlands of the Swan Coastal Plain ecological community	*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)	Critically Endangered	Endangered
	Banksia Woodlands of the Swan Coastal Plain ecological community	Priority 3	Endangered
	Low lying Banksia attenuata woodlands or shrublands	Priority 3	Endangered
	Southern Banksia attenuata woodlands	Priority 3	Endangered
Clay Pans of the Swan Coastal Plain	*Dense shrublands on clay flats (floristic community type 9 as originally described in Gibson et al. 1994)*	Endangered	Critically Endangered
	Herb rich shrublands in clay pans (floristic community type 8 as originally described in Gibson et al. 1994)	Endangered	Critically Endangered
Tuart woodlands and forests of the Swan Coastal Plain	*Quindalup Eucalyptus gomphocephala and/or Agonis flexuosa woodlands*	Priority 3	Critically Endangered
	Southern Eucalyptus gomphocephala-Agonis flexuosa woodlands	Priority 3	Critically Endangered
	Tuart (Eucalyptus gomphocephala) woodlands and forests of the Swan Coastal Plain	Priority 3	Critically Endangered
	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	Endangered	

Name (EPBC Act)	Name (BC Act)	BC Act	EPBC Act
	Corymbia calophylla — Xanthorrhoea preissii woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in Gibson et al. 1994)	Endangered	Endangered
	Living microbial mats in hypersaline ponds	Priority 2	
	Northern Spearwood shrublands and woodlands	Priority 3	
	Shrublands and woodlands on Muchea Limestone of the Swan Coastal Plain	Endangered	Endangered
	Shrublands on calcareous silts of the Swan Coastal Plain (floristic community type 18 as originally described in Gibson et al. 1994)	Critically Endangered	
	Subtropical and Temperate Coastal Saltmarsh	Priority 3	Vulnerable

4.0 Threats to Biodiversity

Biodiversity is threatened by a variety of processes that create a loss of environmental values and ecosystem services, and threats can be anthropogenic and non-anthropogenic. The Shire as one of the fastest growing in WA is experiencing urbanisation and land use change over a short period resulting in a loss of vegetation and a threat to Biodiversity.

The key threats to Biodiversity in the Shire include fragmentation, land use conflicts, financial and resource limitations, political and administrative challenges, community and stakeholder engagement, and monitoring and evaluation.

It is vital to mitigate the impact of threats on natural areas to conserve Biodiversity and environmental values.

4.1 Land Use Change / Clearing

Land clearing for development is the biggest threat to Biodiversity in the Shire, and land clearing is expected to increase with ongoing urban expansion, and this will require well considered planning for long-term sustainability and biodiversity protection. DBCA statistics indicate that the pre-European vegetation cover in the Shire has been reduced by more than 50% (Government of Western Australia, 2019).

Land clearing creates habitat fragmentation that creates more and more isolated areas, that in turn makes them more and more vulnerable to the effects of climate change, disease and pest invasion. Implications of land clearing on the natural environment include:

- Salinisation of land and inland waters.
- Altered water regimes.
- Soil erosion.

- Eutrophication of waterways; and
- Increased greenhouse gas emissions (NAM, 2004a).

The Department of Planning, Lands and Heritage (DPLH) brings all land use and heritage responsibilities together and this aims to shape the future of cities, regions and towns (Government of WA, 2025b). Land use categories can create conflicts through competing interest and ownership, including development pressures from agriculture, urban development, and infrastructure projects.

Land use categories are often used to primarily assess areas with good opportunities, varied opportunities, and limited opportunities. Land use has varying impacts on the Biodiversity of an area. More intensive land use results in a greater share of resources and energy flowing to human uses, leaving less to sustain other species (Semenchuk *et al*. 2022). The resulting human-dominated landscapes often represent mosaics of ecosystems that are used at varied levels of intensity, mixed with remnants of natural ones. The ensuing decline of Biodiversity depends on the capacity of species adapted to pristine ecosystems to survive in those reshaped by human use (Semenchuk *et al*. 2022)

4.2 Fragmentation

Habitat fragmentation involves both habitat loss and a change in the configuration of habitat, and habitat loss and fragmentation are currently the main threats to terrestrial Biodiversity (Rogan *et al.,* 2018)

When habitats become fragmented the ability of native animals and plants to disperse across landscapes is affected, as is the ability of populations to re-colonise areas after a disturbance. Fragmentation generally results in the continued loss of species across the broader landscape long after initial clearing has occurred (Del Marco *et al.* 2004).

Fragmented habitat typically has increased edge effects. These edge effects create a rapid loss of Biodiversity and habitat quality (Ramalho *et al.*, 2014).

4.3 Invasive Species

An invasive species is an organism that causes ecological or economic harm in a new environment where it is not native. Invasive species impact Biodiversity by reducing species abundance and diversity and are capable of causing extinctions of native plants and animals, reducing Biodiversity, competing with native organisms for limited resources, and altering habitats (National Oceanic and Atmospheric Administration (NOAA), 2025). Moreover, they cause land degradation through soil erosion, an increased spread of weeds and diseases, and create habitat destruction and predation (NAH, 2024a).

Invasive plant species (weeds) generally respond positively and swiftly to habitat disturbance, such as clearing, rubbish dumping, trampling and fire, and cause numerous issues for Biodiversity within the Shire including:

- Competition - inhibiting growth and displacing native species.
- Replacement - changing diverse native plant communities with more uniform weed communities
- Changing nutrient cycling and nutrient uptake of native vegetation.
- Altering soil acidity.

- Increasing bushfire risk.
- Reducing habitat resources for fauna by altering the habitat
- Out competing native species; and
- Harm or death of native fauna through poisonous weeds (NAH, 2024a).

Pathogens such as *Phytophthora* dieback and Marri canker can lead to the death of native vegetation. Dieback is the most widely known pathogen of bushland and the biggest threat to Biodiversity in WA (Southcoast NRM, 2023). *Phytophthora* dieback is an introduced plant pathogen and although classified as a water mould has animal, fungal and plant characteristics. It lives in soil and attacks the roots of many native plants. It also destroys animal habitats and threatens whole communities; banksia communities are particularly susceptible – dieback can turn a flourishing woodland into a sparse sedge-land (Southcoast NRM, 2023). Humans are the main culprits for spreading dieback, especially over large distances and although there is no effective cure for the pathogen, its spread can be controlled.

Marri canker is a stem and branch disease of Marri (*Corymbia calophylla*) and the Red Flowering Gum (*Corymbia ficifolia*) caused by the native fungal pathogen *Quambalaria coyrecup*. The spores of the fungus enter the stem, usually through a wound or crack, and infect the sapwood (DBCA, 2025b). The infected tree will usually produce an abundance of kino (sap) in response to the infection and as the infection spreads it will cause a target-like infection site that may ring-bark the tree often causing the bark to crack and shed.

The introduced pathogen *Quambalaria pitereka,* native to the east coast of Australia but introduced into WA also affects the leaves, flower buds, flowers and fruit of Marri. It is impacting the reproductive capabilities of infected trees and is notable by symptoms such as dark lesions, deformed growth and premature death (e.g. of flowers) (DBCA 2025b). In the right conditions, masses of white fungal spores may also be visible on the outside of flowers and fruits.

4.4 Bushfires

Bushfires can impact Biodiversity by causing a decline in the distribution, abundance, genetic diversity and/or function of species or ecological communities. The Shire was greatly impacted upon in the 2016 Waroona-Yarloop Bushfire, when 69,000 ha was burnt (Australian Institute for Disaster Resilience, 2025). Refer Map 11.

The sequence of time intervals between successive fires forms part of the fire regime that can influence the composition and abundance of Biodiversity. Inappropriate fire intervals can lead to localised extinction or changes to the abundance or habitat quality of a range of species (Bushfire Cooperative Research Centre, 2010). The frequency of bushfires within WA has increased in the past decade as a result of altered fire regimes that are now characterised as very large recurrent fires with shorter intervals between fires (Lindenmayer & Taylor 2020).

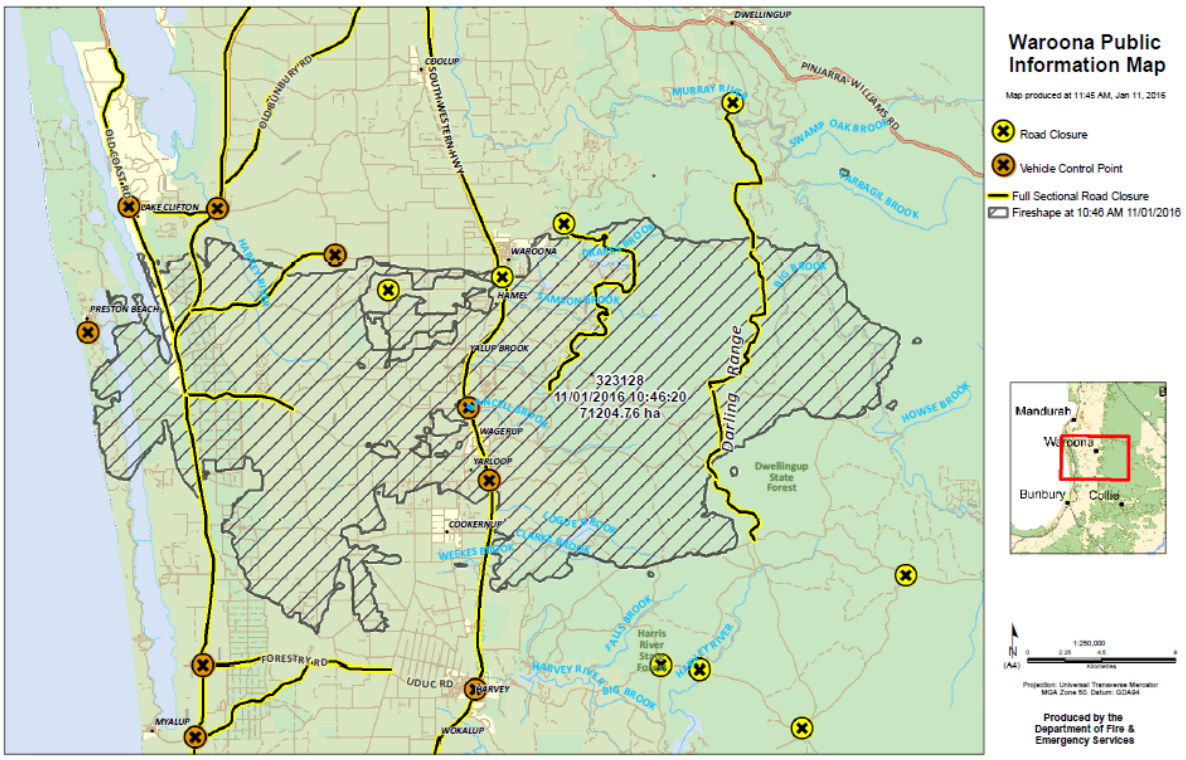
Fires that are too intense will impact on the populations of sensitive species and fires that are too frequent will result in limited population recovery. The effects of bushfires on Biodiversity includes:

- Direct impact on fauna – reduction in native species that have on-going ecological, and biodiversity impacts i.e. weeks and months later species are likely to continue dying due to loss habitat and food sources (UN Environment Programme, 2025)

- Reduction in resprouting of native plants after each fire and an increased weed burden (Harvey *et al*. 2017)

- Reduction of logs, leaf litter and other habitat required materials – reduction in shade and shelter.

- Climate feedback loops - global warming is making bushfires burn more intensely and frequently. In just three months, the Australian 2019–2020 bushfires emitted 400 megatonnes of carbon dioxide into the atmosphere, according to the Copernicus monitoring programme; this was as much as Australia's average annual carbon dioxide emissions (UN Environment Programme, 2025). Such events will increase Australia's annual greenhouse gas emissions, contributing to global warming, and heighten the likelihood of recurring megafires that will release yet more emissions, and negatively affect Biodiversity (Department of Agriculture, Water and the Environment (DAWE), 2022).



Map 1: *Waroona-Yarloop Fire impact zone (WA Today 2017)*

4.5 Altered Hydrology

The construction of impervious surfaces over the natural landscape, piped drainage systems and changed topography with urbanisation has significantly altered the natural hydrological regime. Altered hydrology can create environments no longer suitable for species survival, impacting ecosystem structure and function; this change is prevalent in arid, semi-arid and riverine landscapes where species are more dependent on water (Sommer & Froend, 2014).

With urbanisation stormwater flows into natural waterways, bringing rubbish, debris, chemicals, nutrients and sediments that impact on water quality and therefore Biodiversity. With an increase in urban development, there is an increase in stormwater flow, and a more likely impact on water quality. (Salerno *et al*., 2018)

4.6 Climate Change

Climate change is a significant threat to Biodiversity and the southwest of WA is becoming hotter and drier with more frequent and extreme weather events such as drought, heatwaves, high-risk bushfire weather, dangerous rainfall events and rising sea levels (Government of WA, 2025).

Climate change with higher temperatures, altered patterns of precipitation, sea level rise and an increased number and magnitude of extreme weather events will impact the environment and species habitats – both flora and fauna. The rate of these changes will create difficulties in the adaptability of species (Steffan *et al.,* 2009). Species unable to adapt will be unable to survive, impacting the structure and function of ecosystems.

The Shire is expected to experience a future climate change scenario similar to other locations in WA with a Mediterranean climate (Government of WA, 2025a) these include:

- Mean, maximum and minimum temperatures are projected to continue to rise and by 2030, the mean annual warming across all emissions scenarios is projected to be about 0.5 to 1.1 °C above the climate of 1986–2005.
- The temperature and frequency of very hot days is expected to increase, and heatwaves will get longer and more intense with a reduced number of days with frost risk.
- The Southwest has experienced a marked drying trend since 1970, the decline has been larger than anywhere else in Australia. By 2030 under all emission scenarios, winter rainfall is projected to decrease by up to 15 per cent.
- Under all emission scenarios, the time spent in drought is projected to increase, and even though the total annual rainfall is expected to reduce, the intensity of heavy rainfall events will likely increase.
- Drier and hotter conditions will lead to decreases in soil moisture and runoff because of increased water loss from plants and soils (evapotranspiration), that could further exacerbate drought conditions.
- There is high confidence that climate change will result in a harsher fire weather climate in the future.
- There is very high confidence that sea levels will continue to rise during the 21st century, with projections sensitive to representative concentration pathways (RCP) as the century progresses however, if a collapse in the marine-based sectors of the Antarctic ice sheet were initiated, projections could be several tenths of a metre higher than the high RCP by late in the century.
- There is very high confidence that oceans will become more acidic, and the rate of ocean acidification will be proportional to carbon dioxide emissions (Government of WA, 2015a)

Additional climate change impacts include:

- Reduced water availability in waterways and other groundwater dependant ecosystems.
- Deterioration of water quality in waterway and for other groundwater dependant ecosystems.
- Changes to wildlife migration patterns and seasonal timing of reproduction.
- Species movement due to habitat destruction that could lead to reduction in local biodiversity and/or an increase introduced pest flora and fauna.
- Land degradation through erosion and inundation (NSW Government, 2025)

4.7 Uncontrolled Access

Uncontrolled access by recreational activities including trail bike and 4wd driving are a major concern for Biodiversity in coastal, bushland and forested areas in the Shire. Damage can be significant including erosion through trampling, disturbance and compaction, that in turn leads to vegetation loss through changes to floristic communities, invasion by exotic weeds and increased pathogens (Legge *et al.* 2023). In riparian areas this can lead to increased turbidity, increased input of nutrients and bacteria to waterways and have negative effects on waterway geomorphology and hydrology (Jansen *et al*. n.d.).

4.8 Financial and Human Resource Limitations

Limitations surrounding financial and human resources can cause constraints on the initial protection and ongoing conservation of biodiversity.

Financial limitations include:

- budget constraints
- funding availability
- cost of implementation
- ongoing maintenance costs
- economic trade-offs (NAH, 2024a).

Human resource limitations include:

- skilled workforce shortage
- volunteer dependence
- capacity building
- staff workload
- community engagement (NAH, 2024a).

4.9 Community and Stakeholder Engagement

Community and stakeholder engagement plays a vital role in Biodiversity Conservation, and stakeholder conflict can create varying pressures on the protection of Biodiversity.

However public and community awareness is essential for the sustainable and equitable use of Biodiversity and its conservation and increasing knowledge and awareness of local Biodiversity is

essential in improving sustainable behaviour and attitudes towards the natural environment NAH, 2024a).

A community that is aware of the local Biodiversity and is threats is critical if threats are to be addressed. The conservation of Biodiversity is dependent on public support and education.

4.10 Political and Administrative Challenges

The protection of Biodiversity faces significant challenges relating to politics and administration including policy integration and regulatory barriers. This includes difficulties integrating conservation priorities into existing land use and development policies. Regulatory barriers can cause further difficulties in integrating new conservation priorities through lack of suitable monitoring data, resource limitations, inadequate preparation and a lack of leadership (McIntosh, 2019).

There can also be a lack of effective and legally enforced protections, and of government funding for capacity to control threats and properly manage native vegetation in the conservation reserve system and on other lands (Urban Bushland Council, 2022). A lack of effective and legally enforced protections can be seen to include:

- Land clearing of native vegetation in areas that are protected such as in Threatened Ecological Communities (TECs), habitat of endangered species, and over-cleared regions.
- Through the Clearing Regulations that can allow native vegetation clearing when it appears to be at variance to multiple Clearing Principles.
- Through Clearing Regulation exemptions that can allow an unknown extent of clearing to be conducted, and
- Through clearing in Bush Forever sites.
- The 2015 abolishment of the SCP Lakes Environmental Protection Policy (EPP), leaving wetlands without any statutory protection. Currently there is no protection policy over wetlands and their buffers (Urban Bushland Council, 2022)

4.11 Monitoring and Evaluation

Data deficiencies can impact on the protection and prioritisation of Biodiversity and of natural areas. The lack of comprehensive and up-to-date data on Biodiversity and environmental values can impact the way that natural areas are managed. Data deficient species are roughly twice as likely as data sufficient species to be at risk of extinction (Yale Environment 360). Whilst more than 147,000 species have been surveyed for the risks facing them, thousands more species have not been assessed at all because of a lack of data on the threats they're at risk from; recent data modelling suggests that of a selected 7699 data deficient species 56% are in conditions that have likely left them threatened with extinction (Yale Environment 360).

5.0 Benefits in Biodiversity Conservation

Biodiversity is essential for the processes that support life on earth including human life. Without a wide range of animals, plants and microorganisms, we cannot have the healthy ecosystems that we rely on to provide us with the air we breathe and the food we eat (The Royal Society, 2025).

Some aspects of Biodiversity are instinctively widely valued however the more we study Biodiversity the more we (should) see that all of it is important. There are lots of ways that humans depend upon Biodiversity, and it is crucial for us to conserve it. Pollinators such as birds, bees and other insects are estimated to be responsible for a third of the world's crop production (The Royal Society, 2025). Without pollinators there would not be apples, cherries, blueberries, almonds and many other foods. Agriculture is also reliant upon invertebrates – which help maintain the health of the soil crops grow in. Soil is teeming with microbes that are vital for liberating nutrients that plants need to grow that are then also passed to humans when eaten (The Royal Society, 2025). Life from the oceans provides the main source of animal protein for many people, and Biodiversity is essential to support coastal communities' well-being (Jungwiwattanaporn *et al*. 2023).

Trees, bushes, wetlands and wild grasslands naturally slow down water and help soil to absorb rainfall; when removed flooding can increase. Trees and other plants clean the air we breathe, and trees absorb carbon dioxide. Coral reefs and mangrove forests act as natural defences protecting coastlines from waves and storms (Jungwiwattanaporn *et al*. 2023). Much human medicine, along with other complex chemicals used in daily lives originate from plants. Spending time in nature is increasingly understood to lead to improvements in people's physical and mental health (The Royal Society, 2025). Simply having green spaces and trees in cities has been shown to decrease hospital admissions, reduce stress and lower blood pressure.

Biodiversity provides food, water and shelter; influences climate; controls disease; and regulates nutrient and water cycles. Biodiversity is integral to spiritual, cultural, psychological and artistic well-being (The Royal Society, 2023). Biodiversity also has its own intrinsic worth distinct from human life. Humans are embedded in the natural world, and so are a part of Biodiversity.

Natural areas are therefore important in maintaining natural systems and processes by providing ecosystem services. These ecosystems services are vital in providing a balance in the environment (NAH, 2024a). Ecosystem services provided by natural areas can be distinguished into four categories as identified by the Millennium Ecosystem Assessment framework (Millennium Ecosystem Assessment, 2005):

- provisioning services (food and water)
- regulating services (flood and disease control)
- supporting services (nutrient cycling)
- cultural services (spiritual, recreational and cultural beliefs).

Provisioning Services

Provisioning services are typically tangible and can be directly consumed, appropriated, and traded. These provisioning services are vital for human health and well-being (Quijas and Balvanera, 2013). Provisioning services include goods and products that are provided by ecosystem services including:

- food, fuel and fibre
- genetic resources
- nutrients
- fresh water (NAH, 2024b).

Regulating Services

Regulating services help to maintain the environment. Regulating services reduce the impacts from natural and anthropogenic activities that create a risk to human health and ecosystem quality (Mengist *et al.*, 2020). Regulating services include:

- invasion resistance
- pollination
- climate regulation
- disease regulation
- natural hazard protection
- water purification
- herbivory
- seed dispersal
- pest regulation
- erosion regulation (NAH, 2024b).

Supporting Services

Supporting services provide long-term processes that maintain life support systems. Supporting services are traditionally unvalued, despite their importance in Biodiversity due to the difficulties surrounding valuation at the most basic level (DEWHA, 2009). Supporting services include:

- primary production
- provision of habitat
- nutrient cycling
- soil formation and retention
- production of oxygen
- water cycling NAH, 2024b).

Cultural Services

Cultural services are those which provide nonmaterial benefits (Jungwiwattanaporn *et al*. 2023) including:

- recreation and aesthetic values
- education and inspiration
- knowledge system (sense of place)
- spiritual and religious values (NAH, 2024b).

Biodiversity is conserved in many areas for its cultural services providing intrinsic and scientific value (DEWHA, 2009). Biodiversity can provide educational opportunities and foster a community connection through citizen science plus promote recreational opportunities that can assist in improving physical and

mental wellbeing whilst also providing tourism opportunities (DEWHA, 2009). Tourism provides economic opportunities with tourist attractions boosting local economies.

The Shire contains local natural areas and Biodiversity that create a unique sense of place and is intrinsically linked with the cultural values of the Binjareb and Wardandi Noongar people. The Binjareb and Wardandi Noongar people are the traditional custodians of the Australind and Harvey area and have a rich social, spiritual and historical connection to this country (NAM, 2024b).

6.0 Combatting Constraints

There are several ways the Shire can combat the constraints surrounding the protection of LNAs. Providing free workshops for residents to attend assists in developing awareness and knowledge surrounding biodiversity. The Shire can provide incentives such as free native plants to residents, this promotes native flora species and in turn assists in developing awareness. Moreover, organise community events or programs including in partnership with environmental organisations that are targeted towards promoting Biodiversity within the Shire (Talyor *et al.* 2021). By creating a collaborative environment, the Shire can gain engagement and residents in the community feel like they have a sense of responsibility.

Incentives include:

- workshops including native gardens, regenerative agriculture, pest control, species identification
- free native plant giveaway to residents
- developing wildlife corridors in agricultural land use areas where the Shire provides support towards the cost or supplies.
- community events (NAH, 2024).

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8.0 Maps

Map 4: Vegetation Complexes within the Shire of Harvey

Map 5: Vegetation Complexes Remaining within the Shire of Harvey

Map 6: State and Locally Managed Reserves within the Shire of Harvey

Map 7: Ecological Linkages and Remnant Vegetation within the Shire of Harvey

Map 8: Wetlands and Watercourses within the Shire of Harvey

Map 9: Conservation Significant Flora and Fauna Observations within the Shire of Harvey

Map 10: Conservation Significant Ecological Communities within the Shire of Harvey

Map 11: Waroona-Yarloop Fire Impact Zone

115.478079 115.559173 115.640267 115.721362 115.802456 115.883550 115.964644 116.045738 116.126832 116.207927 116.289021 116.370115

-32.924228 -33.005322 -33.086416 -33.167510 -33.248604 -33.329698

Yarloop
Cookernup
Warawarrup
Harvey
Myalup
Binningup
Muedela
Brunswick Junction
Roelands

Map 4

Vegetation Complexes within the Shire of Harvey

Shire of Harvey

Legend

- Townsite
- Roads
- Bassendean Complex-Central and South
- Cannington Complex
- Cartis Complex
- Cooke
- Cottesloe Complex-Central and South
- Dardanup Complex
- Darling Scarp
- Dwellingup
- Forrestfield Complex
- Goonaping
- Guildford Complex
- Helena 1
- Karrakatta Complex-Central and South
- Lowdon
- Murray 1
- Quindalup Complex
- Serpentine River Complex
- Southern River Complex
- Swamp
- Swan Complex
- Vasse Complex
- Yarragil 1
- Yarragil 2
- Yoongarillup Complex
- Shire of Harvey Boundary

Client:	Shire of Harvey
Date:	26/02/2025
Created by:	Z. Stoney
Image Source:	Google Satellite, 2025
Datum:	WGS 84 / Pseudo-Mercator
Scale:	1: 270000

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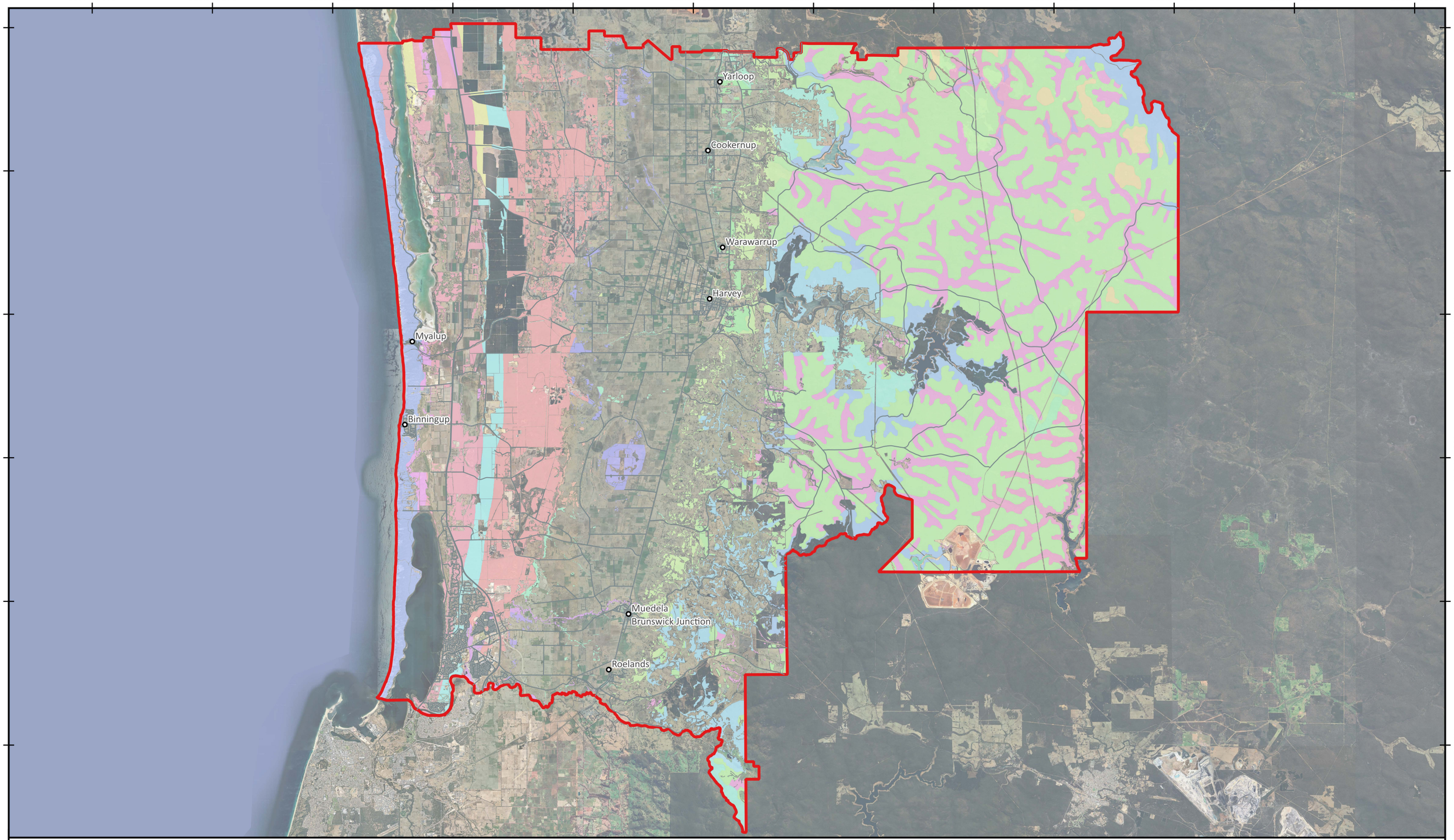

Map 5

Vegetation Complexes Remaining within the Shire of Harvey

Shire of Harvey

Legend

- Townsite
- Roads
- Bassendean Complex-Central and South
- Cannington Complex
- Cartis Complex
- Cooke
- Cottesloe Complex-Central and South
- Dardanup Complex
- Darling Scarp
- Dwellingup
- Forrestfield Complex
- Goonaping
- Guildford Complex
- Helena 1
- Karrakatta Complex-Central and South
- Lowdon
- Murray 1
- Quindalup Complex
- Serpentine River Complex
- Southern River Complex
- Swamp
- Swan Complex
- Vasse Complex
- Yarragil 1
- Yarragil 2
- Yoongarillup Complex
- Shire of Harvey Boundary

Client:	Shire of Harvey
Date:	26/02/2025
Created by:	Z. Stoney
Image Source:	Google Satellite, 2025
Datum:	WGS 84 / Pseudo-Mercator
Scale:	1: 270000

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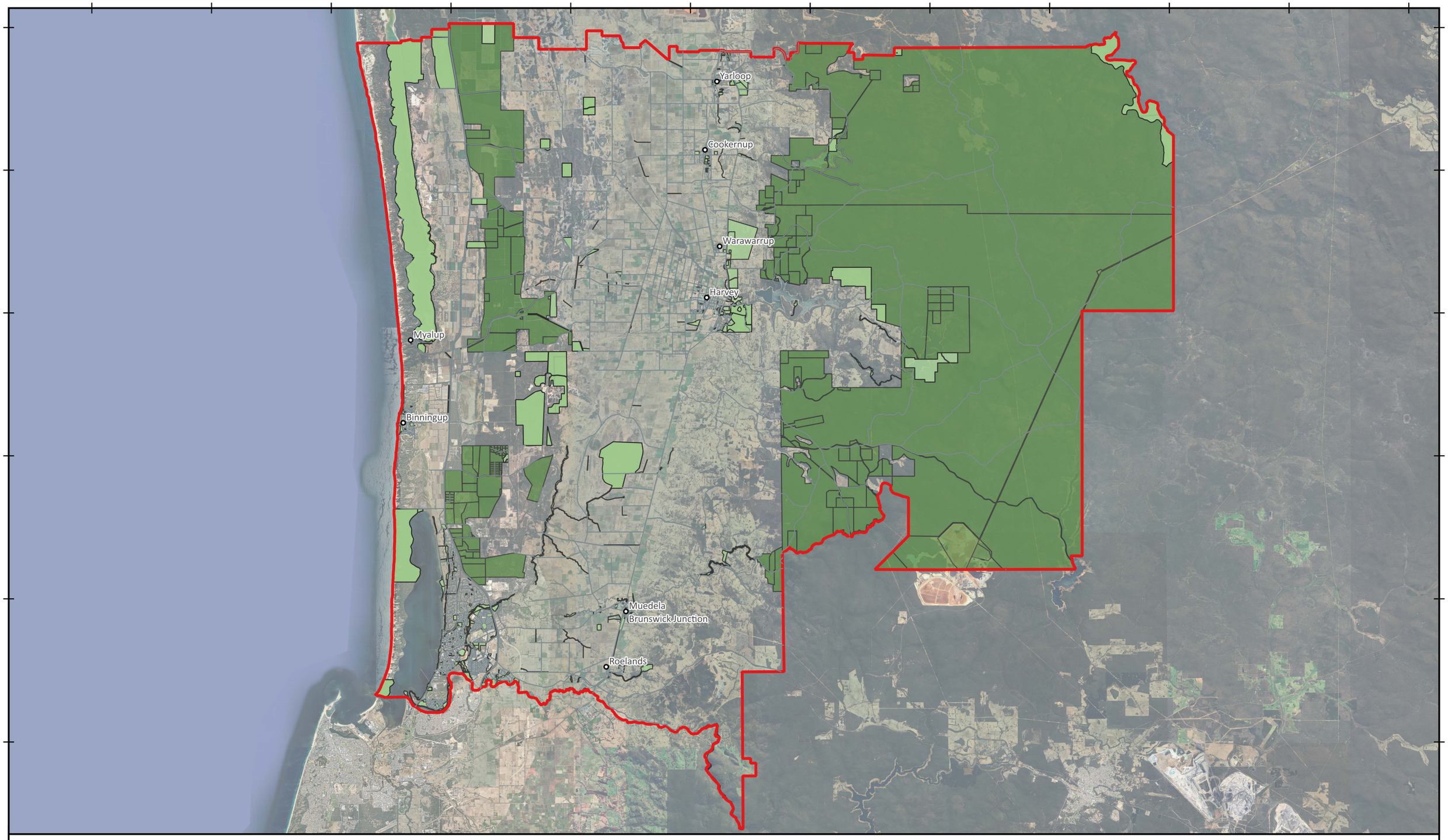

Map 6

State and Locally Managed Reserves within the Shire of Harvey

Legend

- Townsite
- Roads
- State Reserves (DBCA Legislated Lands and Waters)
- Local Reserves
- Shire of Harvey Boundary

Client:	Shire of Harvey
Date:	26/02/2025
Created by:	Z. Stoney
Image Source:	Google Satellite, 2025
Datum:	WGS 84 / Pseudo-Mercator
Scale:	1: 270000

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Shire of Harvey

115.478079 115.559173 115.640267 115.721362 115.802456 115.883550 115.964644 116.045738 116.126832 116.207927 116.289021 116.370115

-32.924228 -33.005322 -33.086416 -33.167510 -33.248604 -33.329698

Yarloop
Cookernup
Warawarrup
Harvey
Myalup
Binningup
Muedela
Brunswick Junction
Roelands

Map 7

Ecological Linkages and Remnant Vegetation within the Shire of Harvey

Legend

- Townsite
- Roads
- Ecological Linkages
- Native Vegetation Extent
- Shire of Harvey Boundary

Client:	Shire of Harvey
Date:	26/02/2025
Created by:	Z. Stoney
Image Source:	Google Satellite, 2025
Datum:	WGS 84 / Pseudo-Mercator
Scale:	1: 270000

0 5 10 km

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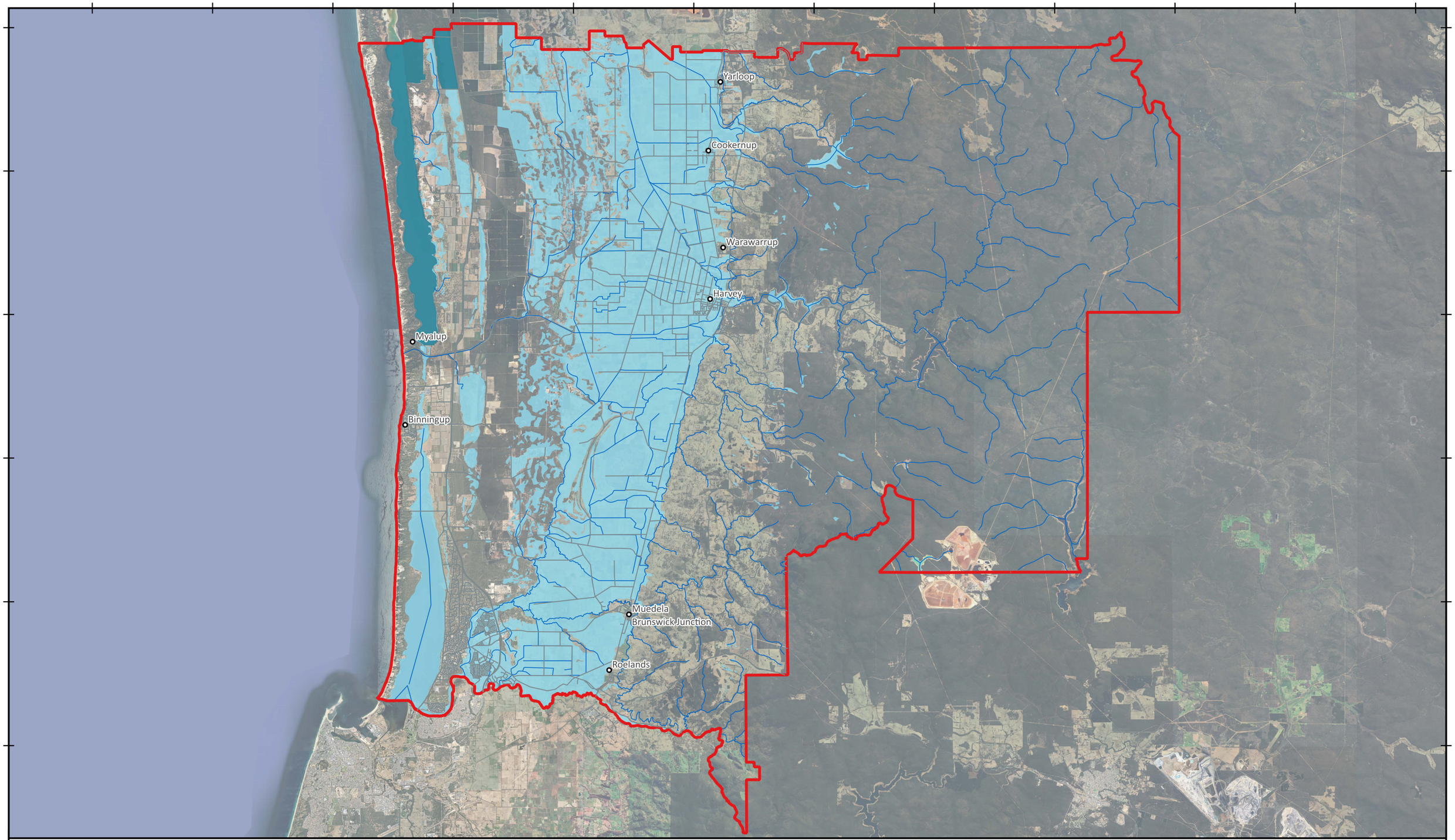
Shire of Harvey



Map 8

Wetlands and Watercourses within the Shire of Harvey

Shire of Harvey

Legend

- Townsite
- Roads
- Waterways
- Geomorphic Wetlands
- RAMSAR
- Shire of Harvey Boundary

Client:	Shire of Harvey
Date:	26/02/2025
Created by:	Z. Stoney
Image Source:	Google Satellite, 2025
Datum:	WGS 84 / Pseudo-Mercator
Scale:	1: 270000

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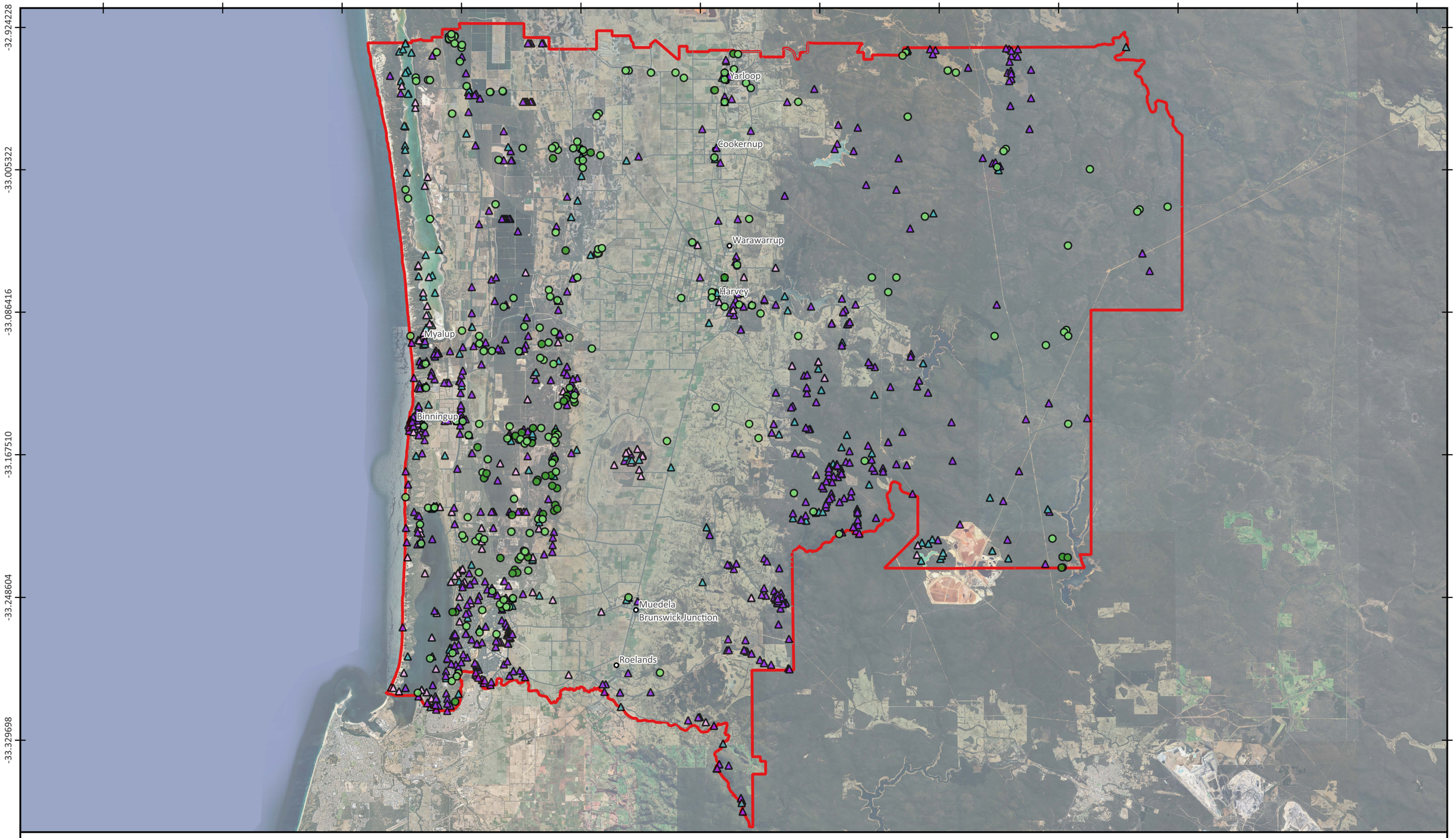

Map 9

Conservation Significant Flora and Fauna Observations within the Shire of Harvey

Shire of Harvey

Legend

- Townsite
- Roads
- Threatened Fauna
- Specially Protected Fauna
- Priority Fauna
- Priority Flora
- Threatened Flora
- Shire of Harvey Boundary

Client:	Shire of Harvey
Date:	26/02/2025
Created by:	Z. Stoney
Image Source:	Google Satellite, 2025
Datum:	WGS 84 / Pseudo-Mercator
Scale:	1: 270000

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115.478079 115.559173 115.640267 115.721362 115.802456 115.883550 115.964644 116.045738 116.126832 116.207927 116.289021 116.370115

-32.924228 -33.005322 -33.086416 -33.167510 -33.248604 -33.329698

Yarloop
Cookernup
Warawarrup
Harvey
Myalup
Binningup
Muedela
Brunswick Junction
Roelands

Map 10

Conservation Significant Ecological Communities within the Shire of Harvey

Legend

- Townsite
- Roads
- Threatened Ecological Communities
- Priority Ecological Communities
- Shire of Harvey Boundary

Client:	Shire of Harvey
Date:	26/02/2025
Created by:	Z. Stoney
Image Source:	Google Satellite, 2025
Datum:	WGS 84 / Pseudo-Mercator
Scale:	1: 270000

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Shire of Harvey

9.0 Appendices

Appendix 1. Description of Vegetation Complexes (NAH, 2024)

Vegetation Complexes within the Shire of Harvey and their Descriptions

Name	Description
Swan Coastal Plain	
Bassendean Complex-Central and South	Vegetation ranges from woodland of *Eucalyptus marginata* (Jarrah) - *Allocasuarina fraseriana* (Sheoak) - Banksia species to low woodland of Melaleuca species, and sedgelands on the moister sites. This area includes the transition of *Eucalyptus marginata* (Jarrah) to *Eucalyptus todtiana* (Pricklybark) in the vicinity of Perth.
Cannington Complex	Mosaic of vegetation from adjacent vegetation complexes of Bassendean, Karrakatta, Southern River, and Vasse.
Cartis Complex	Low open forest to open forest of *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri) - *Corymbia haematoxylon* (Mountain Marri) with definite second storey of *Banksia* spp.
Cottesloe Complex-Central and South	Mosaic of woodland of *Eucalyptus gomphocephala* (Tuart) and open forest of *Eucalyptus gomphocephala* (Tuart) - *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri); closed heath on the Limestone outcrops.
Dardanup Complex	Mosaic of vegetation types characteristic of adjacent vegetation complexes such as Serpentine River, Southern River and Guildford.
Forrestfield Complex	Vegetation ranges from open forest of *Corymbia calophylla* (Marri) - *Eucalyptus wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah) to open forest of *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri) - *Allocasuarina fraseriana* (Sheoak) - Banksia species. Fringing woodland of *Eucalyptus rudis* (Flooded Gum) in the gullies that dissect this landform.
Guildford Complex	A mixture of open forest to tall open forest of *Corymbia calophylla* (Marri) - *Eucalyptus wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah) and woodland of *Eucalyptus wandoo* (Wandoo) (with rare occurrences of *Eucalyptus lane-poolei* (Salmon White Gum)). Minor components include *Eucalyptus rudis* (Flooded Gum) – *Melaleuca rhaphiophylla* (Swamp Paperbark).
Karrakatta Complex-Central and South	Predominantly open forest of *Eucalyptus gomphocephala* (Tuart) - Eucalyptus marginata (Jarrah) - *Corymbia calophylla* (Marri) and woodland of *Eucalyptus marginata* (Jarrah) - Banksia species. *Agonis flexuosa* (Peppermint) is co-dominant south of the Capel River.
Quindalup Complex	Coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata* (Rottnest Teatree) - *Callitris preissii* (Rottnest Island Pine), the closed scrub of *Acacia rostellifera* (Summer-scented

Name	Description
	Wattle) and the low closed *Agonis flexuosa* (Peppermint) forest of Geographe Bay.
Serpentine River Complex	Closed scrub of Melaleuca species and fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark) along streams.
Southern River Complex	Open woodland of *Corymbia calophylla* (Marri) - *Eucalyptus marginata* (Jarrah) - Banksia species with fringing woodland of Eucalyptus rudis (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark) along creek beds.
Swan Complex	Fringing woodland of Eucalyptus rudis (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark) with localised occurrence of low open forest of *Casuarina obesa* (Swamp Sheoak) and *Melaleuca cuticularis* (Saltwater Paperbark).
Vasse Complex	Mixture of the closed scrub of Melaleuca species fringing woodland of *Eucalyptus rudis* (Flooded Gum) - Melaleuca species and open forest of *Eucalyptus gomphocephala* (Tuart) - *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri). Will include areas dominated by Tecticornia and Sarcocornia species (Samphire) near Mandurah and south of the Capel River.
Yoongarillup Complex	Woodland to tall woodland of Eucalyptus gomphocephala (Tuart) with Agonis flexuosa in the second storey. Less consistently an open forest of *Eucalyptus gomphocephala* (Tuart) - *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri). South of Bunbury is characterised by *Eucalyptus rudis* (Flooded Gum)-Melaleuca species open forests.
Jarrah Forest	
Cooke	Mosaic of open forest *of Eucalyptus marginata subsp. marginata*-Corymbia calophylla (subhumid zone) and open forest of *Eucalyptus marginata subsp. thalassica-Corymbia calophylla* (semiarid and arid zones) and on deeper soils adjacent to outcrops, closed heath of Myrtaceae-Proteaceae species and lithic complex on granite rocks and associated soils in all climate zones, with some *Eucalyptus laeliae* (semiarid), and *Allocasuarina huegeliana* and *Eucalyptus wandoo* (mainly semiarid to perarid zones).
Darling Scarp, DS2	Mosaic of open forest of *Eucalyptus marginata subsp. marginata-Corymbia calophylla,* with some admixtures with *Eucalyptus laeliae* in the north (subhumid zone), with occasional *Eucalyptus marginata subsp. elegantell* (mainly in subhumid zone) and *Corymbia haematoxylon* in the south (humid zone) on deeper soils adjacent to outcrops, woodland of *Eucalyptus wandoo* (subhumid and semiarid zones), low woodland of *Allocasuarina huegeliana* on shallow soils over granite outcrops, closed heath of Myrtaceae-Proteaceae species and lithic complex on or near granite outcrops in all climate zones.
Dwellingup, D1	Open forest of *Eucalyptus marginata subsp. marginata-Corymbia calophylla* on lateritic uplands in mainly humid and subhumid zones.
Goonaping	Mosaic of open forest of *Eucalyptus marginata subsp. marginata* (humid zones) and Eucalyptus marginata subsp. thalassica (semiarid to perarid zones) on the sandy- gravels, low woodland of Banksia attenuata on the drier sandier sites (humid to perarid zones) with some Banksia menziesii (northern arid and perarid

Name	Description
	zones) and low open woodland of Melaleuca preissiana-Banksia littoralis on the moister sandy soils (humid to perarid zones).
Helena 1	Mosaic of open forest of *Corymbia calophylla-Eucalyptus patens-Eucalyptus marginata subsp. marginata* with some *Eucalyptus rudis* on the deeper soils ranging to closed heath and lithic complex on shallow soils associated with granite on steep slopes of valleys in humid and subhumid zones
Lowdon	Open forest of *Corymbia calophylla-Eucalyptus marginata subsp. marginata-Agonis flexuosa* with some *Eucalyptus wandoo* and occasional *Corymbia haematoxylon* on slopes, and woodland of *Eucalyptus rudis-Melaleuca rhaphiophylla* on valley floor in the humid zone.
Murray 1	Open forest of *Eucalyptus marginata subsp. marginata-Corymbia calophylla-Eucalyptus patens* on valley slopes to woodland of *Eucalyptus rudis-Melaleuca rhaphiophylla* on the valley floors in humid and subhumid zones.
Swamp	Mosaic of low open woodland of *Melaleuca preissiana-Banksia littoralis*, closed scrub of Myrtaceae spp., closed heath of Myrtaceae spp. and sedgelands of *Machaerina* and *Leptocarpus* spp. on seasonally wet or moist sand, peat and clay soils on valley floors in all climatic zones.
Yarragil 1	Open forest of *Eucalyptus marginata subsp. marginata-Corymbia calophylla* on slopes with mixtures of *Eucalyptus patens* and *Eucalyptus megacarpa* on the valley floors in humid and subhumid zones.
Yarragil 2	Open forest of *Eucalyptus marginata subsp. thalassia-Corymbia calophylla* on slopes, woodland *of Eucalyptus patens-Eucalyptus rudis* with *Hakea prostrata* and *Melaleuca viminea* on valley floors in subhumid and semiarid zones.

Appendix 2. Threatened and Priority Flora Species (NAH, 2024)

Species Name	Cons Code	NatureMap	PMST	DBCA
Acacia flagelliformis	4	X		X
Acacia horridula	3	X		X
Acacia oncinophylla subsp. *Oncinophylla*	3			X
Acacia oncinophylla subsp. *Patulifolia*	4	X		X
Acacia semitrullata	4	X		X
Acacia sp. Binningup (G. Cockerton et al. WB 37784)	1	X		X
Actinotus repens	3	X		X
Alyogyne sp. Rockingham (G.J. Keighery 14463)	2	X		X
Andersonia gracilis	T (EN)		X	
Angianthus drummondii	3	X		X
Anthocercis gracilis	T (VU)		X	
Aponogeton hexatepalus	4			X
Austrostipa bronweniae	T (EN)	X	X	X
Banksia mimica	T (EN)		X	
Banksia squarrosa subsp. *Argillacea*	T (VU)		X	
Blennospora doliiformis	3	X		X
Bolboschoenus medianus	1	X		X
Boronia capitata subsp. *Gracilis*	3	X		X
Boronia juncea subsp. *Juncea*	1	X		X
Brachyscias verecundus	T (CR)		X	
Caladenia huegelii	T (EN)	X	X	X
Caladenia procera	T (CR)	X	X	X
Caladenia speciosa	4	X		X
Caladenia swartsiorum	2	X		X
Caladenia uliginosa subsp. Patulens	1	X		X
Cardamine paucijuga	2	X		X

Species Name	Cons Code	NatureMap	PMST	DBCA
Carex tereticaulis	3	X		X
Chamaescilla gibsonii	3	X		X
Chamelaucium lullfitzii	T (EN)		X	
42hamelauciums p. S coastal plain (R.D.Royce 4872)	T (VU)		X	
Conostylis pauciflora subsp. Pauciflora	4	X		X
Craspedia sp. Waterloo (G.J. Keighery 13724)	2			X
Cyanothamnus tenuis	4	X		X
Cyathochaeta teretifolia	3	X		X
Dillwynia dillwynioides	3	X		X
Dillwynia sp. Capel (P.A. Jurjevich 1771)	3	X		X
Diuris drummondii	T (EN)	X	X	X
Diuris micrantha	T (VU)	X	X	X
Diuris purdiei	T (EN)	X	X	X
Drakaea elastica	T (CR)	X	X	X
Drakaea micrantha	T (EN)	X	X	X
Eleocharis keigheryi	T (VU)		X	
Eucalyptus argutifolia	T (VU)		X	
Eucalyptus foecunda subsp. Foecunda	4	X		X
Eucalyptus rudis subsp. Cratyantha	4	X		X
Eucalyptus x graniticola	4			X
Euphrasia scabra	2	X		X
Galium leptogonium	3			X
Gonocarpus keigheryi	2			X
Grevillea bipinnatifida subsp. Pagna	1	X		X
Grevillea prominens	3	X		X
Grevillea rara	T (EN)	X	X	X
Grevillea rosieri	2			X
Hakea oligoneura	2			X

Species Name	Cons Code	NatureMap	PMST	DBCA
Haloragis aculeolata	2	X		X
Haloragis scoparia	1	X		X
Hemiandra sp. Windy Harbour (B.J. Conn & J.A. Scott BJC 3344)	3			X
Hemigenia microphylla	3	X		X
Hibbertia leptotheca	3	X		X
Juncus meianthus	3	X		X
Lambertia echinata subsp. Occidentalis	T (EN)		X	
Lasiopetalum membranaceum	3	X		X
Leucopogon sp. Busselton (D. Cooper 243)	2	X		X
Lomandra whicherensis	3			X
Meionectes tenuifolia	3	X		X
Morelotia australiensis	T (VU)		X	X
Myriophyllum echinatum	3	X		X
Netrostylis sp. Blackwood River (A.R. Annels 3043)	3	X		X
Netrostylis sp. Nannup (P.A. Jurjevich 1133)	1	X		X
Olearia strigosa	3	X		X
Ornduffia submersa	4			X
Pimelea calcicola	3	X		X
Platysace ramosissima	3			X
Pterostylis frenchii	2	X		X
Puccinellia vassica	1	X		X
Pultenaea skinneri	4	X		X
Rumex drummondii	4			X
Schizaea rupestris	2	X		X
Schoenus capillifolius	3			X
Schoenus sp. Waroona (G.J. Keighery 12235)	3	X		X
Senecio leucoglossus	4	X		X
Sphaerolobium calcicola	3	X		X

Species Name	Cons Code	NatureMap	PMST	DBCA
Stylidium aceratum	3			X
Stylidium acuminatum subsp. Acuminatum	2	X		X
Stylidium korijekup	2	X		X
Stylidium longitubum	4	X		X
Stylidium maritimum	3	X		X
Stylidium paludicola	3	X		X
Stylidium trudgenii	3	X		X
Styphelia filifolia	3	X		X
Synaphea odocoileops	1	X		X
Synaphea sp. Fairbridge Farm (D.Papenfus 696)	T (CR)		X	
Synaphea sp. Pinjarra Plain (A.S.George 17182)	T (EN)		X	
Synaphea sp. Serpentine (G.R. Brand 103)	T (CR)		X	X
Synaphea stenoloba	T (EN)		X	X
Tetratheca parvifolia	3	X		X
Tripterococcus sp. Brachylobus (A.S. George 14234)	4	X		X
Verticordia attenuata	3	X		X

Appendix 3. Conservation Codes

Western Australia

Conservation Code	Name	Description
T	Threatened	Flora or fauna that is rare or likely to become extinct, ranked according to their level of threat using IUCN Red List criteria (Schedules 1-3 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice)
CR	Critically endangered	Species considered to be facing an extremely high risk of extinction within the wild in the immediate future
EN	Endangered	Species considered to be facing a very high risk of extinction in the wild in the near future
VU	Vulnerable	Species considered to be facing a high risk of extinction in the wild in the medium-term future
EX	Extinct Species	Species where 'there is no reasonable doubt that the last member of the species has died (Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice)
EW	Extinct in the Wild	Species that are known to only survive in cultivation, in captivity, or as a naturalised population well outside its past range; and it has not been recorded in its known or expected habitat at appropriate seasons anywhere in its past range, despite surveys over a timeframe appropriate to its life cycle and form
MI	Migratory Species	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth (Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice)
CD	Conservation Dependent	Species of special conservation interest (conservation dependent fauna), being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened (Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice)
OS	Specially Protected	Fauna otherwise in need of special protection to ensure their conservation (Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice)

Conservation Code	Name	Description
P	Priority Species	Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.
1	Priority One	Poorly known species – Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either very small or on lands not managed for conservation, such as road verges, urban areas, farmland, active mineral lease and under threat of habitat destruction or degradation.
2	Priority Two	Poorly known species – Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, such as national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves and similar.
3	Priority Three	Poorly known species – Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat
4	Priority Four	Rare or near threatened and other species in need of monitoring.

Commonwealth

Category	Description
Critically Endangered	Species facing an extremely high risk of extinction in the wild in the immediate future
Endangered	Species facing a very high risk of extinction in the wild in the near future
Vulnerable	Species facing a high risk of extinction in the wild in the medium term

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