



ATTACHMENTS

DEVELOPMENT AND INFRASTRUCTURE SERVICES COMMITTEE MEETING

5.30pm

City of Albany Council Chambers

DEVELOPMENT AND INFRASTRUCTURE SERVICES COMMITTEE
ATTACHMENTS – 12/08/2026

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Local Biodiversity Strategy

The Strategy 2026–2036



THE CITY OF ALBANY
RESPECTFULLY ACKNOWLEDGES
THE MENANG NOONGAR
PEOPLE AS THE TRADITIONAL
CUSTODIANS OF THE LAND ON
WHICH THE CITY CONDUCTS
ITS BUSINESS, AND PAYS
RESPECT TO ELDERS
PAST AND PRESENT.

Australian Pelican
(*Pelecanus conspicillatus*)
Sensr Solutions

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*Cover Image: Mount Melville, Albany
Sensr Solutions*

Albany Local Biodiversity Strategy

The City has taken a significant step towards the protection of biodiversity in its Local Planning Strategy (2019), which states:

Development will generally only be supported in cleared areas. Clearing of vegetation may be supported in liaison with relevant State Government Agencies only where its conservation value has been assessed as low.

The City of Albany is committed to continuously enhancing the conservation of our local biodiversity through proactive and innovative approaches to environmental planning and sustainable land management. The creation of the Albany Local Biodiversity Strategy (ALBS) provides a pathway for the Albany Council and its stakeholder partners to address environmental threats, provide planning input for local biodiversity areas, enhance areas managed by the City, and celebrate our natural and cultural heritage.

As one of Western Australia's fast-growing regional cities, Albany continues to experience increasing demand for housing, infrastructure and services to support a growing and diverse community. This growth presents both opportunities and challenges for the City's natural environment. The Albany Local Biodiversity Strategy recognises the intrinsic, social and economic value of biodiversity to the City's identity and liveability, while also acknowledging the need to balance biodiversity protection with responsible growth and development.

Through integrated planning and informed decision-making, the Strategy seeks to support sustainable development outcomes that respect ecological values while enabling the City to meet community housing and development needs.

This Local Biodiversity Strategy has been developed through stakeholder collaboration and will thrive only with internal funding, grants, the support of local organisations and the community. The Strategy outlines the necessary steps to conserve our natural areas for future generations, ensuring the sustainability and liveability of our community.

The Strategy is supported by an Action Plan and a Technical Report, both available on the City of Albany website albany.wa.gov.au



Purpose and Vision

The Albany community has told Council that it values biodiversity and the richness it provides to our lives, culture, mental wellbeing and economy.

During the stakeholder engagement process, the community defined 'Local Natural Areas' (LNA) in the City of Albany as "areas with value to natural systems across all land tenures, including non-vegetated areas with value for ecosystem processes".

The City of Albany has committed to proactively protecting and managing biodiversity under its direct control, and advocate for biodiversity protection more broadly.

It is noted that the City has recently adopted a Waterwise Strategy and is progressing a range of urban forest initiatives. Accordingly, actions relevant to biodiversity that are more closely linked to the achievement of water management and urban forest outcomes are incorporated into these initiatives.

Biodiversity stakeholders have told the Council that they have the following vision:

“Kinjarling – Albany,
caring for country -
Where nature and
the community can
thrive and adapt”

Sharp Point, Albany
Frances Andrijich



Black Swan
(*Cygnus atratus*)

Krysta Guille

Our Local Biodiversity

Biodiversity encompasses all forms of life on Earth, including plants, animals, microorganisms, the genes they carry, and the ecosystems and natural processes in which they are part. It is one of our most valuable natural assets, as the Earth's biodiversity supports every aspect of human life. Therefore, we must conserve our natural resources to remain resilient in the face of future challenges.

Biodiversity is defined as:

“The variety of life forms, including plants, animals, fungi, and microorganisms, as well as the genes they contain and the ecosystems they form.”

Commonwealth of Australia, 1996

In the South West Australian Ecoregion, Albany is part of one of the world's 36 biodiversity hotspots, underscoring the richness of our natural environment and community.

The City of Albany boasts a rich blend of natural assets, comprising diverse ecosystems such as granite outcrops, bushland, wetlands, waterways and coastal areas. These landscapes make Albany a unique and beautiful place to live and attract many visitors due to their scenic value and variety. The municipality features Threatened and Priority flora and fauna, ecological communities, and an array of plants, animals, and habitat types endemic to the region.

Development for agriculture and settlement growth has significantly impacted biodiversity, already clearing nearly two-thirds of the native vegetation in the Albany municipality. Phytophthora dieback, weeds, pests and climate change also threaten biodiversity.

The continued reduction in the size, number, and functionality of vegetation remnants, waterways, and wetlands will increase pressure on ecosystems and species of flora and fauna. Albany has significant areas of vegetation in small, scattered patches inland, and considerable native vegetation remains on private property.

As conservation reserves are less able to retain their values as isolated 'islands' in a cleared or urbanised landscape, a vegetation linkage or macrocorridor approach that links conservation reserves to other remnant native vegetation on private land is an important initiative for reducing biodiversity loss.

City of Albany Snapshot

The Snapshot provides an overview for the whole City of Albany local government area (LGA).

See the Technical Report for more details.



Land & Water

430,807

total hectares
of LGA

5

major
drainage lines

180

kilometres
of coastline

35

conservation
significant wetlands



Flora & Fauna

3,104

plant
species

1,464

fauna
species

30

threatened flora
species (WA)*

56

threatened fauna
species (WA)*



Vegetation

36%

of original extent remaining

~52%

of remaining vegetation has some level of protection

83,800

hectares of
vegetation on
freehold land

443

crown reserves
managed by
the City

340

hectares of vegetation
owned by the City on
freehold land

12,202

hectares of vegetation
on Crown land
managed by the City

**For a comprehensive list of conservation-significant flora and fauna species recorded in the City, refer to Appendix C & G of the Technical Report*

Biodiversity in Focus

Albany is recognised as part of one of the world's biodiversity hotspots and supports a remarkable diversity of plants and animals, including species found nowhere else on Earth.



Albany Pitcher Plant

Cephalotus follicularis

A unique carnivorous plant found only in the south-west of Western Australia.



Albany Woollybush

Adenanthos sericeus

An iconic Albany species recognised for its soft silver foliage and striking red flowers.



Granite Banksia

Banksia verticillata

A distinctive banksia of Albany's granite outcrops and coastal heathlands.



Western Ground Parrot

Pezoporus flaviventris

One of Australia's rarest birds, found in coastal heathlands of the Great Southern.



Noisy Scrub-bird

Atrichornis clamosus

One of Australia's rarest birds and a conservation success story of international significance.



Western Ringtail Possum

Pseudocheirus occidentalis

A threatened marsupial found in Albany's forests and woodlands.



The species shown above are examples of the unique biodiversity found within the City of Albany and are not intended to represent a complete or prioritised list. For a comprehensive list of conservation-significant flora and fauna species recorded within the City, refer to Appendices C and G of the Technical Report.

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Threats to Biodiversity

	Land clearing and fragmentation
	Knowledge gaps
	Climate change and variability
	Altered Hydrology
	Inappropriate Fire Frequency and Intensity
	Inappropriate Access
	Weeds
	Pests and Diseases



Little Penguin
(*Eudyptula minor*)
Eqroy



The City's Role in Biodiversity Management

The City must work within the Commonwealth and State framework of legislation and policies and has the following roles.

Regulator	Proponent	Assets Manager	Facilitator
Land use planning provisions Development approvals Enforcement of local laws	Planner and manager of infrastructure projects	Natural areas in reserves and freehold land Native vegetation and habitat in parks and roadsides	Community education and engagement Volunteer support Landholder incentives

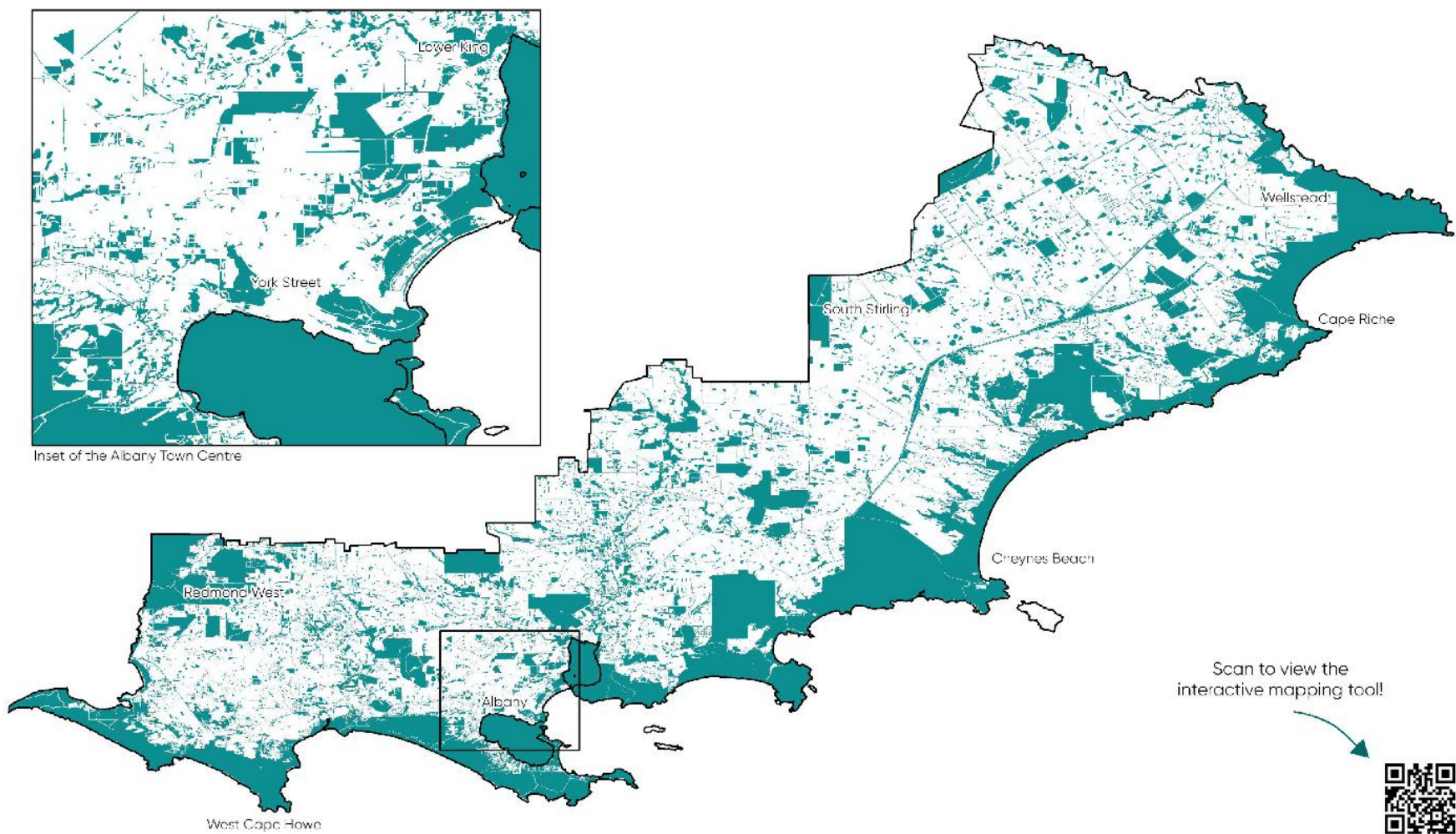
Mechanisms within the City's control that guide how and where they can manage biodiversity, include the following:

	Council Plan
	Local Planning Strategy
	Local Planning Scheme

	Local Laws
	Reserve Management
	Leasing Agreements

Local Natural Areas

Local Natural Areas (LNA) are defined as “areas with value to natural systems across all land tenures, including non-vegetated areas with value for ecosystem processes”.





Two Peoples Bay
Sensory Exposure



Granite Spider Orchid
(*Caladenia granitora*)

Kym Nicolson

Goals

To maintain our biodiversity values and manage the threats, the City's goals are as follows:



Retain & Protect

Retain and protect natural areas, with consideration of biodiversity criteria and ecological representation, on City-managed land and through planning and development processes on private land.



Learn

Improve understanding of biodiversity values, threats and opportunities by building knowledge, research and partnerships.



Manage & Enhance

Improve ecological condition, increase connectivity and reduce threats across natural areas through coordinated management and restoration.



Engage

Increase community involvement, partnerships and stewardship in biodiversity protection and management.

Turning Plans into Action

Protecting and enhancing the City's local biodiversity is a shared responsibility between government agencies, the City, and the community. It's vital that all stakeholders work together to achieve our shared vision of improving the conservation status of LNAs and realising the benefits this creates.

As part of this Strategy, an Action Plan has been developed to articulate the goals, actions, and key pathways for implementation. The Action Plan has been shaped through targeted engagement with the teams responsible for delivery, ensuring each action is achievable, well-informed, and grounded in operational capability.

The Strategy and accompanying Action Plan will annually guide the City in planning and prioritising projects for implementation. An internal cross-departmental working group will coordinate the implementation of the Action Plan, measure its success and recommend changes as implementation of the Plan progresses.

Actions are proposed to guide the City's implementation of this Strategy and to support achievement of the Vision of caring for Country so that nature and community can thrive and adapt together.

Each action within the Action Plan is assigned a proposed timeframe, priority level and delivery responsibility. The timeframe indicates the suggested period for implementation, while the priority reflects the relative importance of the action in contributing to the overall objectives of the Strategy.

Priority and timeframe should be considered together; actions with a lower priority but a shorter timeframe may represent opportunities for early achievement, while higher-priority actions may require longer timeframes due to complexity or resourcing requirements. The nominated priorities and timeframes are indicative only.

Implementation of the Strategy will be influenced by factors such as funding and budget availability, Council priorities and capacity, legislative requirements, and levels of stakeholder and community support. As such, the Action Plan is intended to remain flexible and responsive, allowing the City to adapt its approach as circumstances, opportunities and challenges evolve.

The Action Plan is structured around four goals that support achievement of the Strategy's vision: Retain and Protect, Learn, Manage and Enhance, and Engage. Each goal is supported by a suite of actions that provide a practical pathway for implementation and ongoing improvement of biodiversity outcomes across the City.

Before progressing these goal-based actions, the City will first establish an appropriate governance model to oversee implementation of the Strategy. This foundational action underpins all other actions in the Action Plan by providing leadership, coordination, accountability, monitoring and reporting arrangements to support effective delivery over time.





Blue-breasted Fairywren
(*Malurus pulcherrimus*)

Implementation Governance

Purpose: The successful delivery of the Albany Local Biodiversity Strategy relies on clear governance and organisational oversight.

This action establishes the governance arrangements required to coordinate implementation, monitor progress, support reporting and drive continual improvement across all goals and actions.



G1

Establish an appropriate governance model to oversee implementation of the Local Biodiversity Strategy



Goal: Retain and Protect

Retain and protect natural areas, with consideration of biodiversity criteria and ecological representation, on City-owned and managed land and through planning and development processes on private land.

- 1.1

Continue to implement and improve an Environmental Impact Assessment (EIA) process.
- 1.2

Embed biodiversity considerations into the planning assessment process and when making recommendations on rezoning and subdivision proposals.
- 1.3

Integrate Albany Local Biodiversity Strategy (ALBS) objectives, where relevant, into the Local Planning Strategy and Scheme.
- 1.4

Enforce Local Planning Framework provisions requiring revegetation/rehabilitation where clearing or degradation has occurred without approval.
- 1.5

Strengthen compliance and environmental outcomes associated with permits and approvals that affect vegetation and natural areas on City-managed land.
- 1.6

Ensure coastal risk management and adaptation planning maintains ecological processes.



Honey Possum
(*Tarsipes rostratus*)



Goal: Learn

Improve understanding of biodiversity values, threats and opportunities by building knowledge, research and partnerships.

- 2.1**

Maintain and enhance biodiversity related data and information sharing across the organisation.
- 2.2**

Capture existing knowledge and investigate ways to build knowledge of ecological values within Local Natural Areas (LNA).
- 2.3**

Support agencies, research institutions, citizen scientists and community groups to enhance knowledge of biodiversity values and threats.
- 2.4**

Raise awareness and educate about biodiversity values across the organisation.
- 2.5**

Establish a technical advisory framework to inform the development and continual improvement of biodiversity decision-support tools.



Goal: Manage and Enhance

Improve ecological condition, increase connectivity and reduce threats across natural areas through coordinated management and restoration.



3.1	Continue to implement the City's environmental code of conduct for any works on City land, including biodiversity clauses in tenders and maintenance contracts.	3.7	Continue to enforce and monitor environmental lease conditions to ensure biodiversity is managed and retained on leased City land.
3.2	Consider the designs of proposed and current public open spaces and where feasible, take steps to increase biodiversity.	3.8	Encourage cooperative management programs to manage risks to biodiversity.
3.3	Adequately maintain new Public Open Space (POS) and offset areas surrendered to the City as part of developments/subdivisions and adjust resourcing to reflect additional management responsibilities.	3.9	Review the priorities of reserve management to target management and restoration where biodiversity benefit and community benefit are greatest.
3.4	Advocate for and embed consideration of connectivity and eco-corridors into all planning, rezoning and subdivision proposals, as well as any strategies.	3.10	Continue to collaborate with Department of Fire and Emergency Services (DFES) and external agencies to undertake innovative and ecological burning trials and continue to map fire history.
3.5	Provide funding opportunities to non-governmental organisations (NGOs) to provide education and on-ground actions that support best practice natural area management.	3.11	Continue to maintain and implement environmental weed management plans and strengthen education and volunteer support.
3.6	Investigate ways to increase urban greening and ecological connectivity to improve biodiversity outcomes.	3.12	Consider ways in which to strategically facilitate offsets, including revegetation.

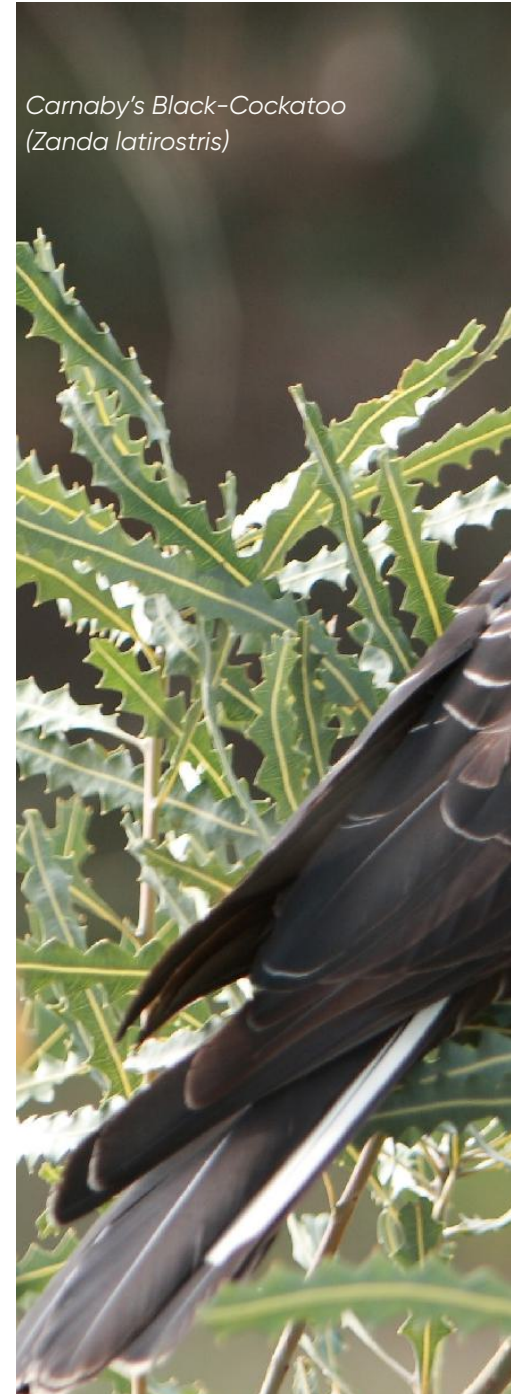


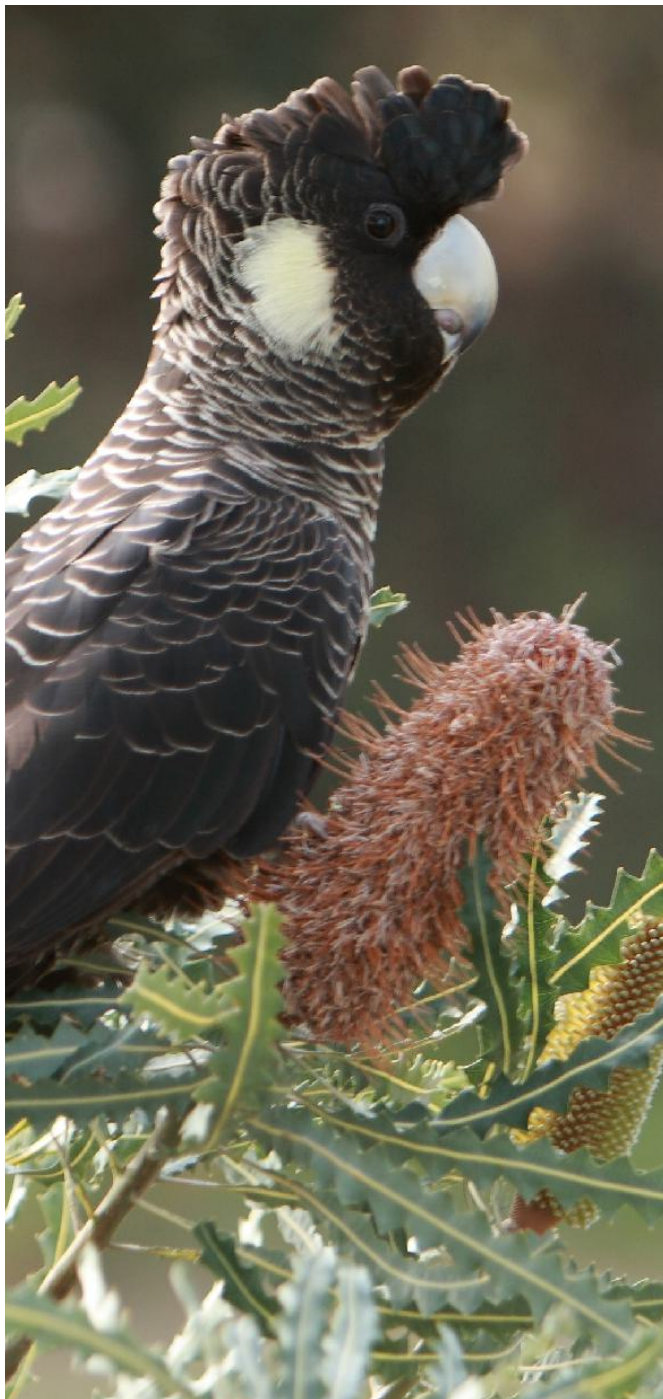
Goal: Engage

Increase community involvement, partnerships and stewardship in biodiversity protection and management.

- | | |
|-----|---|
| 4.1 | Implement a coordinated advocacy and awareness program promoting biodiversity values and ALBS objectives. |
| 4.2 | Advocate for a funding program to help support landowners of high biodiversity freehold land to protect and enhance biodiversity. |
| 4.3 | Connect education facilities and community groups with opportunities for biodiversity education and on ground projects. |
| 4.4 | Act on any recommendations or requirements from State agencies to manage biosecurity risks. |
| 4.5 | Strengthen relationships with Traditional Custodians. |
| 4.6 | Continue to support volunteer programs that support the management of biodiversity. |
| 4.7 | Explore and promote community biodiversity grant opportunities to support on-ground works, research and stewardship initiatives. |
| 4.8 | Investigate potential incentive mechanisms for biodiversity protection on private land, such as rate relief or covenant support. |
| 4.9 | Celebrate biodiversity achievements. |

*Carnaby's Black-Cockatoo
(Zanda latirostris)*





Governance, Monitoring and Reporting

The City will maintain governance and transparent oversight of the Local Biodiversity Strategy by embedding monitoring, reporting, and continuous improvement into its activities. Implementation of the strategy will be guided by alignment with existing City strategies, policies and guidelines to ensure consistency and integration across all areas of work.

An early action of the Strategy will be to investigate and establish an appropriate governance model, including the identification of a responsible team and/or the formation of a cross-functional working group to oversee implementation.

This working group will support coordination across the organisation, help inform action priorities, and provide a mechanism for accountability to the City.

In particular, a dedicated working group established under the Learn goal will inform the development and continual improvement of biodiversity decision-support tools, drawing on internal expertise and, where appropriate, external input to guide evidence-based enhancements.

Progress will be tracked through the monitoring and evaluation framework, with an annual public update provided to demonstrate achievements, identify emerging challenges, and inform future refinements.

This approach ensures accountability, supports evidence-based decision-making, and keeps biodiversity outcomes central to the City's long-term planning.



Review of the Strategy

The Strategy will serve as a guiding document and will be reviewed ten years after adoption by Council, or earlier if required due to significant legislative or policy changes.

The Action Plan, as a more adaptive operational tool, will undergo its first review 18–24 months after adoption to allow sufficient time for the implementation and evaluation of initial actions before updates are undertaken.

For Further Reading

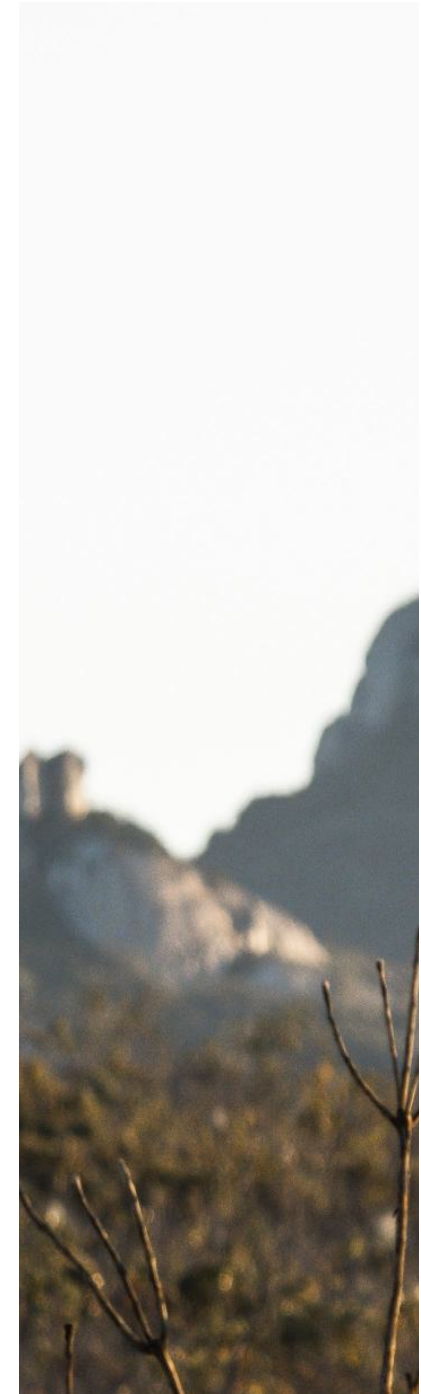
The Albany Local Biodiversity Strategy is part of an integrated suite of City of Albany strategies, plans and policies that collectively guide decision-making and investment across the organisation.

The Strategy aligns with, and should be considered alongside, the Council Plan, Local Planning Strategy, planning framework documents, asset management plans and other environmental and infrastructure strategies.

Its successful implementation relies on coordinated consideration across these documents to ensure biodiversity outcomes are balanced with the City's broader priorities, including housing, growth, community wellbeing and economic development.

This Strategy document is designed to be read in conjunction with the Action Plan and Technical Report.

Visit the City's website to view these documents and find out more about the implementation of the Albany Local Biodiversity Strategy.





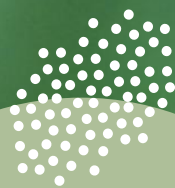
Scarlet Banksia
(*Banksia coccinea*)
Sensr Solutions



A wide-angle photograph of a coastal landscape. In the foreground, there are large, smooth, grey boulders covered in low-lying green and yellow vegetation. The middle ground shows a dense forest of similar vegetation leading down to a sandy beach. The ocean is a deep blue with white surf breaking on the shore. In the distance, there are rolling hills and a coastline with some buildings and wind turbines visible under a cloudy sky.

Local Biodiversity Strategy

The Action Plan 2026-2036



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RESPECTFULLY ACKNOWLEDGES
THE MENANG NOONGAR
PEOPLE AS THE TRADITIONAL
CUSTODIANS OF THE LAND ON
WHICH THE CITY CONDUCTS
ITS BUSINESS, AND PAYS
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Red-Flowering Gum
(*Corymbia ficifolia*)

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Cover Image: Stony Hill, Albany
Sensr Solutions



Action Plan

The Action Plan will be used to annually guide the City in planning and prioritising projects for implementation as detailed in the Strategy. The information in the tables below, has been collated based on discussions with City staff and the Stakeholder Reference Group. Use the legend below to interpret the tables.

The timeframes and priorities are indicative. Implementation of the Strategy will be influenced by factors such as funding and budget availability, Council priorities and capacity, legislative requirements, and levels of stakeholder and community support.

Timeframe	Actions to be completed
Short term	2026/27 – 2027/28 – within Annual Budget or Corporate Business Plan
Medium term	2028/29 – 2030/31 – within Council Plan
Long term	2031/32 – 2035/36 – within Long Term Financial Plan
Ongoing	To occur through operations and accounted for in annual operational budget.
Priority	The approach actions require
High	Of high importance, needs a strong proactive approach, opportunities should be created.
Medium	Of medium importance, opportunities should be sought.
Low	Of low importance, should be undertaken as opportunities arise.
Cost	Likely order of magnitude costs
High	Over \$100,000
Medium	\$50,000 – \$100,000
Low	Under \$50,000

Funding consideration	
Low	The action is currently resourced and can be delivered within existing operational capacity.
Medium	The action is currently resourced through the Annual Budget or available external grant funding.
High	The action is not currently resourced and will require additional resourcing to enable implementation.
*	Potential to seek external funding to resource this action.
Implementation streams	
	Planning/strategic – embedding biodiversity in planning frameworks.
	Operational/on-ground – actions the City delivers directly.
	Education/advocacy – community education, awareness, partnerships.
	External/capacity building – actions beyond direct CoA control, reliant on others.

Implementation Governance

Purpose:

The successful delivery of the Albany Local Biodiversity Strategy relies on clear governance and organisational oversight. This action establishes the governance arrangements required to coordinate implementation, monitor progress, support reporting and drive continual improvement across all goals and actions.

	Action	How	Timeframe	Priority	Funding	Responsibility
G1	Establish an appropriate governance model to oversee implementation of the Local Biodiversity Strategy.	Investigate and determine the most effective governance arrangement, including the identification of a responsible team and/or formation of a cross-functional working group to coordinate implementation, monitor progress, and support reporting.	Short term	High	High	Executive

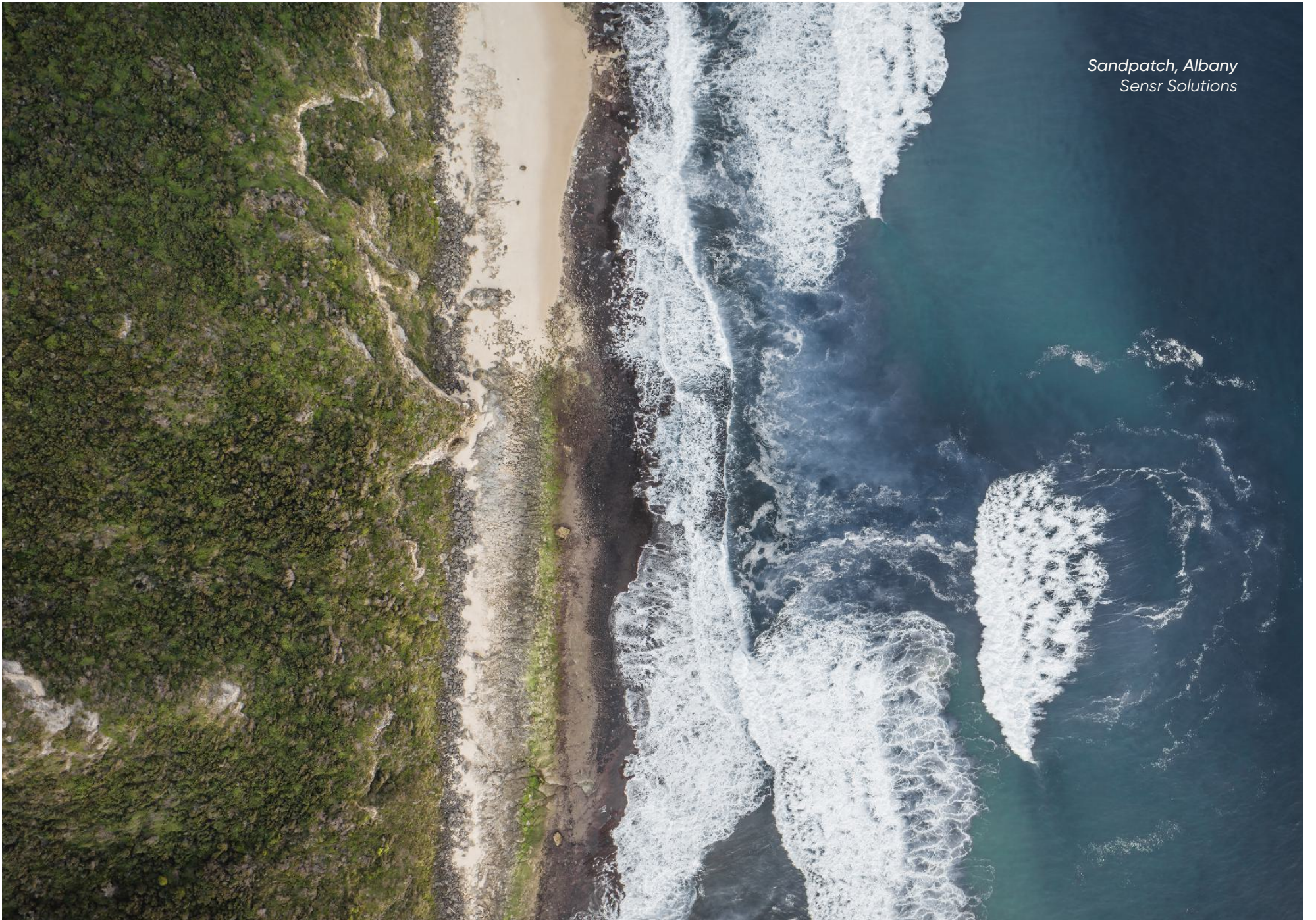


Honey Possum
(Tarsipes rostratus)

Goal: Retain and Protect

Retain and protect natural areas, with consideration of biodiversity criteria and ecological representation, on City-owned and managed land and through planning and development processes on private land.

	Action	How	Timeframe	Priority	Funding	Responsibility
1.1	Continue to implement and improve an Environmental Impact Assessment (EIA) process.	Provide inductions for relevant staff on the EIA process. Annual review of EIA process. Demonstrate to the public that an EIA process is regularly implemented.	Ongoing	High	Low	Reserves
1.2	Embed biodiversity considerations into the planning assessment process and when making recommendations on rezoning and subdivision proposals.	Continue current best practice in the planning assessment process. Awareness and training on biodiversity values and considerations.	Ongoing	High	Low	Planning
1.3	Integrate Albany Local Biodiversity Strategy (ALBS) objectives, where relevant, into the Local Planning Strategy and Scheme.	Incorporate in next review of the Local Planning Strategy and Local Planning Scheme.	Short term	High	Low	Planning
1.4	Enforce Local Planning Framework provisions requiring revegetation/rehabilitation where clearing or degradation has occurred without approval.	As part of the assessment process, require rehabilitation where vegetation clearing has occurred without approval or where rehabilitation is a condition of approval. Schedule in inspections of conditioned revegetation/rehabilitation works to ensure that they have be undertaken in accordance with agreed plans.	Short term	High	Medium	Compliance
1.5	Strengthen compliance and environmental outcomes associated with permits and approvals that affect vegetation and natural areas on City-managed land.	Improve compliance with permit conditions by undertaking targeted inspections and compliance for vegetation-related works, including fenceline clearing, crossovers, verge development and tree removal.	Medium term	Medium	High	Reserves
1.6	Ensure coastal risk management and adaptation planning maintains ecological processes.	Foreshore Management Plans are prepared and implemented subsequent to a CHRMAP.	Medium term	Medium	High	Planning Reserves Major Projects



Sandpatch, Albany
Sensr Solutions



Southern Brown Bandicoot (Quenda)
(*Isodon obesulus*)

Goal: Learn

Improve understanding of biodiversity values, threats and opportunities by building knowledge, research and partnerships.

	Action	How	Timeframe	Priority	Funding	Responsibility
2.1	Maintain and enhance biodiversity related data and information sharing across the organisation.	Easy and clear process for staff to follow to collect and store biodiversity-related data.	Short term	High	Low	GIS
2.2	Capture existing knowledge and investigate ways to build knowledge of ecological values within Local Natural Areas (LNA).	Central environmental database. Disseminating internal and public data.	Short term	Medium	Low	GIS Reserves
2.3	Support agencies, research institutions, citizen scientists and community groups to enhance knowledge of biodiversity values and threats.	Provide support for citizen-science through permits, Sustainability grants and community events.	Ongoing	Medium	Medium	Sustainability Reserves
2.4	Raise awareness and educate about biodiversity values across the organisation.	Run training sessions and provide educational materials to educate officers and elected members on values and threats and ways that they can protect biodiversity as part of their roles.	Ongoing	Medium	Low	Reserves
2.5	Establish a technical advisory framework to inform the development and continual improvement of biodiversity decision-support tools.	Provide a platform for technical representatives from government, industry, research institutions and the City to identify data gaps and inform ongoing improvements to biodiversity decision-support tools.	Short term	Medium	Medium	Executive GIS

Goal: Manage and Enhance

Improve ecological condition, increase connectivity and reduce threats across natural areas through coordinated management and restoration.

	Action	How	Timeframe	Priority	Funding	Responsibility
3.1	Continue to implement the City's environmental code of conduct for any works on City land, including biodiversity clauses in tenders and maintenance contracts.	Provide induction and yearly refresher on code of conduct for relevant staff and contractors.	Ongoing	High	Low	Reserves
3.2	Consider the designs of proposed and current public open spaces and where feasible, take steps to increase biodiversity.	Long-term strategic planning and prioritisation of reserves.	Long term	High	High	Reserves
3.3	Adequately maintain new Public Open Space (POS) and offset areas surrendered to the City as part of developments/subdivisions and adjust resourcing to reflect additional management responsibilities.	Maintain good records on the area of POS/Offsets to be transferred to the City for resourcing requirements to provide adequate ongoing maintenance.	Ongoing	High	Low	Reserves Planning
3.4	Advocate for and embed consideration of connectivity and eco-corridors into all planning, rezoning and subdivision proposals, as well as any strategies.	Flag this action to incorporate into the Albany Local Planning Scheme Review. Training and awareness around how the ALPS actions influence business decisions	Short term	High	Low	Planning
3.5	Provide funding opportunities to non-governmental organisations (NGOs) to provide education and on-ground actions that support best practice natural area management.	Review and improve the City's community biodiversity grant to encourage better uptake to support NGOs and community groups undertaking biodiversity conservation and on-ground restoration activities.	Medium term	Low	Medium	Reserves Sustainability
3.6	Investigate ways to increase urban greening and ecological connectivity to improve biodiversity outcomes.	Continue to implement and improve the street tree planting and revegetation programs.	Ongoing	High	High	Reserves Sustainability

Coneflower
(*Isopogon cuneatus*)



	Action	How	Timeframe	Priority	Funding	Responsibility
3.7	Continue to enforce and monitor environmental lease conditions to ensure biodiversity is managed and retained on leased City land.	During a lease inspection, it is confirmed that the tenant is adhering to the environmental conditions of the lease.	Ongoing	Medium	Low	Leasing
3.8	Encourage cooperative management programs to manage risks to biodiversity.	Participate in working groups with multiple stakeholders across agencies for a coordinated approach to issues that affect biodiversity (weeds, feral animal control, post-burn management).	Medium term	Medium	Medium	Reserves Emergency Services
3.9	Review the priorities of reserve management to target management and restoration where biodiversity benefit and community benefit are greatest.	Long term strategic planning of reserves. Publish how reserves are prioritised.	Long term	High	Low	Reserves
3.10	Continue to collaborate with Department of Fire and Emergency Services (DFES) and external agencies to undertake innovative and ecological burning trials and continue to map fire history.	Recognise that altered vegetation condition and fuel characteristics may limit the immediate application of cultural burning in some areas. Collaborate with DFES and relevant partners to improve ecological condition over time, enabling culturally informed fire practices where appropriate, and to trial adaptive and innovative burning approaches that reflect current landscape conditions and contemporary fire management objectives.	Ongoing	Medium	High	Emergency Services
3.11	Continue to maintain and implement environmental weed management plans and strengthen education and volunteer support.	Support and enhance the volunteer Bushcarer Group program.	Ongoing	High	High	Reserves
3.12	Consider ways in which to strategically facilitate offsets, including revegetation.	Develop an approach to identify, secure and manage City-owned land to support offset requirements for internal projects.	Medium term	Medium	Medium	Planning Reserves

Goal: Engage

Increase community involvement, partnerships and stewardship in biodiversity protection and management.

	Action	How	Timeframe	Priority	Funding	Responsibility
4.1	Implement a coordinated advocacy and awareness program promoting biodiversity values and ALBS objectives.	Develop a communication plan to make residents aware of how we are achieving biodiversity outcomes.	Short term	Low	Low	Reserves Sustainability Planning Communications
4.2	Advocate for a funding program to help support landowners of high biodiversity freehold land to protect and enhance biodiversity	Identify and advocate for incentive programs that assist landowners to protect and enhance biodiversity.	Short term	Low	Low	Planning Grants Reserves
4.3	Connect education facilities and community groups with opportunities for biodiversity education and on ground projects.	Regular updates to schools about opportunities. Disseminate information on relevant projects to the community as they arise.	Ongoing	Low	Low	Reserves Sustainability
4.4	Act on any recommendations or requirements from State agencies to manage biosecurity risks.	Education about current biosecurity threats.	Ongoing	Medium	Low	Reserves
4.5	Strengthen relationships with Traditional Custodians.	Reserves reference group with Wagyl Kaip.	Ongoing	High	Low	Reserves

	Action	How	Timeframe	Priority	Funding	Responsibility
4.6	Continue to support volunteer programs that support the management of biodiversity.	Support groups by providing tools, promoting their work, inviting others to join.	Ongoing	Medium	Low	Reserves
4.7	Explore and promote community biodiversity grant opportunities to support on-ground works, research and stewardship initiatives.	As potential grants are identified, these are passed on to the relevant teams (ie. Reserves) to disseminate to their contacts.	Ongoing	Medium	Low	Grants Reserves
4.8	Celebrate biodiversity achievements.	Citizenship Awards. Consider Environmental Award. Tidy Towns Sustainable Community Awards, volunteer celebration days.	Ongoing	Low	Low	Reserves Sustainability



Oblong Turtle
(*Chelodina oblonga*)



Local Biodiversity Strategy

Technical Report 2026–2036

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RECOGNITION OF TRADITIONAL CUSTODIANS

We wish to acknowledge the traditional custodians of the land that supports our amazing biodiversity, the Menang people of the Noongar Nation. They were the first to protect and manage our rich landscape. We respect their continuing culture and the contribution they make to this region.

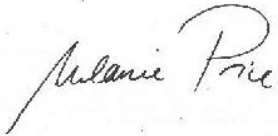
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Aurora Environmental has implemented a comprehensive range of quality control measures on all aspects of the company’s operation.

An internal quality review process has been applied to each project task we undertake. Each document is carefully reviewed and signed off by senior members of the consultancy team before being issued to the client.

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EXECUTIVE SUMMARY

Biodiversity in the south-west of Western Australia is globally significant, featuring threatened and priority flora, fauna and ecological communities. We have a diverse array of plants, animals, and habitats endemic to the region. Particularly high vegetation diversity is observed throughout the City of Albany (the City), which encompasses woodlands, wetland habitats, granite outcrops, and the coastal fringe.

Protection of native vegetation is crucial for maintaining biodiversity, wildlife habitats, scenic values, and minimising the risk of soil erosion and rising water tables. The natural environment serves as a key attraction for many residents and visitors to the district.

Agricultural development and urban growth have significantly impacted biodiversity, resulting in the clearing of nearly two-thirds of the native vegetation in the Albany municipality. Phytophthora dieback, weeds, pests, and climate change also threaten biodiversity. Continued reductions in the size, number, and functionality of vegetation remnants, waterways, and wetlands will increase pressure on ecosystems and the flora and fauna they support. Albany has significant areas of vegetation in small, scattered patches inland, and considerable native vegetation still exists on private property. As conservation reserves become less able to retain their values as isolated 'islands' in a cleared or urbanised landscape, a vegetation linkage or macro-corridor approach that connects conservation reserves with other remnant native vegetation on private land is an essential initiative for reducing biodiversity loss. The creation of a City of Albany Local Biodiversity Strategy (ALBS) provides a pathway for Albany Council and its stakeholder partners to address environmental threats, provide planning input on local biodiversity areas, and celebrate and enhance our natural and cultural heritage. The City has taken a significant step toward protecting biodiversity in its Local Planning Strategy (2019), which states:

Development will generally only be supported in cleared areas. Clearing of vegetation may be endorsed in liaison with relevant State Government Agencies only where its conservation value has been assessed as low.

Key facts¹:

- City of Albany – Area – 430,807 hectares (ha) with pre-European vegetation illustrated in **MAP 1**.
- Native vegetation remaining: 154,022 ha (35.8% of original extent) (**MAP 2**).
- Native Vegetation in the DBCA Conservation Estate: 41,731 ha.
- Native Vegetation in Crown Reserves with a purpose of 'Conservation': 22, 252 ha.
- Native vegetation in areas zoned or reserved 'Environmental Conservation' under the City of Albany Local Planning Scheme: 79,344 ha.

¹ Vegetation statistics vary slightly throughout the report due to the use of different source datasets and reporting scales. Unless otherwise stated, the figures presented here and in Section 5 are the primary statistics adopted for the Albany Local Biodiversity Strategy. DBCA Legislated Lands and Waters that intersect with Native Vegetation Extent, Crown Reserves that have "Conservation" in their purpose and intersect with Native Veg Extent. LPS2 Environmental Conservation Zone or Reserve that intersects with Native Veg Extent and DBCA Conservation Covenants that intersect with Native Veg Extent. Conservation figures are not additive as some areas may be subject to multiple protection mechanisms.

- Native vegetation in areas protected by a conservation covenant: 1,860 ha.
- Area with some level of protection for Conservation: 18% of the original vegetation extent or 51.5% of the remaining vegetation extent (**MAP 3**).
- Native vegetation zoned or reserved for environmental conservation under Local Planning Scheme 2 (**MAP 4**).
- City of Albany freehold land (**MAP 5**).
- Poorly represented vegetation types – Pre-European vegetation: less than 30% of original extent remaining (**MAP 6**).
- Albany Regional Vegetation Survey (**MAP 7**).
- Vegetation condition for Albany Regional Vegetation Survey area, 2010 (**MAP 8**).
- Scoring of LNA in Mapping Toolkit.
- Local Natural Areas (**MAP 9**).

Actions developed by the City of Albany are included in a standalone Action Plan.

This technical report outlines the process and methodology used to formulate the City of Albany Local Biodiversity Strategy, which is presented in a standalone document (City of Albany and Aurora Environmental, 2026).

1 INTRODUCTION

1.1 ALBANY AND BIODIVERSITY

Albany, located in the south-western corner of Australia, is part of one of 36 globally recognised biodiversity hotspots (Critical Ecosystem Partnership Fund, 2025; Figure 1). To meet the criteria, an area must have at least 1,500 vascular plants as endemics² — a high percentage of plant life found nowhere else on the planet. A hotspot, in other words, is unique and irreplaceable. Unfortunately, biodiversity hotspots are often threatened by the clearing of native vegetation, the disruption of ecological processes and Climate Change.

FIGURE 1: SOUTH-WEST AUSTRALIA BIODIVERSITY HOTSPOT



Source: Critical Ecosystem Partnership Fund <https://www.cepf.net/our-work/biodiversity-hotspots/southwest-australia>

For millions of years, south-west Australia was cut off from the rest of the continent by vast central deserts, leading to significant plant endemism. The forests, woodlands, shrublands, and heaths are home to a wide variety of unique and specialised animal species. Today, only 30% of south-west Australia's original vegetation remains intact, due in part to agricultural expansion, mining, and urban development.

² Critical Ecosystem Partnership Fund (2025) <https://www.conservation.org/priorities/biodiversity-hotspots>

The City is a key area in the south-west biodiversity hotspot because it marks the transition of three bioregions: the Warren, Southern Jarrah Forest, and Fitzgerald (Figure 2).

FIGURE 2: BIOREGIONS



Key information for the City of Albany includes:

Key facts³:

- City of Albany – Area – 430,807 hectares (ha) with pre-European vegetation illustrated in **MAP 1**.
- Native vegetation remaining⁴: 154,022 ha (35.8 % of original extent) (**MAP 2**).
- Native Vegetation in the DBCA Conservation Estate: 41,731 ha.
- Native Vegetation in Crown Reserves with a purpose of 'Conservation': 22, 252 ha.
- Native vegetation in areas zoned or reserved 'Environmental Conservation' under the City of Albany Local Planning Scheme: 79,344 ha.
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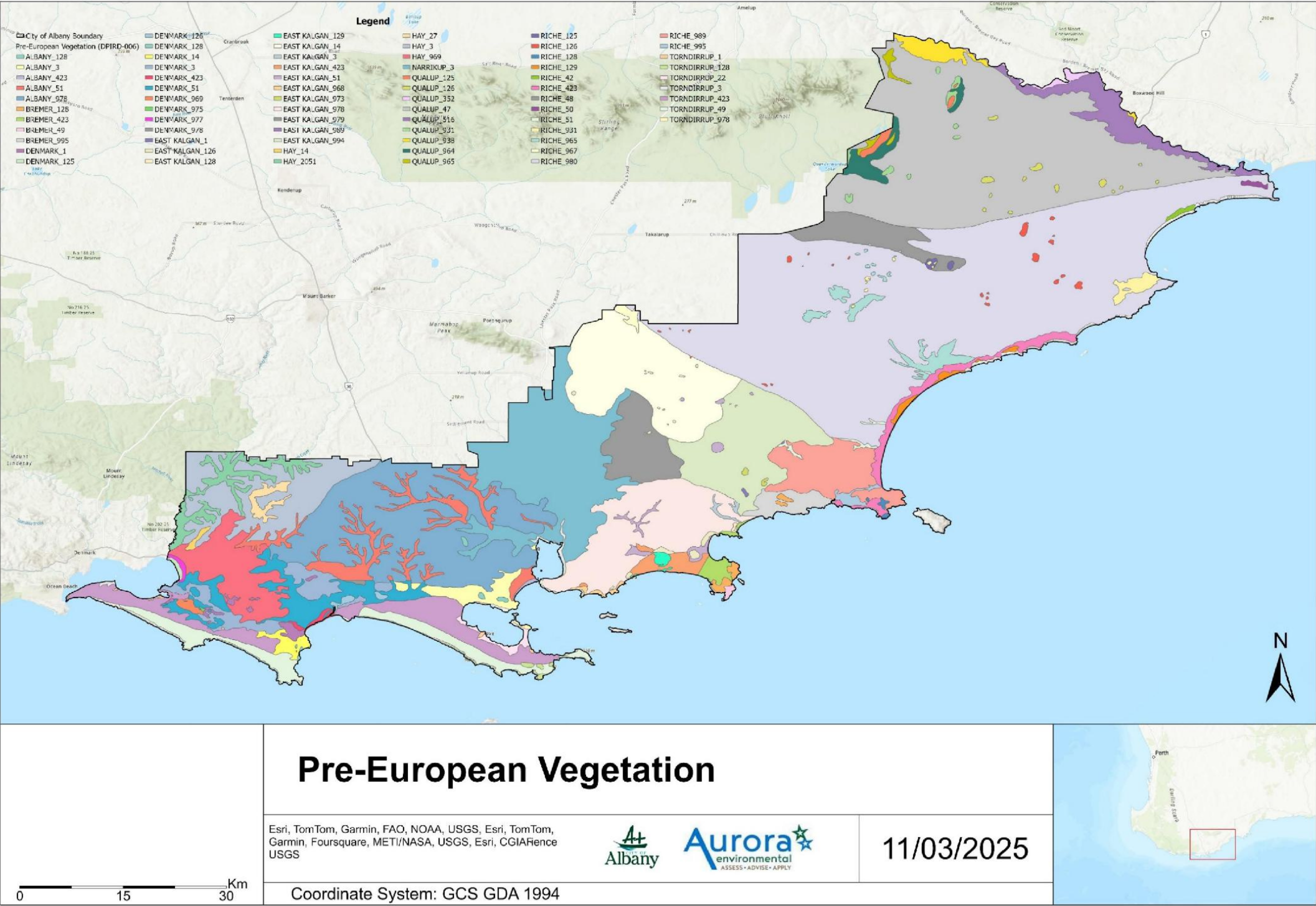
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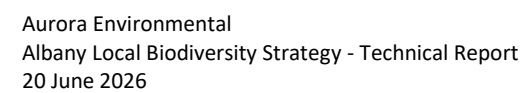
⁴ Based on Pre-European Vegetation Dataset (Department of Primary Industries and Regional Development-006)

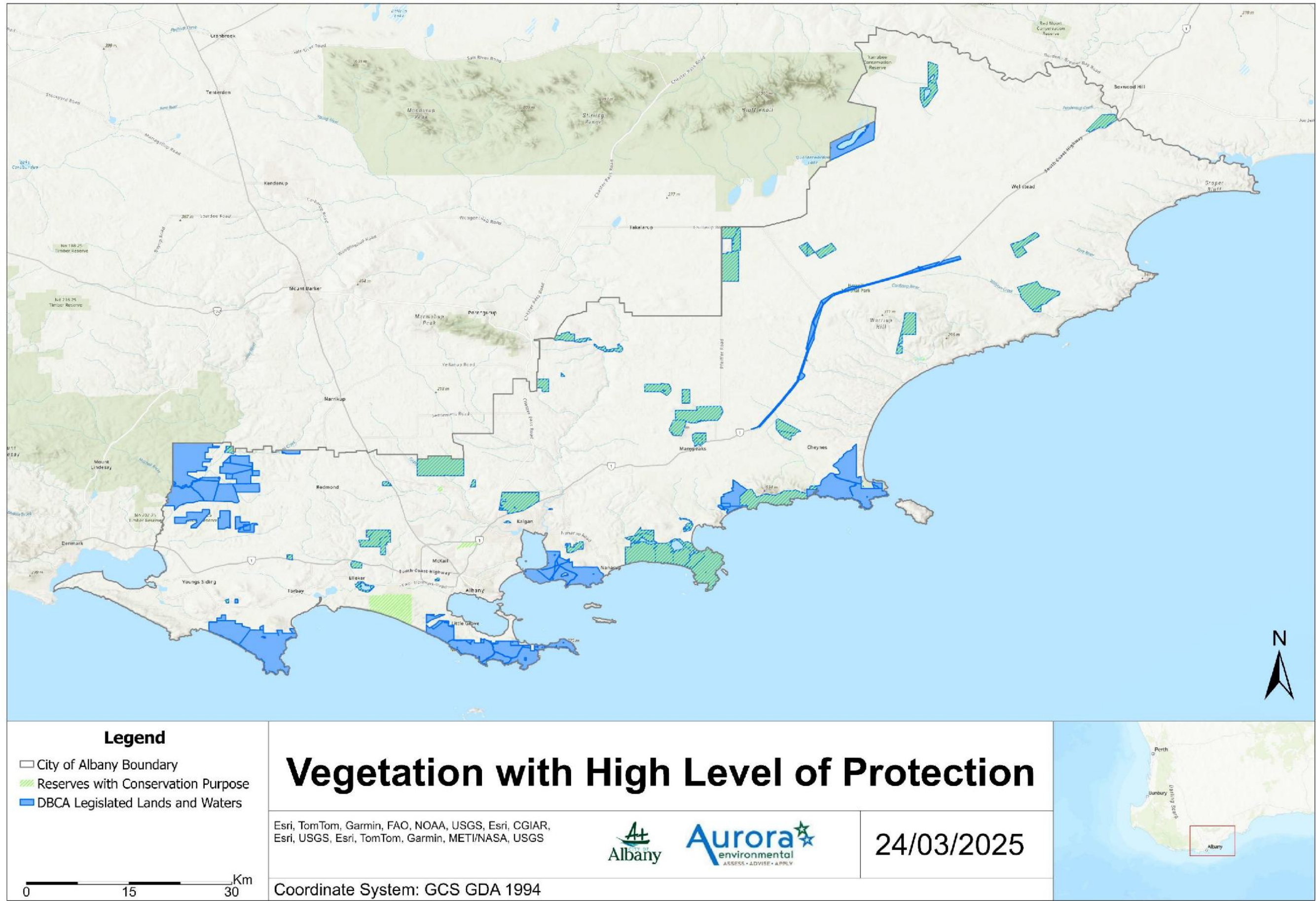
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- Albany Regional Vegetation Survey (**MAP 7**).
- Vegetation condition for Albany Regional Vegetation Survey area, 2010 (**MAP 8**).
- Scoring of LNA in Mapping Toolkit.
- Local Natural Areas (**MAP 9**).

The National Parks and Nature Reserves within the City include:

- [Bakers Junction Nature Reserve](#)
- [Bald Island Nature Reserve](#)
- [Gull Rock National Park](#)
- [Mill Brook Nature Reserve](#)
- [North](#) and [South](#) Sister Nature Reserves
- [Tinkelelup Nature Reserve](#)
- [Torndirrup National Park](#)







- [Two Peoples Bay Nature Reserve](#)
- [Waychinicup National Park](#)
- [West Cape Howe National Park](#)

1.2 WHY IS BIODIVERSITY IMPORTANT?

Biodiversity underpins all life on Earth. Without the complex interactions between plants, animals, and their environment, there would be no air to breathe, no food to eat, and no water to drink. Countless discoveries are yet to be made about the web that constitutes our lives, livelihoods, medicine, culture, and natural beauty.

Humans depend on nature for a wide range of ecosystem services, such as clean air and water, pollination, and food. Generally, the more biodiverse an ecosystem is, the greater its stability, productivity, and resilience, particularly in the face of threats such as climate change, pests, and diseases (Barraclough et al., 2023). Moreover, animal, plant, and microbial diversity are essential sources of medicinal compounds and nutritious food.

Scientific research (Australian Institute of Health and Welfare, 2022) supports the benefits of investing in environmental protection, including improved community health and wellbeing, protection of cultural identity, economic benefits, mitigation of climate impacts, reduced disease burden, and enhanced resilience. It will also enable future research opportunities.

The ability to deliver products through agriculture, forestry, tourism, or product development is often taken for granted. It relies on the continued provision of ecosystem services that sustain the natural landscapes where these products are produced (Commonwealth of Australia, 2020).

Assigning a dollar value to biodiversity can help make environmental concerns more relevant to decision-makers and encourage conservation efforts. While it provides an economic argument for protection by quantifying the value of ecosystem services, such as clean air and water, this method may overlook the intangible, cultural, and intrinsic values of nature, and it faces practical challenges in accurately calculating ecological and economic value.

Managing natural resources creates a range of jobs, providing significant opportunities for Aboriginal people in both knowledge-sharing and direct on-the-ground management roles. Noongar knowledge of traditional land management practices has the potential to help conserve biodiversity in the south-west of Western Australia. It is increasingly valued by programs such as the Department of Biodiversity, Conservation and Attractions (DBCA) Aboriginal Ranger Program.

Growing evidence (New Scientist, 2021) shows that accessible and diverse green spaces offer greater restorative benefits for human health and well-being than those that can be realised in simplified natural environments, such as landscaped parks with a limited number of plant species.

Having a clear plan for local biodiversity conservation will help the City meet community expectations and create opportunities to protect the diverse ecosystem services that support community well-being, economic prosperity, and sustainability.

The strategy also directs the City to ensure that actions complement its role in supporting the entire community's connection to country and sense of place.

The ALBS is a detailed outline of how the Albany Council can conserve and protect biodiversity within its area of influence.

1.3 BIODIVERSITY PLANNING FRAMEWORK

This is the biodiversity planning and protection framework for this Strategy (Figure 3):

- The Values of the community form the foundation upon which we conduct this work; they represent the fundamental motivation for our decisions.
- The Vision – the future you want to create.
- The Mission is the purpose underpinning the Strategy.
- A Strategy is a set of decisions aimed at achieving short- to mid-term goals.
- A Strategy is implemented by breaking it down into specific Actions.
- Actions must be specific, measurable, achievable, relevant and time-bound (SMART).

FIGURE 3: VALUES, VISION, MISSION, OBJECTIVES AND ACTIONS

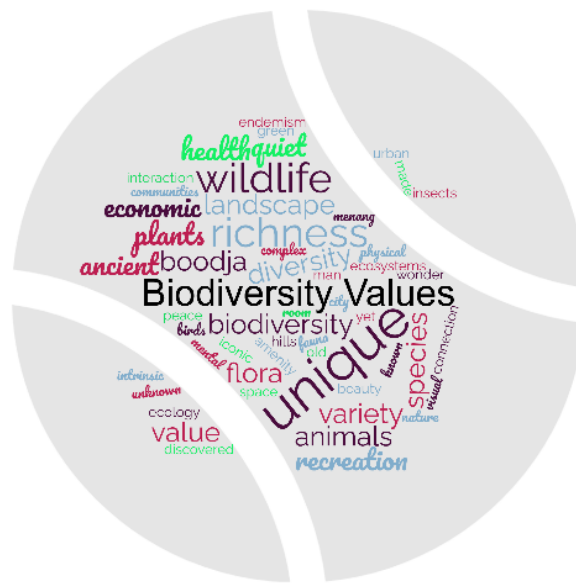


Source: <https://painless.software/vision-mission-values-strategy-actions>

1.4 VALUES

The Albany community has told Council that it values biodiversity and the richness it provides to our lives, culture, mental well-being, and economy. Some key words relating to community values identified during a stakeholder workshop are provided in Figure 4.

FIGURE 4: VALUES OF BIODIVERSITY



Source: Albany Local Biodiversity Strategy - Stakeholder Workshop 1, 29 August 2024.

1.5 VISION

Biodiversity stakeholders have informed the Council that they share the following vision:

- “Kinjarling – Albany, Caring for Country — where nature and the community can thrive and adapt.”

1.6 MISSION

The Albany Council:

- Encourages and empowers landowners to retain, manage, and enhance local biodiversity on their land, contributing to the numerous benefits that native plants, animals, and vegetation provide to the community.
- Has a clear understanding of biodiversity in the municipality and adopts a framework to enable the protection and management of local biodiversity.
- Implements a target to retain, protect, and manage a representative network of local natural areas (LNA) with community input, ensuring these areas are healthy, connected, and resilient in the future.

1.7 PRINCIPLES OF BIODIVERSITY PROTECTION

Principles of biodiversity protection have been developed by the Western Australian Local Government Association (WALGA) and others to guide the preparation and implementation of local biodiversity strategies:

1. Each ecological community must retain at least 30% of its pre-European extent to prevent an exponential loss of species and failures in ecosystem processes.
2. Protect regionally and locally significant natural areas.
3. Biodiversity is best conserved in situ – protect what remains before revegetating.

4. Regeneration takes precedence over revegetation.
5. Prioritise the protection and management of natural areas with the highest biodiversity value.
6. Encourage community involvement in biodiversity conservation.
7. Biodiversity values must be given full consideration in a transparent decision-making process.
8. Site-specific field surveys are essential for understanding biodiversity value.
9. Conservation of natural areas is a legitimate land use.

The City also acknowledges that community input is a key principle of biodiversity protection. Landowners, volunteers, and organisations are supported in their efforts to conserve and celebrate biodiversity in 'Local Natural Areas' (LNA), including rural and urban habitats.

During the stakeholder engagement process, the community defined LNA in Workshop 1 as "areas with value to natural systems across all land tenures, including non-vegetated areas with value for ecosystem processes."

The City values stakeholder partnerships to:

- Achieve biodiversity protection across all land types;
- Enhance connectivity;
- Understand habitat requirements;
- Increase biodiversity in urban habitats;
- Support knowledge through citizen science;
- Reduce threats such as disease and pests; and
- Implement fire regimes that enhance biodiversity.

1.8 GOALS

The ALBS focuses on long-term goals to protect, retain, and manage biodiversity within the City and to strengthen community engagement around its importance. The goal-setting process has been informed by the remaining LNA within the City and by the extent of vegetation types compared to pre-European levels.

The State Government acknowledges that 30% representation of the original extent of each vegetation type is the threshold level below which species loss appears to accelerate exponentially at an ecosystem level, and 10% representation of the original extent of each vegetation type indicates 'endangered' status (EPA, 2000).

Goals for this Local Biodiversity Strategy are:

Goal 1: Retain and protect

Retain and protect natural areas, with consideration of biodiversity criteria and ecological representation, on City-managed land and through planning and development processes on private land.

Goal 2: Learn.

Improve understanding of biodiversity values, threats and opportunities by building knowledge, research and partnerships.

Goal 3: Manage and enhance

Improve ecological condition, increase connectivity and reduce threats across natural areas through coordinated management and restoration.

Goal 4: Engage

Increase community involvement, partnerships and stewardship in biodiversity protection and management.

To achieve these goals, governance, reporting and monitoring are essential to ensure accountability, continuous improvement, integration with planning and budgeting processes in accordance with a monitoring and evaluation framework.

1.9 OBJECTIVES

The biodiversity conservation objectives stem from the national targets for biodiversity conservation outlined in The National Objectives and Targets for Biodiversity Conservation 2001 – 2005, which aim to:

- Prevent the clearing of ecological communities that have less than 30% of their original extent remaining;
- Restore ecological communities with less than 10% of their original extent left; and
- Safeguard threatened species and ecological communities.

Retention and Protection

- Protect all LNA as far as reasonably practicable;
- Preserve and enhance poorly represented vegetation associations that remain within the City by assisting landowners and utilising planning systems;
- Boost formal protection of poorly represented vegetation types and areas containing threatened and priority flora, fauna, and communities;
- Reduce the occurrence of unlawful and incremental clearing to maintain biodiversity values; and
- Increase native vegetation coverage in urban areas by planting suitable native and region-specific species.

Management

- Significantly improve internal planning and assessment processes to include the proactive consideration of biodiversity values during assessment of development proposals;
- Inclusion of multi-criteria analysis results in the City planning and assessment process; and
- Increase knowledge of vegetation quality and condition across the City to ensure retention of good or better quality vegetation as far as reasonably practicable.

Engagement

- Engage with organisations, community groups, and the general public about local biodiversity values.

- Foster broad environmental awareness across all levels of the community to support environmental and educational initiatives.
- Promote citizen science projects that enhance our knowledge base and involve stakeholders.

1.10 KEY FEATURES OF A LOCAL BIODIVERSITY STRATEGY

Key features of the ALBS include:

- Focus on LNA, including biodiversity on public and private lands.
- Objectives and targets are based on spatial analysis, consistent endorsed criteria, and considered in the regional context.
- A natural resource mapping tool with areas ranked by biodiversity values.
- An action plan that integrates biodiversity considerations into all areas of Local Government functions.
- Preparation in consultation with relevant stakeholders and the community, proposed to be endorsed by Council.

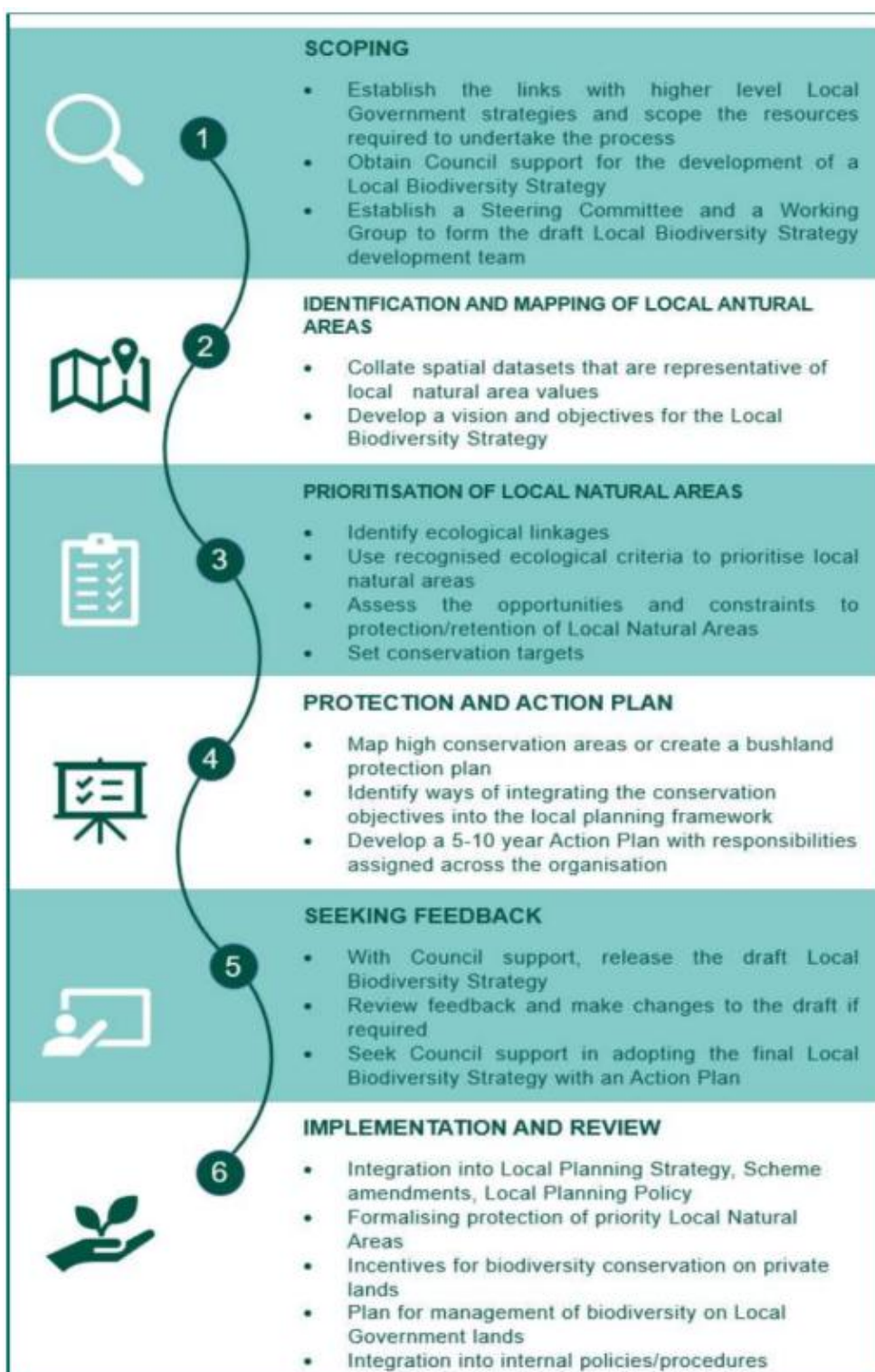
1.11 WHAT CAN A BIODIVERSITY STRATEGY DO?

A local biodiversity strategy:

- Identifies LNA, the biodiversity they support, and their conservation significance and priorities;
- Considers areas with value to natural systems across all land tenures (e.g., crown land, unallocated crown land, road reserves, and surrounding regional assets);
- Assesses local opportunities and constraints for protecting natural areas; and
- Identifies ways to achieve local biodiversity conservation objectives and targets.

The biodiversity strategy process is illustrated in Figure 5.

FIGURE 5: BIODIVERSITY STRATEGY PROCESS



Source: WALGA, 2023

1.12 WHAT CAN A BIODIVERSITY STRATEGY NOT DO?

A biodiversity strategy may not.⁵:

- **Resonate with all people:** The strategy may not connect with people in urban or rural environments.
- **Improve health and resilience:** The strategy may fall short of improving the health and resilience of marine and aquatic environments.
- **Balance interests:** The strategy may not meet the short-term interests of all community members.
- **Influence activities:** This strategy may not be effective in influencing biodiversity conservation activities.
- **Coordinate implementation:** The strategy implementation plan may be difficult to implement unless it is supported at every level of government and by the community.
- **Historic decisions:** The strategy may have a limited ability to change past decisions.
- **Commitment to implementation:** A strategy alone cannot drive change unless there is the will to deliver practical, on-the-ground outcomes.

A biodiversity strategy can't do everything, but it can help protect biodiversity by:

- **Outlining overarching goals and objectives:** Sometimes we need to articulate goals and objectives to get concepts heard by the community.
- **Highlighting the importance of maintaining ecosystems:** Protecting biodiversity is most effective when ecosystems are healthy and functioning.
- **Using science:** Science can help inform management and mitigate threats.
- **Involving many sectors:** Collaboration and engagement from all sectors, public and private, is essential.
- **Adapting management:** Adaptive management includes assessing risk, measuring outcomes, and reviewing approaches.

⁵ Commonwealth of Australia (2016) Adapted from: Report on the Review of the first five years of Australia's Biodiversity Conservation Strategy 2010–2030. <https://www.dcceew.gov.au/sites/default/files/documents/bio-cons-strategy-review-report.pdf>

2 STAKEHOLDER ENGAGEMENT

The City recognises the importance of stakeholder involvement and wants to ensure that specialists and other key stakeholders play a role in developing the Strategy. Key stakeholders have included:

Albany Community Environment Centre	Friends of Yakamia Forest
Gondwana Link	Department of Biodiversity, Conservation and Attractions
Wilson Inlet Catchment Committee	Torbay Catchment Group
Oyster Harbour Catchment Group	Department of Water and Environmental Regulation
UWA	South Coast Natural Resource Management Inc.
Department of Planning, Lands and Heritage	City staff
Birdlife Australia and Albany Bird Group	
Interested community members	

To date, engagement has included a survey, two workshops, and the provision of a mapping tool to show biodiversity values across the municipality.

Appendix A includes an analysis of the survey. TABLE 1 summarises the survey outcomes. The Workshop outcomes are included in TABLE 2 and Appendix B.

TABLE 1: OUTCOMES OF BIODIVERSITY SURVEY

SURVEY EFFORT	• The high number of responses received (693) and the effort taken to complete the survey signify that Biodiversity and vegetation in urban areas are essential community issues. • Responses received from 42 localities within the City, with 84% stating that they lived in urban Albany.
BIODIVERSITY CONSERVATION	• 93% of respondents feel that biodiversity conservation in the City is Important to Very Important. • There was a strong desire amongst respondents for better protection of native bushland within the municipality.
BIODIVERSITY LOSS	• 96% of respondents are concerned about biodiversity loss within the City. • 56.7% of respondents believe biodiversity is declining or declining significantly in the City. • The highest perceived threats by respondents were: ○ Clearing for land subdivision; ○ Non-native animals (feral cats, foxes, rabbits); ○ Weeds; ○ Dieback; ○ Tree canopy loss; and

BIODIVERSITY VALUES	○ Climate change impacts. ● Uncontrolled pet cats were also a concern for multiple respondents in the open-ended response.
	● The highest ranked values for biodiversity were: ○ To preserve the biodiversity of life and ecosystem processes; ○ Living close to nature; and ○ The role biodiversity plays in mitigating climate change. ● Respondents recognise the value of native vegetation for preserving and enhancing corridors for wildlife and protecting plants, animals and other organisms. ● Respondents value the location of native vegetation for enhancing biodiversity values.
ACTIONS BY THE CITY OF ALBANY	● Strong support for more action by the City to protect biodiversity. ● In general, there was slightly higher support for direct actions, such as managing weeds and pests and somewhat less support for changes to policy and community education. The exception was for the Council to consider nature and biodiversity in all decision-making. A total of 85% of respondents rated this action significant, making it the highest-ranked action. ● Concerns included: ○ The Council would take away the rights of property owners to manage vegetation on their private property; and ○ Biodiversity values would take precedence over bushfire management and safety.

TABLE 2: OUTCOMES OF WORKSHOPS

OUTCOMES	WHAT THE STAKEHOLDERS SAID:
Stakeholders from Workshop 1 said:	● The City has a vital role as an advocate and facilitator of collaboration. ● The City can form clear partnerships with others, including: ○ Gondwana Link; ○ South Coast Natural Resource Management (NRM); ○ Green Skills; ○ Oyster Harbour Catchment Group; ○ Torbay Catchment Group; ○ Friends' groups; ○ Community members; and ○ Educational institutions

OUTCOMES	WHAT THE STAKEHOLDERS SAID:
	• Educational role, e.g. urban backyards contribute to biodiversity. • The City needs to make the community more aware of its efforts by reporting publicly. • How else can the City engage with interested people? • Many groups and individuals are interested in weed management – Review weed strategy? • Review of other City environmental plans with biodiversity protection as a key role.
During Workshop 2 (5 December 2024), participants identified the following opportunities for biodiversity preservation and protection:	Opportunities • City of Albany area: 430,807 ha • Native vegetation remaining (pre-European): 154,022 ha or 35.8% • Work with State and Commonwealth controls on clearing and environmental impacts • Reviewing and consolidating City environmental strategies and plans for threat mitigation (e.g., weed strategy, reserve management) • Support of volunteers • Forming partnerships and collaborations • Protecting and managing high-value and vulnerable areas • Increasing resilience to threats at the landscape level and valuing environmental services • Education and awareness raising • Supporting initiatives and businesses that propose sustainable development • Carbon sequestration and biodiversity projects • Working with traditional custodians • Offsets • Dual management with traditional custodians and rangers (leases, resourcing) • Appropriate conservation purpose of reserves • Incentives to protect biodiversity (carrot) • Leverage the knowledge of the presence of threatened species for funding • Stronger legislation for protection (stick) and proper implementation of current rules • Partnerships with other organisations (University of WA, Centre of Excellence in Natural Resource Management, South Coast Natural Resource Management Inc., catchment groups) • Resourcing priorities • Unconstructed road reserves as corridors

OUTCOMES	WHAT THE STAKEHOLDERS SAID:
Constraints identified included:	• Land clearing, degradation and fragmentation • Resources (personnel, funding) • Competing objectives (growth of Albany population, fire risk regulations, approved development, minor clearing) • Threats (weeds, disease, pests) • Climate change (poorly known interactions and outcomes) • Gaps in knowledge, including: ○ Impacts of climate change ○ Overarching impacts ○ How to build resilience • Threatened species on private land or unsurveyed areas • What are the keys to adaptation at the landscape scale • Use of non-native habitat (blue gum plantations, pines, weeds, drains) • Use of road reserves
Mechanisms for Protection include:	• Local Planning Strategy • Local Planning Scheme • Input into planning (Structure Plans, Development Applications) • Input into the clearing application decisions • Purpose of Crown Land • Management of Crown Land • Offsets (City Freehold Land) • Education - awareness raising • Engagement with stakeholders • Assistance for landowners (mulcher and tip pass for weeds)
Other discussion:	Asked by City of Albany Councillor to stakeholders present: What do partners need from the City, the Department of Water and Environmental Regulation (DWER), DBCA? • Funding, information, coordination, support • Nature Positive – How to move beyond concepts of ‘no net loss’ into positive territory • Aim to improve the trend line of loss and degradation • Natural capital, ecological services – calculate these to show the importance of biodiversity to our everyday lives. Show how our investment in biodiversity pays off. • Can the City and partners create a tool for natural capital?

OUTCOMES	WHAT THE STAKEHOLDERS SAID:
	• Rather than ‘connectivity’ – ‘ecological permeability’ – Nature link • Articulate relationships and social dynamics • Set targets for involvement and collaboration • Set revegetation targets. • Weed management needs a different approach to consider biodiversity enhancement • LNA – Natural (what can we protect, e.g. bushland, wetland, watercourse) vs Nature (what can we enhance, e.g. drain, road reserve).

3 BIODIVERSITY PROTECTION FRAMEWORK

3.1 INTERNATIONAL

Global Biodiversity Outlook

The Global Biodiversity Outlook (GBO) is the flagship publication of the Convention on Biological Diversity. It provides a periodic report summarising the latest data on biodiversity status and trends, drawing conclusions relevant to the further implementation of the Convention. The reports draw on various sources, including national reports, scientific literature, data from the Biodiversity Indicators Partnership, and supplementary studies.

The fifth GBO (GBO-5) presents an integrated overview of the world's achievements and shortcomings concerning previous global biodiversity targets (Aichi Biodiversity Targets (2010-2020)). It examines the causes of biodiversity and ecosystem change, explores the implications for people, and discusses policy options based on successful programs worldwide. The report also investigates the essential links between biodiversity and other global agendas, including the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change.

The Convention on Biological Diversity sets a target of managing 17% of each of the world's eight ecoregions as protected areas by 2020. Australia has upgraded its commitment to the 30 by 30 target (30% of land and marine areas protected by 2030) (Australian Government, 2026⁶).

National Reports to the Convention on Biological Diversity

In 2014, in Australia's Fifth National Report to the Convention on Biological Diversity, the Australian Government set a goal that by 2020, at least 17% of terrestrial and inland water, and 10% of coastal and marine areas, particularly those of special importance for biodiversity and ecosystem services, would be conserved through effectively and equitably managed, ecologically representative, and well-connected systems of protected areas and other effective area-based conservation measures, integrated into broader landscapes and seascapes.

A country profile for Australia (Convention on Biological Diversity, 2024) indicates that conservation efforts within Australia have strengthened since the last national report to the CBD. Despite this, the Australian State of the Environment 2021 report found that biodiversity is still in severe decline (Australian Government, 2021).

In November 2021, the United Nations Development Program (UNDP), the UNEP World Conservation Monitoring Centre (UNEP-WCMC), and the Secretariat for the Convention on Biological Diversity (SCBD) published a report entitled 'Creating a Nature Positive Future: The Contribution of Protected Areas and Other Effective Area-Based Conservation Measures'. This report defines nature positive as "actions that increase resilience of the planet and biodiversity, as well as societies, to create a paradigm shift to reduce the loss of nature, secure nature's contributions critical for humanity, and enhance sustainable socio-economic development."

Australia is a party to the China–Australia Migratory Bird Agreement (CAMBA) and the Japan–Australia Migratory Bird Agreement (JAMBA).

⁶ Australian Government (2026) Achieving 30 by 30. [Link](#)

3.2 AUSTRALIAN GOVERNMENT

National objectives and targets for biodiversity conservation were published in 2001 (Environment Australia 2001a⁷).

The priority actions are to:

- Protect and restore native vegetation and terrestrial ecosystems;
- Protect and restore freshwater ecosystems;
- Protect and restore marine and estuarine ecosystems;
- Control invasive species;
- Mitigate dryland salinity;
- Promote ecologically sustainable grazing;
- Minimise impacts of human-induced climate change on biodiversity;
- Maintain and record indigenous people's ethnobiological knowledge;
- Improve scientific knowledge and access to information; and
- Introduce institutional reform.

The national target is to implement clearing controls to prevent the loss of ecological communities to a level below 30% of pre-1750 levels. A level of 30% of the pre-clearing extent of an ecological community is considered the threshold below which species loss appears to accelerate exponentially at the ecosystem level. To achieve the national target, efforts focus on maintaining natural vegetation in situ (within and outside conservation reserves) and rehabilitating degraded areas with local native species to replace losses.

Legislation considered for biodiversity issues related to development includes:

- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act): Proposals likely to impact Matters of National Environmental Significance (MNES) are assessed at the Commonwealth level. The Environment Protection and Biodiversity Conservation Regulations 2000 support the EPBC Act and outline procedures for its implementation. Relevant matters of national environmental significance for biodiversity include Ramsar-listed wetlands of international importance, nationally threatened flora and fauna species and communities identified under the EPBC Act, and migratory species listed under the EPBC Act.
- The Nature Repair Act 2023 came into effect on 15 December 2023, establishing a framework for a world-first legislated, national, voluntary biodiversity market. The Nature Repair Market aims to incentivise actions to restore and protect the environment.

The policy framework for biodiversity encompasses the following:

- Australia's Strategy for Nature 2019 – 2030: This strategy establishes a national framework for government, non-government, and community action aimed at bolstering Australia's response to

⁷ Environment Australia (2001) National Objectives and Targets for Biodiversity Conservation.
<https://library.dbca.wa.gov.au/FullTextFiles/020395.pdf>

biodiversity decline and nurturing nature across various environments. It accommodates the differing priorities and practices throughout the country and reflects the diversity of our landscapes.

- In Australia, the Nature Positive Plan is a Commonwealth government initiative focused on reforming environmental laws to protect the country's unique environment.
- The goals include enhancing natural systems worldwide beyond 2020 by 2030, with ongoing recovery after that.
- The focus is on improving the health, abundance, diversity, and resilience of species, ecosystems, and natural processes.
- Proposed actions by the Commonwealth Government involve conserving ocean environments, protecting habitats, managing resources, and transforming the economy.

3.3 WESTERN AUSTRALIA

The Environmental Protection Authority (EPA) is the primary agency in Western Australia responsible for assessing environmental impacts. The EPA's broad objective regarding biodiversity is to maintain the abundance, diversity, geographic distribution, and productivity at both the species and ecosystem levels by avoiding or managing adverse impacts and enhancing knowledge.

Western Australia's state government has established a Native Vegetation Policy that guides the development of policies, practices, and systems to achieve the following outcomes:

- Outcome 1: Enable all sectors to contribute to a net gain in landscape-scale conservation and restoration.
- Outcome 2: Provide business certainty through regulatory clarity, efficiency, and coordination.
- Outcome 3: Establish a strong, accessible evidence base for policymaking, decision-making, and transparency.

Other legislation that requires consideration of biodiversity is included in TABLE 3.

TABLE 3: WESTERN AUSTRALIAN LEGISLATION - BIODIVERSITY

LEGISLATION/ REGULATION/ POLICY/ GUIDELINE	OBJECTIVES	ADMINISTERED BY
<i>Biodiversity Conservation Act 2016 (BC Act)</i>	The BC Act governs the management of threatened flora, fauna, and ecological communities. The Biodiversity Conservation Regulations 2018 support the BC Act and provide greater protection for biodiversity, particularly threatened species and threatened ecological communities.	DBCA
<i>Environmental Protection Act 1986 (EP Act)</i>	The EP Act provides environmental protection at the State level and outlines guidance on development that requires referral to the EPA for assessment.	EPA and DWER
<i>Environmental Protection (Clearing of Native</i>	These regulations support the EP Act and address matters related to clearing native vegetation, including definitions of native vegetation, fees, data	DWER

LEGISLATION/ REGULATION/ POLICY/ GUIDELINE	OBJECTIVES	ADMINISTERED BY
<i>Vegetation) Regulations 2004</i>	requirements, and circumstances where clearing is exempt from permit requirements.	
Environmental Protection (Environmentally Sensitive Areas) Notice 2005	Environmentally sensitive areas (ESAs) are classes or areas of native vegetation where the exemptions for clearing vegetation under the <i>Environmental Protection (Clearing of Native Vegetation) Regulations 2004</i> do not apply. In Albany, includes: 1. World Heritage properties; 2. Areas included on the Register of the National Estate; 3. Defined wetlands and within 50 metres (m) of the wetland; 4. Threatened flora and vegetation within 50 m; and 5. Threatened Ecological Communities.	DWER
<i>Planning and Development Act 2005 (PD Act)</i>	The PD Act is the primary legislation setting out controls for planning across Western Australia and considers biodiversity as a planning consideration. The PD Act Schedule 7 identifies the conservation of the natural environment, including the maintenance of ecological processes and genetic diversity, as a matter that can be addressed through local and regional planning schemes, state planning policy, and conditions of subdivision.	Western Australian Planning Commission (WAPC) and Department of Planning, Lands and Heritage (DPLH)
<i>Planning and Development (Local Planning Schemes) Regulations 2015</i> (allows for designation of reserves for 'Environmental Conservation' with objectives.	To identify areas with biodiversity and conservation value, and to protect those areas from development and subdivision. To identify and protect areas of biodiversity conservation significance within National Parks and State and other conservation reserves.	WAPC and DPLH
<i>Planning and Development (Local Planning Schemes) Regulations 2015</i> (allows for designation of zones for 'Environmental Conservation' with objectives.	To identify land set aside for environmental conservation purposes. To provide for the preservation, maintenance, restoration or sustainable use of the natural environment.	DPLH and Local Government
<i>Conservation and Land Management Act 1984 (CALM Act)</i>	The CALM Act includes provisions for establishing and managing national parks, nature reserves, conservation parks and marine parks in Western Australia.	DBCA

STATE PLANNING POLICIES

The Planning and Development Act gives effect to State Planning Policies, some of which are relevant to the protection and management of biodiversity in the City of Albany:

- State Planning Policy 2: Environment and Natural Resources Policy
- State Planning Policy 2.4: Basic Raw Materials
- State Planning Policy 2.5: Rural Planning
- State Planning Policy 2.6: State Coastal Planning
- State Planning Policy 2.7: Public Drinking Water Source
- Draft State Planning Policy 2.9: Planning for Water
- State Planning Policy 3: Urban Growth and Settlement
- State Planning Policy 3.4: Natural Hazards and Disasters
- State Planning Policy 3.7: Bushfire
- State Planning Policy 7: Design of the Built Environment

STATE OF THE ENVIRONMENT REPORTING

State of the Environment reporting has not been conducted since 2007. At that time, biodiversity was deemed 'of concern' and in decline, with insufficient knowledge about biodiversity across Western Australia. The issues affecting biodiversity were considered severe and worsening due to climate change, population growth and consumption, greenhouse gas emissions, introduced species, weeds, Phytophthora dieback, land salinisation, salinisation of inland waters, altered fire regimes, and the loss or degradation of native vegetation.

3.4 REGIONAL

The South Coast region of Western Australia features numerous regional environmental and biodiversity initiatives focused on natural resource management, conservation, and community capacity building. The region's recognition as a global biodiversity hotspot and its rich cultural and ecological significance drive these initiatives. Key organisations and initiatives include:

- South Coast Natural Resource Management Inc.: A community-based organisation focused on natural resource management, conservation, and building community capacity in the South Coast region, with projects related to threatened species, high-value landscapes, climate resilience, sustainable agricultural practices and natural capital initiatives.
- Gondwana Link: Concentrating on restoration to reconnect the western woodlands and forests in the south-west of Western Australia, with 16,000 hectares of land acquired, a total of 13,500 hectares of land restored to habitat, control of feral animals on private property, and engagement of stakeholders, including Indigenous custodians.
- Bush Heritage: Emphasising habitat restoration, feral animal control, fauna recovery, and reconnecting the landscape.
- Centre for Excellence in Natural Resource Management (CENRM): Including research in aquatic and fish ecology, social, cultural, and environmental studies, and terrestrial ecology.
- Green Skills: Building resilience in the community and environment.

4 CITY OF ALBANY

4.1 CULTURE

Albany is home to the Menang Noongar people. In 2016, the Western Australian parliament formally recognised that the Noongar people had been here ‘since time immemorial’. Western scientific methods have provided evidence that the Noongar people have lived in and maintained a profound cultural connection to south-western Australia for at least 45,000 years, and probably much longer. This makes the Noongar people part of the longest continuing culture on earth – the First Nations people of Australia.

The Noongar people lived here as ice ages came and went, sea levels rose and fell, and species and ecosystems evolved. They inhabited areas that are now deep ocean and demonstrated remarkable resilience and innovation in developing ways of living with boodja (country, land) throughout those eras.

Boodja is central to Noongar lore, culture, and identity. The different Noongar groups in the Great Southern and wider southwest – Menang, Goreng, Wirlomin, Wudjari, Kaneang, and Wiilman – possess origin stories for the country they have long inhabited, along with wisdom on how to thrive here now.

Since European settlement, people from around the world have come to call Albany home and appreciate the beauty and diversity of its natural landscape. When asked, most people will say they value the rich landscape, the variety of life, and the sense of community most.

4.2 CITY OF ALBANY – ROLE IN LEGISLATION AND POLICY FRAMEWORK

The City must work within the Commonwealth and State framework of legislation and policies, and has the following roles (Figure 6):

Regulator:

- Land use provisions;
- Development approvals; and
- Enforcement of local laws.

Proponent:

- Planner and manager of infrastructure projects.

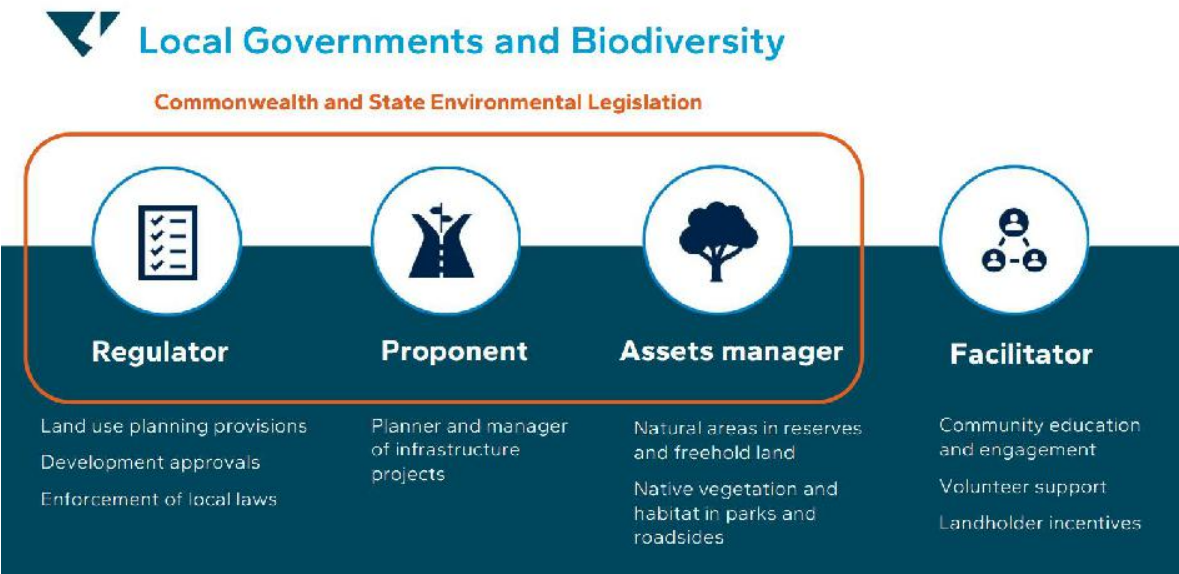
Assets Manager:

- Natural areas in reserves and freehold land; and
- Native vegetation and habitat in reserves, foreshores and roadsides.

Facilitator:

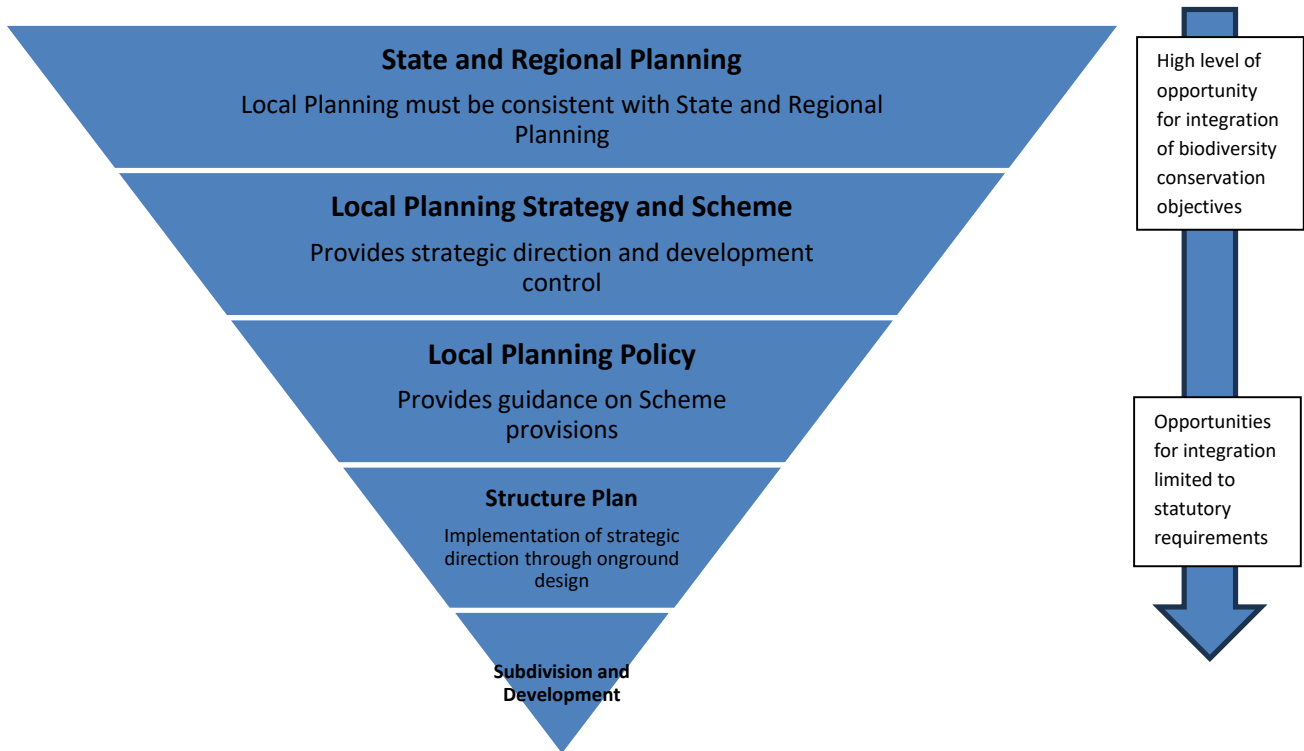
- Community education and engagement;
- Volunteer support; and
- Landholder incentives.

FIGURE 6: LOCAL GOVERNMENT ROLES



The City can consider biodiversity protection during the planning process, as illustrated in Figure 7. The earlier biodiversity issues are addressed, the greater the opportunities for their protection and enhancement.

FIGURE 7: BIODIVERSITY PROTECTION DECISION POINTS



Source: Adapted from WAPC, 2011

4.3 CITY OF ALBANY COUNCIL PLAN

Community surveys have identified biodiversity, environmental protection, and management as key priorities, which are reflected in the City's Council Plan (2026).

The Council adopted an outcome statement which describes the aspiration of where it would like to be: 'A city where our natural environment is valued and conserved, and climate resilience is built for future generations.'

Outcome:

'A city where our natural environment is valued and conserved, and climate resilience is built for future generations.'

Strategic Priorities:

- 2.1.1 Protection of our biodiversity and the natural environment.
- 2.1.3 Mitigate and adapt to long-term environmental challenges

Initiatives relevant to the Local Biodiversity Strategy:

- 2.1.1a Local Biodiversity Strategy – This strategy is currently under development, and will guide how we protect, connect and celebrate our unique local natural areas.

4.4 CITY OF ALBANY LOCAL PLANNING STRATEGY 2019 - VEGETATION AND BIODIVERSITY CONSERVATION

The City of Albany Local Planning Strategy (LP Strategy; 2019⁸) states that a key strategic direction is to:

'Integrate environmental and natural resource management with broader land use planning and decision-making'.

Actions

1. Investigate zones, reserves and special control areas proposed by *Planning and Development (Local Planning Schemes) Regulations 2015* to assist in protecting the City's biodiversity and conservation and amend the Local Planning Scheme accordingly.
2. Support the finalisation of the ALBS.
3. Identify and secure vegetation linkages (macro-corridors) through the use of statutory planning mechanisms, including Local Planning Scheme amendments, structure plans and subdivisions.
4. Maintain and enhance vegetation and trees in the built environment by:
 - Identifying trees within the City that should be protected and providing for their statutory protection under the Local Planning Scheme; and
 - Require the identification of trees to be protected under future Structure Plans, subdivision and development, particularly in planned open space areas and road reserves.

⁸ City of Albany Local Planning Strategy (2019) <https://www.wa.gov.au/system/files/2021-11/LST-Albany.pdf>

5. Develop land use planning incentives for the protection of remnant vegetation on private land, in collaboration with relevant State government agencies.
6. On completion of the ALBS, identify priority areas for conservation of vegetation, fauna conservation and identify critical areas requiring restoration.
7. On completion of the ALBS, incorporate recommendations and any further vegetation surveys into the local planning strategy, schemes and structure plans.
8. Development will generally only be supported in cleared areas. Clearing of native vegetation may be endorsed in liaison with relevant State Government agencies only where its conservation value has been assessed as low.

4.5 CITY OF ALBANY LOCAL PLANNING SCHEME NO. 2

The City of Albany Local Planning Scheme (LPS) No. 2 was gazetted on 27 February 2024 and includes provisions for the protection of biodiversity by:

- Setting development standards for all zones and reserves;
- Including a zone for 'Environmental Conservation';
- Introducing a reserve category of 'Environmental Conservation'; and
- Including provisions to protect natural features for designated areas (e.g. specific rural residential and special use areas).

LPS2 sets development standards for the protection of terrestrial fauna habitats, access, acid sulfate soils, building design, bushfire management, dams, dust control, vegetation clearing, fencing, landscaping, livestock grazing, revegetation, sewage disposal, waste management, and setbacks. Standards relating to terrestrial fauna habitat protection and land uses adjacent to conservation areas are summarised in TABLE 4.

TABLE 4: LPS 2, SCHEDULE 6 TABLE 13: GENERAL DEVELOPMENT STANDARDS

SUBJECT	CONDITIONS
Terrestrial Fauna Habitat Protection	1. To avoid or minimise any adverse impacts, directly or indirectly, on areas of high biodiversity or conservation value, including fauna habitat, development is to be located outside of these areas in suitable alternative locations, when considered at the structure planning, subdivision or development application stages. 2. Subject to (1), at the structure planning, subdivision or development application stages, where suitable alternative locations do not exist, the local government may require a fauna assessment/survey or a fauna habitat assessment to be undertaken, including of existing linkages within proximity to but external to the development site, to determine locations where development could occur on site, that minimises adverse impacts, directly or indirectly, on areas of high biodiversity or conservation value. 3. Following the outcomes of (2), the local government may require a habitat management plan to be prepared, which includes but is not limited to consideration of the following: a. Restoration, retention, and maintenance requirements for the management of identified areas of high biodiversity or conservation value, while ensuring other considerations are addressed, such as bushfire management. b. Improvement of habitat connectivity through the retention or re-establishment of corridors that safeguard and enhance linkages within and external to the

SUBJECT	CONDITIONS
Uses Adjacent to Conservation Areas	development site, with appropriate methods implemented to the specifications of the responsible state department/s. c. Identify mechanisms by which the requirements of the habitat management plan shall be implemented by the local government or responsible state department/s, including appropriate conditions of subdivision or development approval and/or the imposition of restrictive or conservation covenants. <i>Note: Terrestrial fauna includes vertebrates (birds, mammals including bats, reptiles, amphibians, and freshwater fish) and invertebrates (arachnids, crustaceans, insects, molluscs and worms).</i>
	1. In considering an application for development approval to develop premises adjoining a conservation area (i.e. 'Environmental Conservation' or 'Drainage / Waterway'), the local government shall consider the impacts of the proposal on the values of the conservation area. It may require one or more of the following measures: a. Specific site management through the preparation and implementation of an environmental management plan to address those identified impacts on the conservation area and recommend strategies, processes and practices to minimise any effects or conflicts; b. The imposition of a buffer/setback area between the uses to manage the impacts to the satisfaction of the local government in consultation with the relevant government authority; c. Restriction on the keeping of livestock; d. Improve habitat connectivity through the retention or re-establishment of corridors that safeguard and enhance linkages within and external to the development area, with appropriate methods implemented to the specifications of the responsible state department/s.

The 'Environmental Conservation' zone in LPS2 has the following objectives:

- To identify land set aside for environmental conservation purposes.
- To provide for the preservation, maintenance, restoration or sustainable use of the natural environment.
- To provide for residential uses adjoining significant environmentally sensitive areas such as coastal or conservation areas where there is a demonstrated commitment to protecting, enhancing and rehabilitating the site's flora, fauna and landscape qualities.

Areas currently zoned for 'Environmental Conservation' include:

- Eden Road, Nullaki;
- Rainbows End, Little Grove; and
- Lots 20 and 21 Torbay Road, Kronkup.

Areas zoned for 'Environmental Conservation' have requirements relating to setbacks from boundaries, building heights, building design and materials, fencing, access and building envelopes to reduce impacts on bushland and natural features. In addition, there is a clause relating to revegetation:

1. The local government may require revegetation on a site with local endemic species as a condition of development approval, for:
 - a. Enhancing a natural setting;

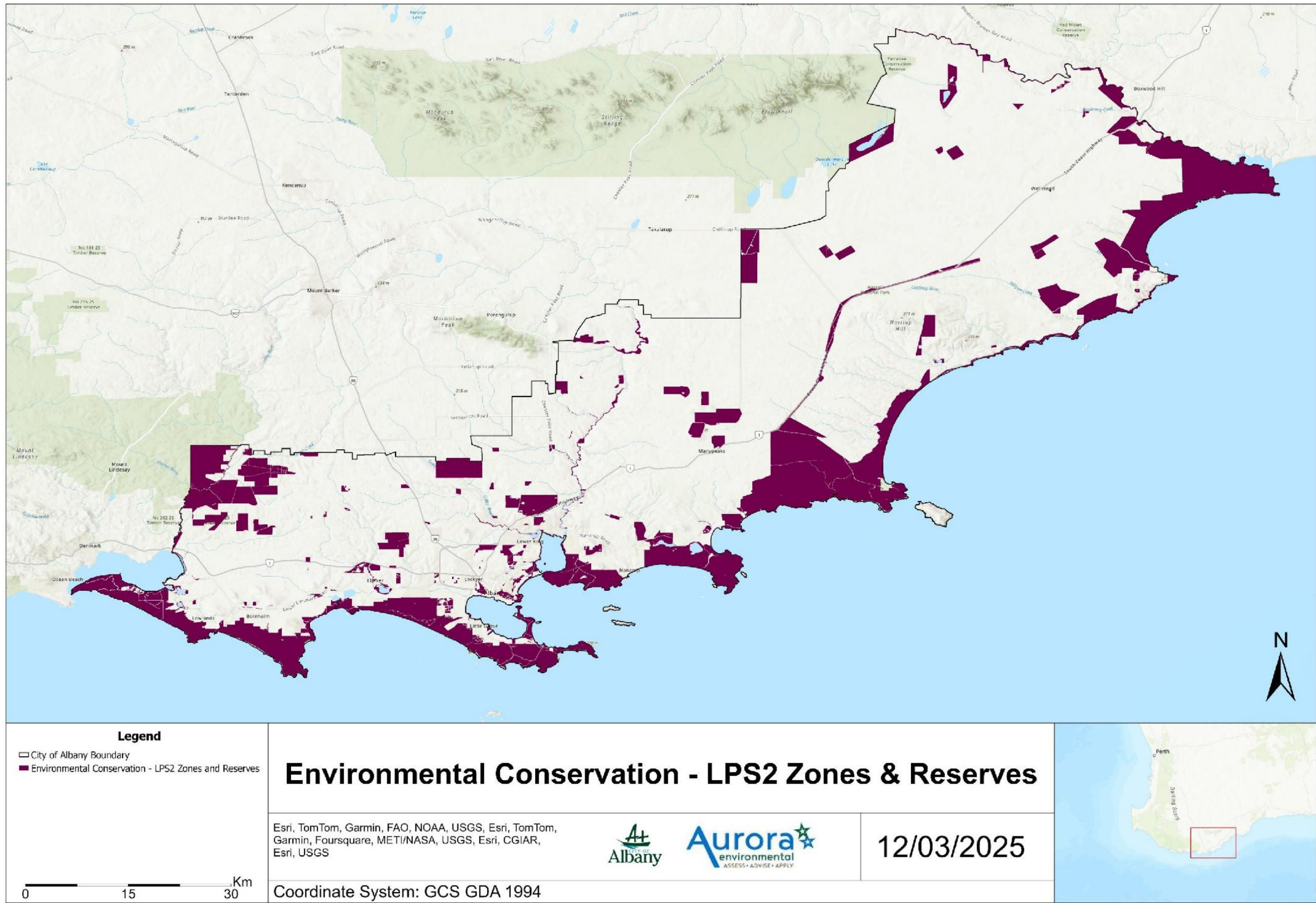
- b. Protecting a local habitat;
- c. Assisting to provide vegetated corridors to maintain fauna and flora linkages; or
- d. Assisting in the maintenance of a waterway or wetland.

In addition to zones, LPS2 also designates local reserves. In a local planning scheme, 'reserved' refers to a parcel of land that has been set aside for a defined purpose, such as a park, school, or community centre, and is therefore restricted from being developed for other uses as outlined in the planning scheme; essentially, it's land safeguarded for a specific community benefit and not available for general development. LPS2 has introduced a new reserve type, 'Environmental Conservation', the objective of which is:

- To identify areas with biodiversity and conservation value, and to protect those areas from development and subdivision.
- To identify and protect areas of biodiversity conservation significance within National Parks and State and other conservation reserves.

Native vegetation in 'Environmental Conservation' zones and reserves comprises 79,344⁹ ha across freehold land and Crown Reserves (**MAP 4**) in the City. The 'local reservation' designation under LPS2 differs from Crown Reserves and can be applied to any land.

⁹ Includes areas of the Conservation Estate and vested in the Conservation Commission of WA, Crown land with a purpose related to conservation and land zoned 'Conservation' under the City of Albany Local Planning Scheme No. 2.



4.6 LAND USE

As outlined in Sections 4.4 and 4.5 on land use planning, the City is guided by its Local Planning Strategy and Local Planning Scheme, which designate land uses and define permitted activities in specific areas. TABLE 5 shows the area of existing native vegetation by zone and local reserve designation. Approximately half of the vegetation is designated as 'Environmental Conservation' local reserve (51.51%). Vegetation in Rural and Priority Agriculture-zoned areas comprises 64,465.9 ha, representing 41.85% of the remaining vegetation. Vegetation should be promoted as a legitimate agricultural land use to support the ecological services these areas provide.

TABLE 5: CITY OF ALBANY LOCAL PLANNING SCHEME 2 - ZONES AND RESERVES – EXISTING VEGETATION

ZONE OR RESERVE DESIGNATION	TOTAL AREA OF VEGETATION (ha)	% OF CITY OF ALBANY VEGETATION
Environmental Conservation	79,343.80	51.51
Rural	48,656.80	31.59
Priority Agriculture	15,809.10	10.26
Infrastructure Services	4,645.90	3.02
Local Road	3,312.90	2.15
Primary Distributor Road	817.7	0.53
Rural Residential	808	0.52
Recreational	749.1	0.49
District Distributor Road	615.6	0.40
Drainage / Waterway	365.9	0.24
Urban Development	301.9	0.20
Rural Small Holdings	282.5	0.18
Residential	139.4	0.09
Rural Townsite	103.6	0.07
Special Use	96.3	0.06
Railways	93.1	0.06
Civic And Community	60.2	0.04
Government Services	60.2	0.04
Special Purpose	48	0.03
Strategic Infrastructure	46.3	0.03
Light Industry	46	0.03
Public Purposes	24	0.02
Education	22.5	0.01
General Industry	18.9	0.01

ZONE OR RESERVE DESIGNATION	TOTAL AREA OF VEGETATION (ha)	% OF CITY OF ALBANY VEGETATION
Heritage	17.8	0.01
Tourism	17.4	0.01
Cultural Facilities	13.3	0.01
Cemetery	12.8	0.01
Public Open Space	12.5	Less than 0.01
Industrial Development	5.3	Less than 0.01
Foreshore Reserve	4.7	Less than 0.01
Emergency Services	2.3	Less than 0.01
Major Road	1.3	Less than 0.01
Service Commercial	0.7	Less than 0.01
Social Care Facilities	0.4	Less than 0.01
Mixed Use	0.2	Less than 0.01
Neighbourhood Centre	0.2	Less than 0.01
Medical Services	0.1	Less than 0.01
Rural Enterprise	0.1	Less than 0.01
Public Purpose	Less than 0.1	Less than 0.01

Source: City of Albany LPS2 Zones and Reserves clipped to Current Vegetation Extent

4.7 LOCAL LAWS

The City of Albany local laws are made under the authority of the *Local Government Act 1995* to regulate various activities and include:

- *Animals Local Law 2020* (keeping of poultry and other animals);
- *Dog Local Law 2017*, which requires dogs over three months old to be microchipped and registered annually. Dogs must be on a maximum 2m leash in town areas and on a leash in designated Rural Leashing Areas, or off-leash but under control in other rural areas. Owners must ensure their property can confine their dogs and prevent them from becoming a nuisance, and may be required to obtain a permit to keep more than the standard two dogs.

Rangers are authorised to enforce these laws, which can result in fines or other actions.

The City complies with WA legislation, *the Cat Act 2011*, which requires cat sterilisation, registration, and microchipping, and limits the number of cats per household. Under current state law and the City of Albany's local laws, it is not illegal for cats to stray onto private property. City Rangers may trap cats only to identify the cat's owner and verify compliance with the *Cat Act 2011*.

The WA Government has recently updated legislation regarding the containment of cats, and Local Government Authorities will have the ability to introduce local laws controlling roaming cats¹⁰.

4.8 CITY OF ALBANY MANAGED LAND

There are approximately 443 Crown Reserve land parcels featuring native vegetation, managed by the City, covering 12,201.66 ha. These reserves serve various purposes, ranging from public open space and active sporting grounds to natural bushland used for passive recreation. Some of these reserves are isolated, while others are clustered together.

The most extensive grouping of City reserves covers 3,060 ha and includes Sandpatch, Muttonbird Beach, and Cosy Corner. The smaller reserves can be as small as 1 ha, with some serving only as drainage easements. The City also manages 1,338 ha of freehold land and 1,629 kilometres (km) of roads and associated verges.

The City officially oversees eight reserves for conservation purposes (TABLE 6), including Sandpatch Reserve, which also serves purposes related to the generation of power and water supply.

Many more reserves are managed for multiple uses. However, they generally serve purposes that are compatible with conservation. Some of the most significant of these include:

- Mount Clarence (Public Park);
- Mount Adelaide (Recreation and Parklands);
- Mount Melville (Public Park & Telecommunications);
- Lake Seppings (Parklands); and
- Mutton Bird (Common for Use of Settlers, Camping and Public Utility).

All reserves with vegetation that the City manages are designated as 'Environmental Conservation' under LPS2 (See section 4.5).

TABLE 6: CROWN RESERVES MANAGED BY THE CITY OF ALBANY – PURPOSE: CONSERVATION

RESERVE NO.	CLASS	NAME / LOCATION	CURRENT PURPOSE/S	AREA (ha)
22892	C	On Chester Pass Road and Menang Drive	Conservation of Flora	149.2
13773	C	Sandpatch	Conservation, Recreation, Water Supply and Wind and Wave Energy Power Generation	1,652.9
16367	C	Mullocullop Nature Reserve	Water Camping & Conservation of Flora & Fauna	57.1
21510	C	South Coast Highway and Rutherford Road	Gravel And Protection of Remnant Vegetation	194.7
24547	A	Cosy Corner West	Recreation And Bushland Management	52.3

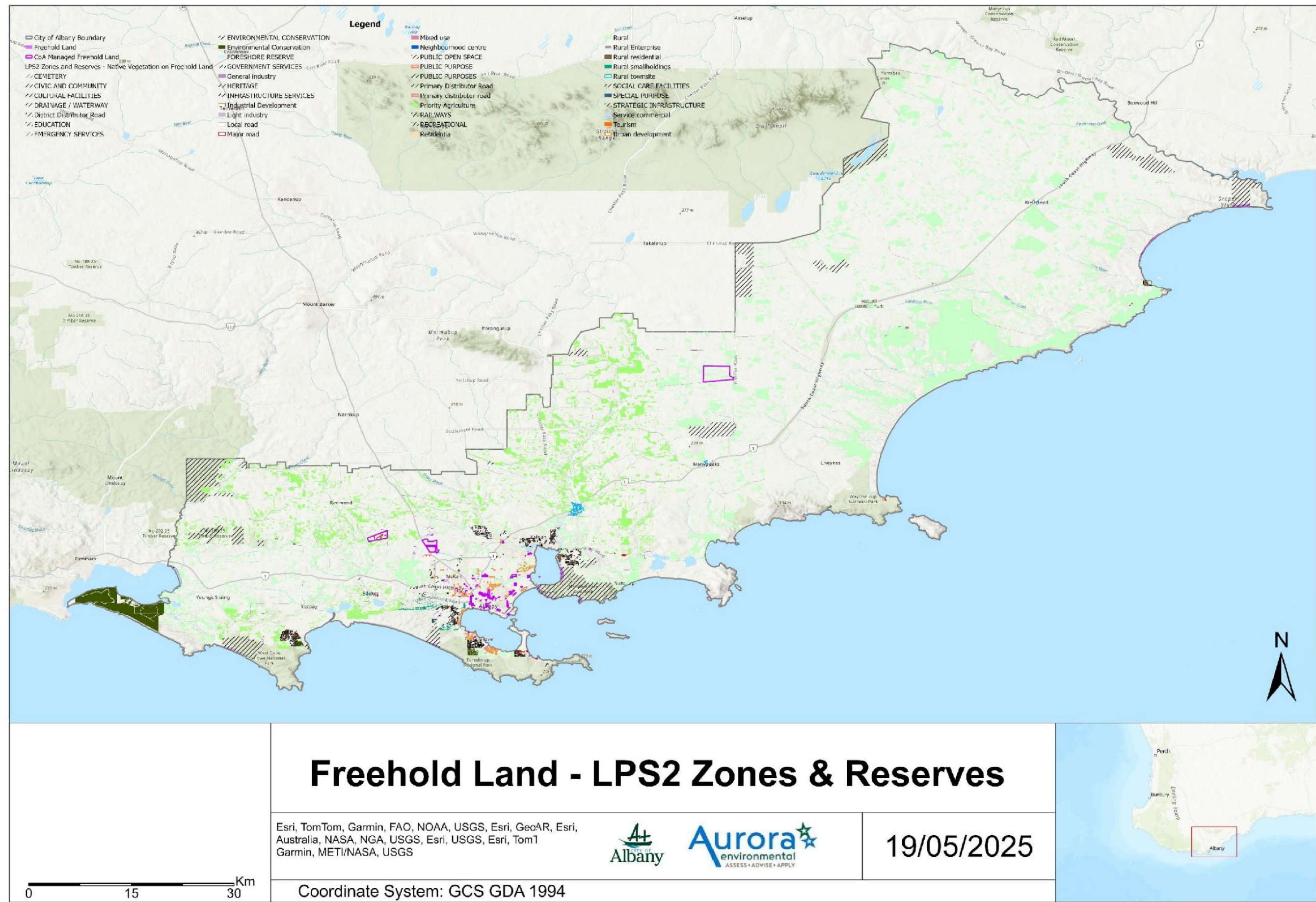
¹⁰ <https://share.google/aimode/JsrfQ5rhHzl3i5IPv>

RESERVE NO.	CLASS	NAME / LOCATION	CURRENT PURPOSE/S	AREA (ha)
37086	C	Cosy Corner East	Recreation And Bushland Management	12.7
46320	A	Nullaki Peninsula	Foreshore Conservation and Recreation	8.8
Total Area (ha)			2,127.7	

4.9 FREEHOLD LAND

Freehold land represents the most absolute form of property ownership, meaning the owner has indefinite rights to the land and any associated buildings. It essentially constitutes ‘fee simple ownership’, allowing the owner to sell, lease, mortgage, or utilise the land as they see fit, subject to local legislation and planning controls. There are 83,835 ha of native vegetation on 347,653 ha of freehold land in the City (**MAP 5**).

The City owns 1,338 ha of freehold land, of which 340 ha support native vegetation (**MAP 6**). This indicates that these areas are not Crown reserves and that the City holds them without a specific purpose (except for land-use controls by zone or local reserve designation). Freehold areas containing native vegetation may be used for a variety of purposes, including conservation or as offsets for development. Cleared areas may also be considered for community purposes.



5 BIODIVERSITY VALUES

5.1 STATUS OF BIODIVERSITY

In Western Australia, we are fortunate to have data relating to biodiversity, including pre-European vegetation mapping. Until 2018, statistics were calculated to indicate broad vegetation types, areas cleared, areas remaining, and areas protected in the conservation estate.

In Albany, vegetation mapping has been undertaken for areas most likely to be subject to development pressure as part of the Albany Regional Vegetation Survey (Sandiford and Barrett, 2010). This section of the Strategy outlines the context of biodiversity in the Albany municipality.

5.2 IBRA BIOREGIONS

The City of Albany marks the confluence of three Interim Biogeographic Regionalisation Areas (IBRA) (Figure 2), including:

- Esperance Sand Plain/ Fitzgerald in the east;
- Jarrah Forest/ Southern Jarrah Forest; and
- Warren (coastal areas west of Albany).

The eastern limit of the Warren and Southern Jarrah Forest marks the transition zone from the wetter, forested southwest of Western Australia to the drier interior and eastern coastal areas, where mallee, woodland, and shrubland associations predominate. Many plants reach their eastern limit in this area, while a few are at their western or southwestern limits (Thackway and Creswell 1995; Sandiford and Barrett 2010). This creates a region of complex biological interactions and species combinations.

5.3 CLIMATE

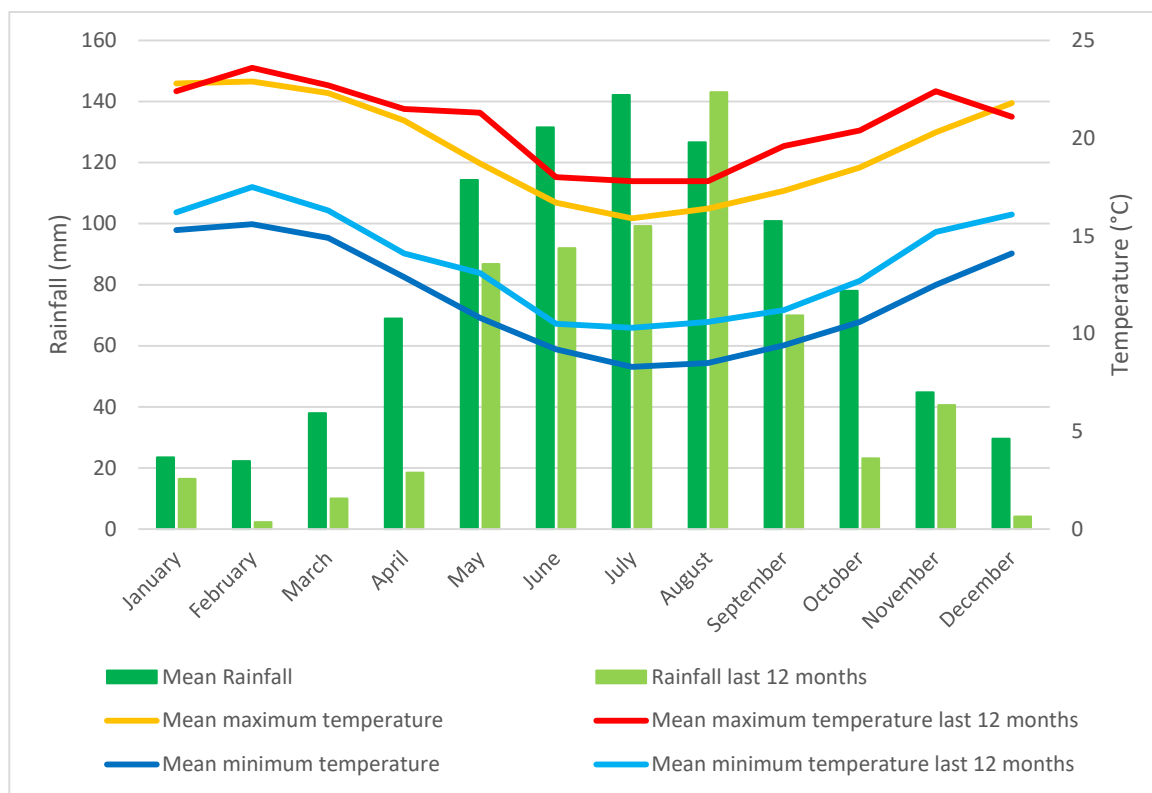
Albany has a Mediterranean climate characterised by warm summers and cool, wet winters. The mean annual rainfall for Albany is 924.7 mm (Bureau of Meteorology, 2024; Figure 8). Most rainfall occurs between May and September, with each month typically receiving over 100 mm. Temperatures are generally mild, with summer average minimum and maximum temperatures of 15 °C and 23 °C, respectively, and average minimum and maximum winter temperatures of 9 °C and 16 °C (Figure 8; Bureau of Meteorology, 2024).

Areas in the north-eastern part of the City experience warmer, drier conditions than the southern, coastal, and western portions. Albany averages 176.8 rainy days per year. The Southern Ocean significantly influences Albany's climate. It exerts a moderating influence on Albany through sea breezes during the warmer months and through the effects of a relatively mild, moist air mass year-round. Seasonal variations mainly result from the north-south movement of the subtropical ridge. An easterly broad-scale flow prevails in summer when the ridge is south of the State. However, the movement of high-pressure cells from west to east along this ridge creates a typical pattern of wind changes across South Coast locations (Bureau of Meteorology, 2014). Albany's south coast aspect means that the progression of winds—moving from east through north, west, south, and then back to east—over several days to a week during summer can create significant variations in weather, ranging from fine and mild to hot with thundery showers, to cool and cloudy with drizzle.

When the ridge moves north in the cooler months, the moisture-laden westerly winds south of the ridge deliver much of Albany's annual rainfall. Atmospheric disturbances embedded in the westerly

winds are common in winter, with the potential for several cold fronts passing through south-west Western Australia in a week.

FIGURE 8: CLIMATE



5.4 LANDSCAPE AND LANDFORM

Albany is located near the edge of the Yilgarn Craton, which contains huge slabs of ancient granite that formed as the Earth began to cool. It sits on the Albany Fraser Orogen, an ancient collision zone with folded and crushed rocks, some of which were once part of Antarctica and now contribute to Albany's coastline. The landscape has remained relatively stable for 250 million years—no significant volcanoes, glaciers, or crumpling of the Earth's crust, yet it features a complex geology. This stability and isolation have led to weathered soils that are low in nutrients. Ecosystems have evolved without interruptions from glaciation and other disturbances, resulting in ancient groups of plants and animals that utilise every niche and opportunity to survive, contributing to our remarkable biodiversity (Gondwana Link, 2025). Even a minor change in soil or slope can result in altered vegetation within a few metres.

5.5 FLORA

Flowering plants first appeared in south-western Australia about 130 million years ago and have evolved there longer than almost anywhere else on Earth (Gondwana Link, 2025). This has led to some of the most ancient lineages of flowering plants on the planet, as well as some of the richest diversity (Gondwana Link, 2025).

Banksia are among the most ancient flowering species found in WA. They exist as both fossils and living plants, looking remarkably similar to how they did 60 million years ago. Australia has been isolated from other continents for over 140 million years. As a result, many of our plants and animals are endemic—they are not found anywhere else on Earth. South-western Australia, in addition to its

significant geological and evolutionary history, is bordered by the ocean, deserts, and the Nullarbor Plain, and has been so for millennia. It has effectively been an island within an island, with nearly half the plants occurring nowhere else.

DBCA NatureMaps and the Threatened Flora database have provided data indicating that approximately 3,104 species of flora are likely to occur within the City municipal boundary (TABLE 7). Conservation-significant flora present in the City are listed in Appendix C. Definitions of conservation categories are included in Appendix D. A summary of the number of Threatened and Priority species is provided in TABLE 8.

TABLE 7: FLORA SPECIES – CITY OF ALBANY

STATUS	NUMBER OF SPECIES
Total plant species	3,104

Source: NatureMaps 2024. Note: includes introduced species

TABLE 8: CONSERVATION SIGNIFICANT FLORA SPECIES – CITY OF ALBANY

STATUS	NUMBER OF SPECIES	
Threatened Species	Biodiversity Conservation Act	EPBC Act
Cr – Critically endangered species (facing an extremely high risk of extinction in the wild in the immediate future)	12 species	6 Vulnerable
EN – Endangered species facing a very high risk of extinction in the wild in the near future	12 species	
VU - Vulnerable species facing a high risk of extinction in the wild in the medium-term future	6 species	
Priority Species		
Priority 1: Poorly-known species - known from few locations, none on conservation lands	21 species	
Priority 2: Poorly-known species - known from few locations, some on conservation lands	47 species	
Priority 3: Poorly-known species - known from several locations	65 species	
Priority 4: Rare, Near Threatened and other species in need of monitoring	54 Species	

5.6 PRE-EUROPEAN VEGETATION AND REPRESENTATION

Calculations of native vegetation extent using 2020 data (TABLE 9) indicate that of the 430,807 ha making up the City, approximately 154,022 ha, or 35.8%, of the original native vegetation extent remains.

TABLE 9: NATIVE VEGETATION STATISTICS

CATEGORY	AREA (ha)	% OF CITY
Pre-European Vegetation (original)	430,807	35.8
Native Vegetation Extent Remaining (DPIRD, 2020)	154,022	

The pre-European and current extent of each vegetation association within the City by IBRA region is outlined in TABLE 10. The following vegetation associations have less than 30% of their original extent remaining (**MAP 6**):

- Warren: 975 Low woodland; Jarrah;
- Southern Jarrah Forest: 969 Mosaic: Medium forest; jarrah-marri / Low forest; jarrah;
- Southern Jarrah Forest: 979 Mosaic: Medium forest; jarrah-marri / Low forest; jarrah & casuarina (likely *Allocasuarina fraseriana*);
- Fitzgerald: 14 Low Forest – jarrah;
- Fitzgerald: 47 Shrublands; tallerack mallee-heath; and
- Fitzgerald: 48 Shrublands; scrub-heath.

There are no pre-European vegetation types with less than 10% remaining.

TABLE 10: PRE-EUROPEAN VEGETATION TYPES BY IBRA REGION

Red shaded cells indicate pre-European vegetation types with less than 30% remaining.

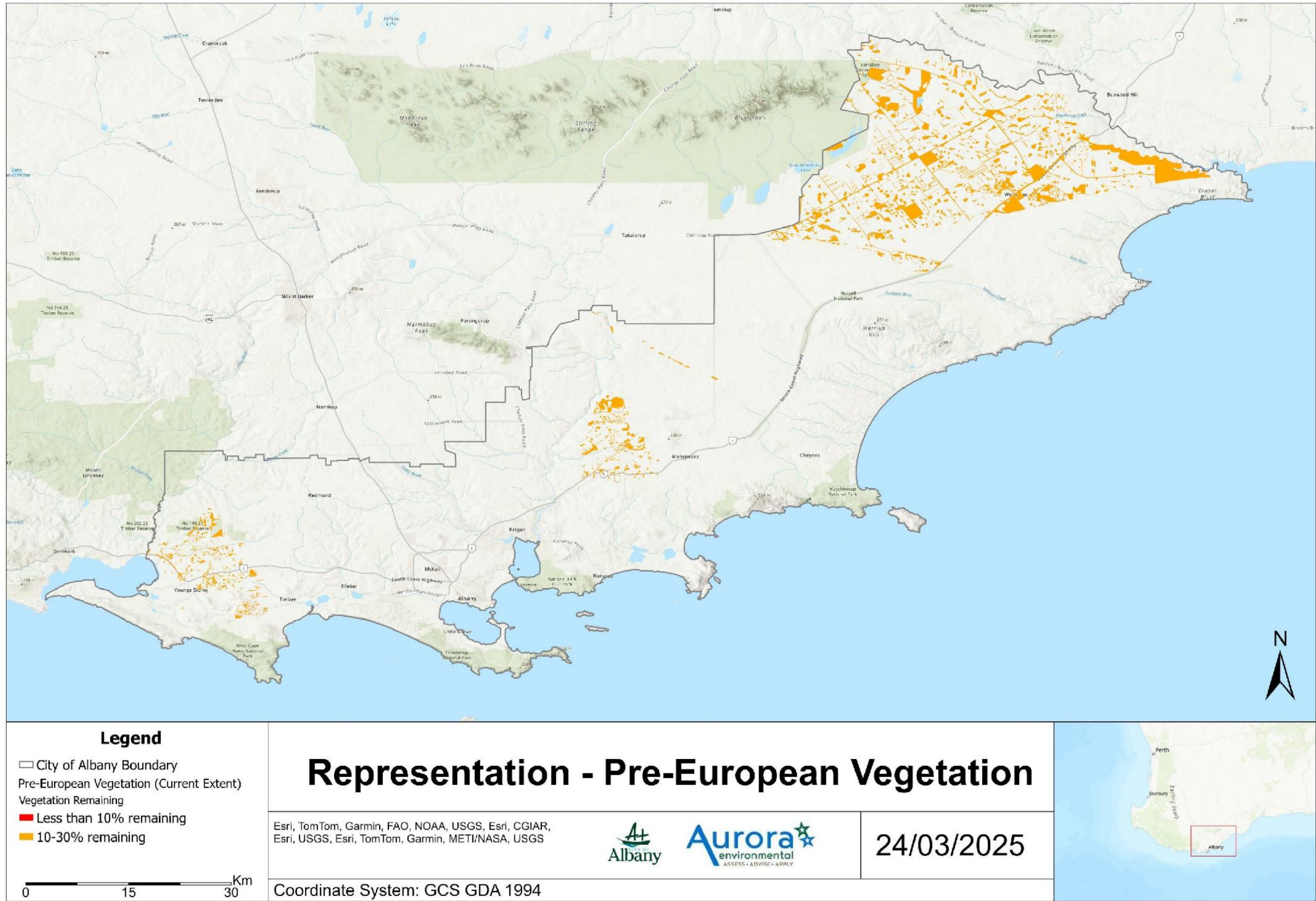
IBRA	VEGETATION ASSOCIATION		-PRE-CLEARING (ha)	AREA REMAINING (ha)	VARIANCE %
Warren	1	Tall Forest – karri (<i>Eucalyptus diversicolor</i>)	958.0	591.7	61.8
	3	Medium Forest – jarrah marri	2308.2	852.6	36.9
	14	Low Forest – jarrah	1104.4	918.9	83.2
	22	Low woodland – <i>Agonis flexuosa</i>	719.8	542.2	75.3
	49	Shrublands – mixed heath	6885.0	6737.8	97.9
	51	Shrublands; dwarf scrub on granite (south coast)	1146.8	406.0	35.4
	125	Bare areas – salt lakes	9.7	8.1	83.6
	126	Bare areas – freshwater lakes	5.9	5.9	100.0
	128	Bare areas – rock outcrops	285.8	273.1	95.6
	423	Shrublands; Acacia scrub-heath (unknown spp.)	10598.9	8567.5	80.8

IBRA	VEGETATION ASSOCIATION		-PRE-CLEARING (ha)	AREA REMAINING (ha)	VARIANCE %
	969	Mosaic: Medium forest; jarrah-marri / Low forest; jarrah	1707.1	671.7	39.3
	975	Low woodland; jarrah	24.2	4.4	18.4
	977	Low forest; teatree & casuarina	1.0	0.3	33.5
	978	Low forest; jarrah, <i>Eucalyptus staeri</i> & <i>Allocasuarina fraseriana</i>	90.6	83.5	92.2
Southern Jarrah Forest	1	Tall Forest – karri (<i>Eucalyptus diversicolor</i>)	103.7	42.7	41.2
	3	Medium Forest – jarrah marri	48076.7	17265.4	35.9
	14	Low Forest – jarrah	21928.6	6614.4	30.2
	27	Low woodland; paperbark (<i>Melaleuca</i> sp.)	1149.4	484.4	42.1
	49	Shrublands; mixed heath	169.0	156.7	92.7
	51	Sedgeland; reed swamps, occasionally with heath	15948.7	5686.5	35.7
	125	Bare areas – salt lakes	121.0	85.4	70.6
	126	Bare areas – fresh water lakes	897.4	346.8	38.6
	128	Bare areas – rock outcrops	820.4	704.6	85.9
	129	Bare areas - rock outcrops	392.0	375.6	95.8
	423	Shrublands; <i>Acacia</i> scrub-heath (unknown spp.)	3462.4	3131.0	90.4
	967	Medium woodland; wandoo & yate	48.7	25.7	52.8
	968	Medium woodland; jarrah, marri & wandoo	328.0	279.0	85.0
	969	Mosaic: Medium forest; jarrah-marri / Low forest; jarrah	8276.3	1462.1	17.7
	973	Low forest; paperbark (<i>Melaleuca raphiophylla</i>)	119.8	83.6	69.8
	977	Low forest; teatree & casuarina	238.9	113.0	47.3

IBRA	VEGETATION ASSOCIATION		-PRE-CLEARING (ha)	AREA REMAINING (ha)	VARIANCE %
	978	Low forest; jarrah, <i>Eucalyptus staeri</i> & <i>Allocasuarina fraseriana</i>	51905.1	20355.7	39.2
	979	Mosaic: Medium forest; jarrah-marri / Low forest; jarrah & casuarina (probably <i>Allocasuarina fraseriana</i>)	7718.4	1480.2	19.2
	989	Shrublands; Albany blackbutt mallee-heath	70.9	57.0	80.4
	994	Low forest; jarrah & casuarina (probably <i>Allocasuarina fraseriana</i>)	16399.5	4987.3	30.4
	995	Shrublands; mallee scrub, bushy yate & Bald Island marlock	6.4	6.4	100.0
	2051	Sedgeland; sedges with low tree savanna woodland; paperbarks over & various sedges	4413.7	2451.3	55.5
Fitzgerald	14	Low Forest – jarrah	405.0	118.0	29.1
	42	Shrublands; mallee & acacia scrub on south coastal dunes	237.7	235.2	99.0
	47	Shrublands; tallerack mallee-heath	63449.2	14258.8	22.5
	48	Shrublands; scrub-heath	6262.3	1348.1	21.5
	50	Shrublands; dwarf scrub on granite (south coast)	217.8	217.8	100.0
	51	Sedgeland; reed swamps, occasionally with heath	456.6	408.1	89.4
	125	Bare areas – salt lakes	763.2	460.2	60.3
	126	Bare areas – fresh water lakes	1093.9	449.8	41.1
	128	Bare areas – rock outcrops	358.5	348.6	97.2
	129	Bare areas - rock outcrops	683.9	609.3	89.1
	352	Medium woodland; York gum	631.6	267.2	42.3
	423	Shrublands; Acacia scrub-heath (unknown spp.)	3487.1	3309.5	94.9

IBRA	VEGETATION ASSOCIATION		-PRE-CLEARING (ha)	AREA REMAINING (ha)	VARIANCE %
	516	Shrublands; mallee scrub, black marlock	6723.2	3700.5	55.0
	931	Medium woodland; yate	1952.9	1040.8	53.3
	938	Medium woodland; York gum & yate	2215.0	750.0	33.9
	964	Shrublands; mallee scrub, black marlock & <i>Eucalyptus decipiens</i>	2337.8	855.8	36.6
	965	Medium woodland; jarrah & marri	3912.9	1573.0	40.2
	967	Medium woodland; wandoo & yate	453.5	188.0	41.5
	978	Low forest; jarrah, <i>Eucalyptus staeri</i> & <i>Allocasuarina fraseriana</i>	19.1	19.1	100.0
	980	Shrublands; jarrah mallee-heath	109688.6	41339.4	37.7
	989	Shrublands; Albany blackbutt mallee-heath	8943.5	7635.0	85.4
	994	Low forest; jarrah & casuarina (probably <i>Allocasuarina fraseriana</i>)	547.0	287.2	52.5
	995	Shrublands; mallee scrub, bushy yate & Bald Island marlock	3106.0	3052.7	98.3

Source: Pre-European Veg Look Up Table (LUT) Summary (preeuropeanvegetationlutsummary-may2012) <https://catalogue.data.wa.gov.au/dataset/pre-european-dpird-006/resource/d6ce041c-8f7a-4309-9f52-44c1b617a4c8> and BEARD_IBRA_LGA_postclearing_stats (This project, 2025).



5.7 ALBANY REGIONAL VEGETATION SURVEY

The most comprehensive vegetation survey conducted within the City is the Albany Regional Vegetation Survey (ARVS1; Sandiford and Barrett, 2010). The study area spanned 124,415 ha and extended 30 km east and west, and 20 km north of the Albany urban area (**MAP 7**). It identified 67 native vegetation units, along with two units dominated by introduced species (Appendix E and **MAP 7**) The vegetation condition attributed at that time is depicted in **MAP 8**.

The study identified 67 native vegetation units: 32 upland, 22 wetland (including three tidal or estuarine units), and 13 dampland or transitional units between wetlands and uplands. Two vegetation units (28, 50) are classified as ‘miscellaneous’ mapping units, covering uninterpretable areas and vegetation that did not clearly fit into any other unit. Three vegetation units (22, 34, 51) were ecotonal and did not clearly belong to other units.

A summary of key findings from ARVS1 is presented in TABLE 11. Preliminary assessment of the conservation significance of Albany vegetation units was undertaken using criteria adopted from the EPA Guidance Statement 33¹¹.

Caution must be exercised when interpreting the ARVS1 reservation status data, as large conservation reserves (e.g., Stirling Ranges) are situated just outside the ARVS area. The prioritisation of significant vegetation units was not conducted as part of ARVS1, as additional vegetation extent surveys outside the ARVS are needed, and further analysis of condition status and the impact of threats is required.

The ARVS found little correlation between the broad-scale regional mapping of pre-European vegetation associations and the more detailed vegetation units in Albany, making it impossible to accurately determine the original extent of the vegetation units. As a result, pre-European vegetation association values are generally used to represent both the pre-clearing and current extent of ecological communities in the Albany region.

Vegetation condition attributed at that time is shown in **MAP 8**. Vegetation condition for ARVS areas used a scale by Thackway and Lesslie (2006¹²).

TABLE 11: SUMMARY OF FINDINGS FROM ALBANY REGIONAL VEGETATION SURVEY (ARVS1)

Representation/distribution
• 35% of native vegetation remains in the ARVS area. Of this, 19% is in formal conservation reserves (IUCN I-IV categories) and 39% in other Crown reserves. • 32 vegetation units had less than 10% of their current extent protected within formal conservation reserves, including the most common unit (12). • 15 vegetation units do not have any of their current extent occurring within conservation reserves, including six units (7, 27, 32, 40, 42, 61) restricted to other Crown reserves, and nine

¹¹ EPA (2008) Environmental Guidance 33 for Planning and Development.
https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/GS33-270508.pdf

¹² Thackway, Richard & Lesslie, Rob. (2005) Vegetation Assets, States, and Transitions: accounting for vegetation condition in the Australian landscape.
http://researchgate.net/publication/255588401_Vegetation_Assets_States_and_Transitions_accounting_for_vegetation_condition_in_the_Australian_landscape.

units (15, 18, 19, 30, 34, 44, 53, 55, 63) that have more than 70% occurring on non-reserved land (six of these occur in Angove water reserve and five occur in Betty's Beach reserve).

- Taking into account known occurrences in conservation reserves just outside the survey area, 18 vegetation units (20, 27, 30, 32, 33, 40, 41, 42, 53, 54, 55, 56, 60, 62, 63, 65, 66, 67) have less than 10% of their extent occurring in conservation reserves. They would therefore be considered poorly reserved at the local level.
- Five vegetation units (7, 9, 33, 42, 62) are known to occur outside the ARVS area or have very similar floristic composition to units outside the ARVS area.
- Over one-quarter of vegetation units appear to be primarily restricted to the ARVS area and its 10 km buffer, including the two most common vegetation units (12, 13).
- Only eight vegetation units (12, 13, 3, 31, 47, 5, 46, 10) are common within the ARVS area; however, at least one other unit (2) is considered to be common locally due to its widespread occurrence within conservation reserves just outside the survey area.
- All other vegetation units each occur with less than 1500 ha, comprising 3.4% of the total native vegetation remaining in the survey area.

Rarity

- 49 vegetation units each occur on less than 1% of the total native vegetation remaining in the survey area. The significance of these 49 vegetation units is highlighted by the fact that 20% of species recorded through the ARVS are restricted to, and 78% of species occur within these units.
- 12 vegetation units (60, 41, 29, 37, 62, 44, 26, 61, 43, 42, 7) are highly restricted in their extent, each occurring on less than 10 ha.
- The two smallest vegetation units (7 and 42) are particularly significant as the ARVS recorded nine native species as occurring only within these units.
- Vegetation unit 34 is entirely restricted to the ARVS area, and the Priority 1 Priority Ecological Community (PEC) unit 14 is largely restricted to the area.
- It is likely that at least one vegetation unit (14) has less than 30% of its original extent remaining, and another three units, which appear to be restricted to the survey area plus 10 km buffer (13, 39, 56), are also likely to have less than 30% of their original extent remaining.
- Seven other units that appear to be restricted to the survey area plus 10 km buffer (6, 15, 16, 17, 18, 19, 23) are likely to have more than 30% of their original extent remaining. In comparison, the original extent of another nine units thought to be restricted to the ARVS area (12, 30, 32, 35, 37, 44, 45, 51, 60) is unclear.
- Threatened flora species were recorded in eight vegetation units in the ARVS area (3, 4, 13, 14, 15, 24, 31, 37).
- Vegetation units 15 and 24 are particularly significant as they each contain most of the known populations of Threatened species, which are considered to be restricted to the ARVS area.

- Other Threatened species restricted to the ARVS area were recorded in vegetation units 3, 4, 13 and 14.
- Over half of the vegetation units contained priority flora species.

Diversity

- Particularly high vegetation diversity was found in wetland habitats, on granite outcrops and along the coastal fringe overlying granite hills, relative to the extent of these areas.
- High species diversity was recorded in upland (shrubland and woodland) vegetation units, with the highest mean species richness recorded in unit 31 (with a mean of 31 species per relevé).
- Strong vegetation patterning was observed in several areas, with vegetation units either following a gradational sequence or occurring as mosaics across the landscape.

Condition

- Approximately two-thirds of native vegetation in the ARVS area is in residual (very good to excellent) condition.
- 41% of native vegetation on non-reserved land is in residual condition, 34% is modified (good to very good), and 25% is transformed (good to degraded).
- It has been estimated that at least 46% of vegetation unit 12, 69% of vegetation unit 57 and 41% of vegetation unit 52 are either in modified or transformed condition.

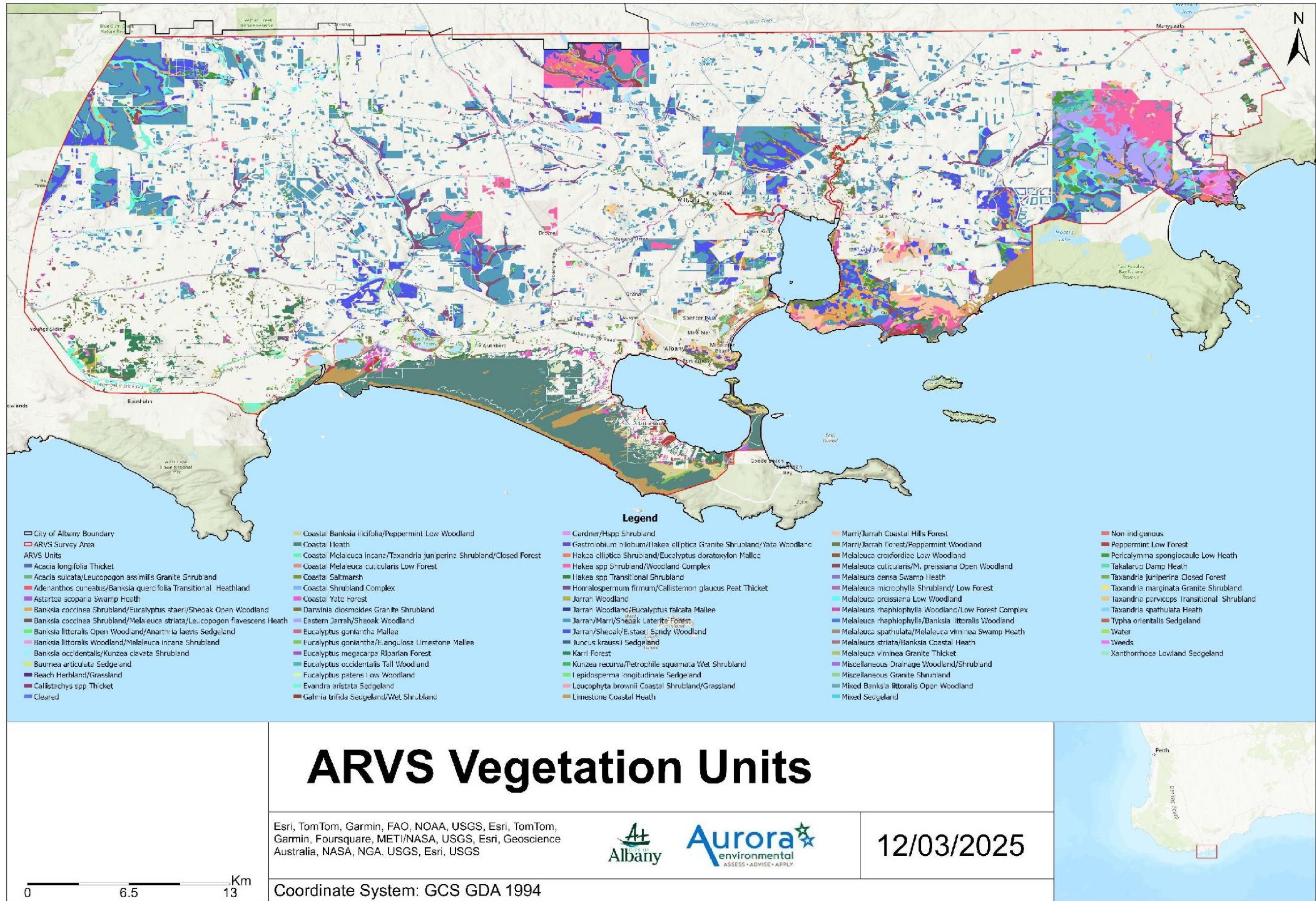
Susceptibility to threats

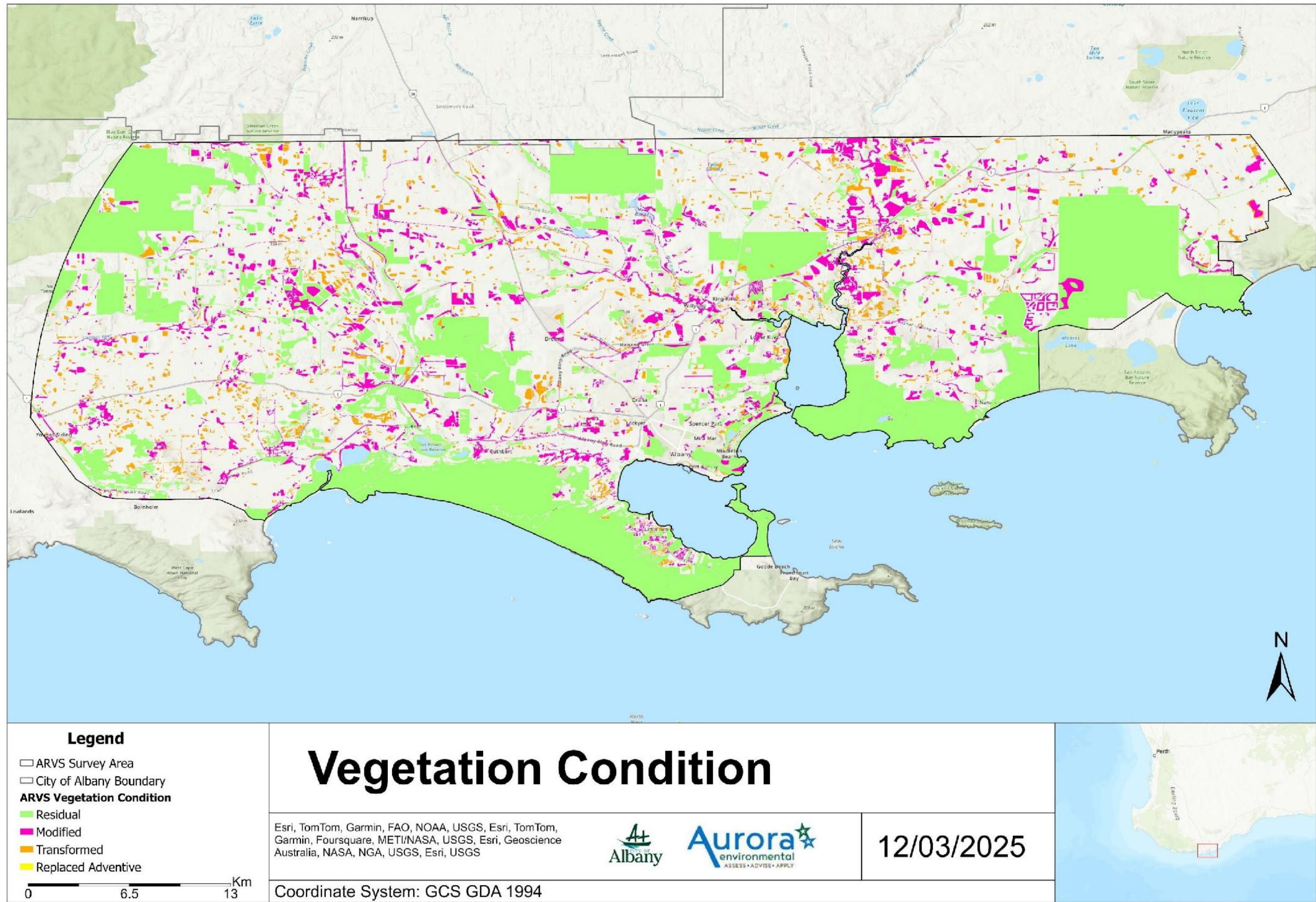
- Vegetation units susceptible to *Phytophthora* dieback include units 4, 12, 13, 14, 15, 16, 18, 21, 24b, 31, 37, 38, 45, 46, 47b and 51. Vegetation unit 14 is listed as a PEC due to its susceptibility to dieback.
- Aerial canker fungi were observed to cause limb death as well as plant mortality in vegetation units 16, 24b and 21.
- Vegetation units 44 and 48 appear to be threatened by hydrological change, with wetland species dying and upland species invading these units.
- Fire-sensitive vegetation units within the ARVS area have been identified as those dominated by serotinous obligate seeder species (14, 15, 16, 34, 46d, 51, 31), refugial habitat (granite outcrop) units, wetland/riparian units, and those restricted to peat soils (47).

Survey confidence

- Approximately two-thirds of native vegetation in the ARVS area was mapped with very high or high confidence, 31% moderate confidence and 2% low confidence.
- Most moderate to low confidence ratings occurred on private property and within Jarrah dominated units (12, 13, 30, 31) or wetland units.
- 19 vegetation units (6, 15, 16, 18, 19, 20, 21, 2, 27, 30, 32, 34, 40, 41, 53, 54, 58, 63) had not been previously described.

In 2013, the ARVS2 project analysed spatial datasets of ARVS1 and identified poorly represented AVUs. This information was used to identify poorly represented AVU areas described in Appendix F.





5.8 ECOLOGICAL COMMUNITIES

The City of Albany supports several ecological communities of conservation significance recognised under both Commonwealth and Western Australian legislation. Three Threatened Ecological Communities (TECs) listed under the *Environment Protection and Biodiversity Conservation Act 1999* occur in the region (TABLE 12). In addition, numerous Priority Ecological Communities (PECs) recognised by the Department of Biodiversity, Conservation and Attractions are recorded from the Albany area (TABLE 13). Definitions of Threatened and Ecological Communities are included in Appendix D.

TABLE 12: THREATENED ECOLOGICAL COMMUNITIES

ECOLOGICAL COMMUNITY	STATUS (EPBC)	NOTES
Proteaceae dominated kwongan shrublands of the southeast coastal floristic province of Western Australia	Endangered	Occurs across south-coast sandplains including Albany hinterland
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Occurs in estuarine systems, including Oyster Harbour and Princess Royal Harbour
Empodisma peatlands of south-western Australia	Endangered	Occurs in peat wetlands and slopes in high rainfall areas

TABLE 13: PRIORITY ECOLOGICAL COMMUNITIES

DBCA REF	ECOLOGICAL COMMUNITY	WA PRIORITY
6	<i>Green Range granite hill heath and woodland community</i>	P1
7	<i>Wet ironstone heath community (Albany District)</i>	P1
9	<i>Cheyne's 1 Tree Mallee</i>	P1
10	<i>Cheyne's 2 Open Tree Mallee</i>	P1
15	<i>Banksia coccinea shrubland / Eucalyptus staeri / sheoak woodland (community type 14a)</i>	P1
19	<i>Mosaic of Albany Blackbutt mallee-heath and Chittick scrub-heath</i>	P1
20	<i>Banksia littoralis woodland / Melaleuca incana shrubland</i>	P1
21	<i>Banksia occidentalis / Kunzea clavata shrubland</i>	P1
22	<i>Astartea scoparia swamp thicket</i>	P1

DBCA REF	ECOLOGICAL COMMUNITY	WA PRIORITY
23	<i>Coastal Melaleuca incana / Taxandria juniperina shrubland</i>	P1
24	<i>Tallerack mallee-heath on seasonally inundated soils</i>	P2
25	<i>Melaleuca striata / Banksia spp. coastal heath</i>	P1
26	<i>Melaleuca spathulata / Melaleuca viminea swamp heath</i>	P1
27	<i>Banksia coccinea shrubland / Melaleuca striata / Leucopogon flavescens heath</i>	P1
30	<i>Albany Blackbutt mallee-heath on deep sand</i>	P2
33	<i>Swamp Yate woodlands in seasonally inundated clay basins</i>	P3
39	<i>Taxandria spathulata heath</i>	P4

5.9 FAUNA

Data has been provided by the DBCA (NatureMap and Threatened Fauna Database), which indicates that approximately 1,464¹³ species of fauna may occur within the City, comprising:

- Invertebrates – 677 recorded species;
- Fish – 274 recorded species;
- Frogs – 22 recorded species;
- Reptiles – 55 recorded species;
- Birds – 349 recorded species; and
- Mammals – 87 recorded species.

DBCA databases indicate that there are the following number of conservation significant species:

- Invertebrates: 10 species;
- Fish: 7 species;
- Reptiles: 3 species;
- Birds: 72 species; and
- Mammals: 26 species.

56 of these species are listed as Threatened in Western Australia. A list of conservation significant fauna species is included in Appendix G. Definitions of conservation categories are included in Appendix D.

¹³ This is likely to be an underestimate of species numbers.

The ARVS project (Sandiford and Barrett, 2010) identified significant AVU for fauna habitat. (Appendix H).

5.10 FUNGI AND OTHER LIFE FORMS

Data has been provided by DBCA NatureMap, which indicates that approximately 531 species of fungi, lichen and slime mould may occur within the City (TABLE 14). This number is likely an underestimate, as these life forms are often poorly known.

TABLE 14: FUNGI, LICHEN AND SLIME MOULDS

STATUS	NUMBER OF SPECIES
Lichen	159
Fungus	368
Slime mould	4

Source: DBCA (2024) NatureMap. Note: includes introduced species

5.11 STATE MANAGED CONSERVATION RESERVES

The Conservation Commission manages National Parks and Nature Reserves under the *Conservation and Land Management Act 1984*, which the DBCA actively manages. These areas are the crown jewels of our region, considered ‘Regionally Significant,’ and can remain healthy only with support from surrounding bushland, wetlands, and waterways.

Areas managed as part of the conservation estate in the City are shown in TABLE 15.

TABLE 15: STATE CONSERVATION AREAS

MANAGED BY DBCA	AREA (ha)	CONSERVATION RESERVE TYPE	
Conservation Park	6.38	Gledhow Conservation Park	
National Parks	78,717.74	Gull Rock Hassell Mount Lindsay	Stirling Range Torndirrup Waychinicup West Cape Howe
Nature Reserves	18,997.11	Bakers Junction Basil Road Blue Gum Creek Bon Accord Road Cheyne Road Down Road Gledhow Granite Hill Kojaneerup South Lake Pleasant View	Mount Manypeaks Mount Mason Napier North Sister Pallinup Sleeman Creek South Sister South Stirling Takenup Road Tennessee North

MANAGED BY DBCA	AREA (ha)	CONSERVATION RESERVE TYPE	
		Lake Powell Mailalup Marbelup Mettler Lake Millbrook	Tinkelelup Two Peoples Bay West Mount Mason White Lake
Section 5(1)(h) Reserve	402.4	Voyagers Park Lighthouse, Torndirrup – Cave Point and two other parcels	
State Forest	4,055.31	Denmark Catchment State Forest	
Timber Reserve	1,234.5		
Covenants			
Conservation Covenants	1,859.13		

5.12 WATERWAYS AND WETLANDS

Waterways and wetlands are vital for biodiversity, providing essential habitats, food sources, and breeding grounds for diverse species, including waterbirds, fish, frogs, and plants, some of which are threatened or migratory. These systems also act as natural filters, improving water quality by trapping pollutants and nutrients. They also support landscape connectivity, aiding species migration and adaptation to climate change, while also offering significant cultural, economic and aesthetic benefits.

These features are highly valued for recreational, cultural and landscape reasons, while wetlands often have cultural significance and high customary value for many Aboriginal people. Waterways and wetlands also provide important habitats for animals including some threatened fauna such as the Australasian Bittern and migratory waterbirds.

The two largest river systems in the Albany townsite area are the Kalgan River and King River catchments, which both discharge into Miaritch/Oyster Harbour. Oyster Harbour, along with Princess Royal Harbour, is also a significant waterway within the City (Urbaqua, 2026). Catchments across the municipality include:

- Beaufort Inlet/Pallinup River
- Bluff River
- Cordinup River
- Miaritch/Oyster Harbour/Kalgan/King
- Eyre River
- King Creek
- Limeburner Creek
- McBrides Creek
- Menbijup/Moates/Goodga/Angove
- Mullocullop Creek
- Waychinicup River
- Norman River
- Princess Royal Harbour
- South Warriup Creek
- Yerringurup/Willyung Creek
- Wilson Inlet
- Hay River
- Yeerup/Torbay Inlet

- Wongerup Creek
- Coastal catchments

There are over 80 conservation category wetlands in the region (Urbaqua, 2026), 35 in the City of Albany. Some of the key wetlands in the City include:

- **Miaritch/Oyster Harbour:** A large estuarine system that receives water from both the King and Kalgan Rivers. It is a vital habitat for fish, birds, and other wildlife. Efforts have been made to enhance the wetland areas around the harbour to support biodiversity.
- **Tjuitgellong/Lake Seppings:** Located near the city centre, this freshwater lake is surrounded by a City of Albany managed reserve. It is an important site for birdwatching and supports a variety of wetland plants and animals.
- **Booyiup/Centennial Park Wetland:** A constructed wetland system that plays a vital role in improving water quality before it flows into Miaritch/Oyster Harbour. It diverts water from Yakamia Creek, using native plants and organisms to filter out nutrients and sediments. This project has significantly contributed to improved biodiversity.
- **Wetlands of the Torbay Catchment:** These wetlands are important for water management, habitat and cultural values. They include coastal lakes, basin wetlands, palusplains (wide, flat areas of seasonal waterlogging), and hillside seeps (paluslopes). These wetlands are important for water management, habitat, and cultural values.
- **Lake Vancouver:** Situated near Goode Beach, Lake Vancouver is identified as a conservation category wetland. It is a significant natural feature requiring ongoing management to protect its ecological values.
- **Muir-Byenup System (partially within the Albany region):** While primarily located in the Shires of Manjimup and Cranbrook, this Ramsar-listed wetland system extends into the broader Albany region. It is an internationally important site, comprising interconnected lakes and swamps of varied sizes and salinities. It is particularly important for moulting and drought refuge for thousands of Australian Shelducks and other waterbirds.
- **Wilson Inlet:** The City boundary is defined by Hay River and Wilson Inlet to the west and Pallinup river in the east.
- **The Ballogup/Lake Pleasant View System, Miaritch/Oyster Harbour, and Menbijup/Moates Lake System** are also listed in the Directory of Important Wetlands in Australia (DCCEEW, 2025).

Historically, many water courses and wetlands have been modified, cleared, filled, or drained. Other significant changes to these features include nutrient enrichment, sedimentation, weed invasion, and hydrological alterations. This includes increased salinity, heightened runoff, and rising water levels due to vegetation clearing, as well as lowered water levels linked to water extraction for supply purposes (Department of Water, 2007).

5.13 COASTAL AREAS

Threats to coastal biodiversity include climate change, which causes ocean warming and acidification, leading to habitat loss. Habitat destruction from urban development and agriculture, and pollution from sewage, stormwater runoff, and marine debris are also major concerns. Overfishing, which reduces fish populations and disrupts food webs, and unintentional bycatch of other species further threaten aquatic ecosystems. Additionally, invasive species compete

with native species, and increased human activity, including driving on beaches, tourism and recreation, can cause physical disturbance and pollution.

The City of Albany's coastline stretches over 180 km from the Nullaki Peninsula in the west to Pallinup Beach in the east. It primarily consists of sandy beaches and dunes, limestone formations, and granite headlands. Other significant features include inlets and estuaries that support rich biodiversity. Coastal vegetation plays an essential role in stabilising mobile dunes and providing natural protection from storms, rising sea levels associated with climate change, and erosion. The City's coastline has significant regional conservation value and provides extensive ecological linkages characterised by coastal dunes, limestone and granite cliffs, and coastal heathland vegetation.

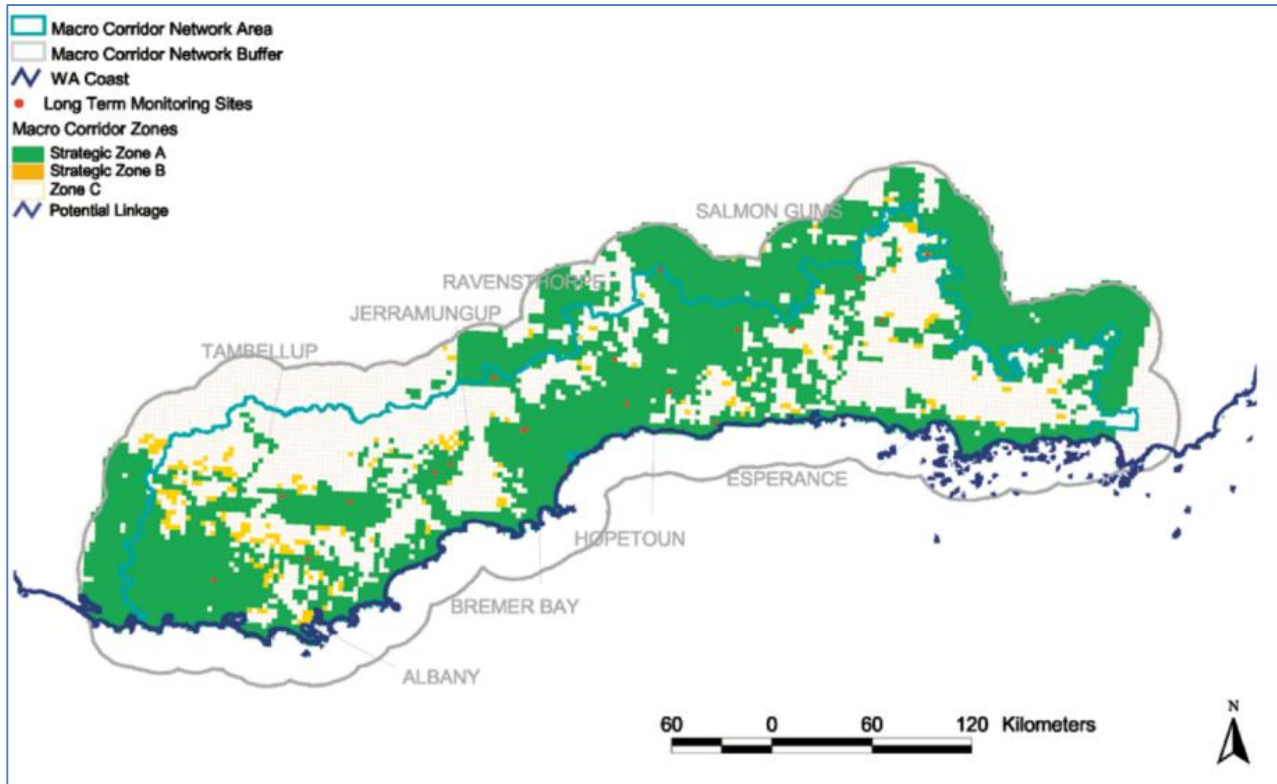
5.14 UPLANDS

Upland landscapes, including granite outcrops, lateritic uplands, quartzitic areas, ridgelines and associated shrubland and woodland mosaics, are an important component of Albany's biodiversity. These ancient landscapes support a diverse range of plants, animals and habitats, including species and ecological communities that may be restricted to particular landforms or soil types (Hopper et al., 1990). The Albany Regional Vegetation Survey identified high species diversity in upland shrubland and woodland vegetation units and recognised granite outcrops as areas of particularly high vegetation diversity relative to their extent (Sandiford and Barrett, 2010). Recent research has also highlighted the importance of ancient upland landscapes and rock outcrop systems in supporting biodiversity and providing long-term refuges for species (Cramp et al., 2025). Noongar knowledge and contemporary ecological research further recognise the environmental and cultural significance of these landscapes. Upland habitats should therefore be considered alongside wetlands, waterways, coastal areas, ecological communities, threatened species, connectivity and vegetation representation when interpreting biodiversity values, assessing development proposals and identifying management priorities.

5.15 CONNECTIVITY

In 2006, the Macro Corridor Project (Wilkens et al., 2006) identified potential linkages between Israelite Bay, east of Esperance, stretching westward to Albany, with inland connections along major river systems to protected areas such as the Stirling Ranges and other bushland (Figure 9). Protecting and enhancing these corridors is a key criterion for maintaining biodiversity.

FIGURE 9: MACRO CORRIDOR NETWORK



Source: Wilkens et al. 2006

5.16 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

The EPBC Act allows for assessment of potential impacts to ‘Matters of National Significance’ (MNES). The Department of Climate Change, Energy, the Environment and Water (DCCEEW) website features a ‘Protected Matters Search Tool’ which indicates that the City has:

- One National heritage place: Part of the Stirling Range National Park;
- A Commonwealth Marine Area;
- Three listed Threatened Ecological Communities;
- 115 listed Threatened species;
- 69 listed migratory species;
- 94 listed marine species; and
- 31 species of whales and other cetaceans.

A summary report of the MNES is included in Appendix I.

6 ACHIEVEMENTS

The City has been working over decades to protect natural areas. This section outlines strategies and actions undertaken.

6.1 LAND USE PLANNING

As outlined in Section 4.5, the City has reviewed its LPS and includes a reservation category of 'Environmental Conservation'. This means that even if a Crown Reserve lacks a purpose related to 'Conservation', any development application will take into account the environmental conservation values of the area.

6.1.1 Local Planning Strategy and Local Planning Scheme No. 2

The new Local Planning Scheme No. 2 now includes a zone and reservation category for 'Environmental Conservation.' The land outlined in this category comprises 79,344 ha (**MAP 4**).

- The State government has provided a planning framework, and the City has advanced this in its LPS and LPS2.
- Each Reserve may accommodate other compatible uses.

6.1.2 Special Control Areas

The City has established Special Control Areas within its planning framework to benefit the community and biodiversity. Special Control Areas include coastal hazard risk management and adaptation plan (CHRMAP) areas for Middleton Beach and Emu Point. Foreshore management plans are required for these areas to identify biodiversity attributes and ensure ongoing protection. Special Control Areas are also designated for Yakamia Creek, Lake Seppings, Oyster Harbour, Lake Powell, Lake Manurup, and Willyung Creek to address hydrological processes and protect habitat.

6.2 THREAT ABATEMENT

Rather than prepare a management plan for each Reserve under its management, the City is guided by its *Environmental Land Management Guidelines*¹⁴. These guidelines cover how all work by the City and its contractors should be undertaken to address environmental issues related to:

- All new upgrades and maintenance work;
- Roads, roadsides and drainage;
- Developed reserves;
- Resource pits;
- Tracks and trails;
- Fuel and fire management;
- Waste disposal sites and transfer stations; and

¹⁴ City of Albany (2022) Environmental Land Management Guidelines
<https://www.albany.wa.gov.au/documents/310/environmental-land-management-guidelines>

- External customer activities.

In terms of threat abatement, the guidelines address:

- Vehicle and machinery management;
- Clearing of native vegetation;
- Importing soil or other materials;
- Weed management and herbicide use;
- Dieback management and hygiene;
- Acid sulfate soil management; and
- Erosion and drainage management.

6.3 BIODIVERSITY MANAGEMENT PARTNERSHIPS

The City has formed partnerships with community groups to assist in local biodiversity protection. This often comprises support, advice, insurance for volunteers and letters of support for grant applications. Initiatives include:

- Collingwood Heights protection of TEC in collaboration with South Coast NRM.
- Support for catchment groups like Oyster Harbour and Torbay through funding for events.
- Small environmental grants and funding for administration and other activities of these groups that assist in achieving the City's objectives.
- Western ringtail possum projects with South Coast NRM in city reserves.
- Decades of collaboration with South Coast NRM and the City to rehabilitate and increase the biodiversity values of Yakamia Creek.
- Torbay feral animal control within city reserves, including West Cape Howe, Mutton Bird, Cosy Corner, and Sand Patch.
- Wilson Inlet Catchment Group - feral animal control initiatives.
- Oyster Harbour cat control in city reserves, along with education and workshops.
- The City provides letters of support to groups.
- Torndirrup Sydney golden wattle control letter drops in partnership with Green Skills.
- Senecio weed control at Sand Patch.
- Hanrahan landfill - arum lily control efforts.
- Education for residents near city reserves regarding weed and feral animal control.
- Good neighbour policy for the City reserves for weed and fire management.

6.4 SUPPORT OF VOLUNTEERS

The City has collaborated with community volunteers for many years to support activities such as weed removal, replanting, and rubbish clean-up. Currently, four bushcare groups in Albany are made up of dedicated volunteers who unite to protect, preserve, and enhance their local bushland. These groups make a significant contribution to removing environmental weeds from ecologically and culturally sensitive areas. They include:

- Barmup bushcare busy bee group;
- Yakamia bushcare busy bee group;
- Frenchman Bay bushcare busy bee group; and
- Tjuitgellong/ Lake Seppings, Eyre Park and Mounts community group.

Each group meets monthly for about three hours to focus on weed control and eradication in their local reserve. They progressively move across their areas of interest, targeting weeds as the seasons dictate, while monitoring their local patches for changes and impacts.

Passionate volunteers founded these groups and now manage them entirely. The bushcare groups receive support from the City's Natural Reserves team, which works collaboratively to identify priority areas for weed control. They discuss native plants, weeds, and other topics to monitor in the bushland. This effort greatly benefits both the community and the city. Without the dedication of these community members, some of Albany's precious bushland could face increasing weed infestation. The commitment and contributions of these groups are invaluable for enhancing biodiversity, improving habitat, water quality, and soil health. In addition to these important environmental outcomes, the community benefits from improved aesthetics, opportunities to connect with residents, opportunities to share knowledge and stories, and the satisfaction of improved conditions for future generations.

Support from the City includes providing mulch, green waste collection, and donations from the Fossicker's Tip Shop.

Project outcomes include:

- 28 busy bee events in the 2023/2024 financial year;
- Over 12 ha of bushland weeded during the busy bee events;
- Over 270 combined group hours spent weeding and revegetation at the seven sites;
- Over 400 individual volunteer hours attending the bushcare events;
- Work included weed control, mulching and rubbish collection;
- Work has been undertaken at Barmup/ Bluff Rock, Yakamia Forest, Goode Beach, Frenchman Bay, Lake Seppings/ Tjuitgellong, Eyre Park, Mount Clarence/ Corndarup and Mount Adelaide/ Irrerup; and
- Priority weeds tackled include Kikuyu, Sydney Golden Wattle, Victorian tea tree, Rose Pelargonium, Taylorina, Senecio, Polygala, Gorse, Fleabane, Nasturtiums, Arum Lily, Pampas Grass and Lantana.

Site-specific outcomes include:

- Tjuitgellong/Lake Seppings: The planting of two new areas was carried out in 2022/23. One site measured 100 m in length, while the other measured 30 m at the edge of the wetland. Native plants, including numerous sword sedges, kangaroo paw, and saltwater paperbark, were transplanted from nearby firebreaks to locations adjacent to the walking trail. This area is heavily used by the community for walking and birdwatching, creating high engagement and awareness opportunities. Weed control was implemented, including the removal of 1,790 Sydney golden wattle plants from around the lake and adjacent areas.
- Eyre Park: Planting occurred within two 'wildlife stepping stones' in the park to facilitate movement for possums, bandicoots, and other animals and birds across the park. A new site was planted next to the lake on Middleton Road, primarily using transplanted native willows, sword sedge, saltwater paperbark, and other species donated by community members.
- Corndarup/Mount Clarence and Irrerup/Mount Adelaide: The removal of 1050 Sydney Golden Wattle took place before seeding, including 580 from near Albany Senior High School on Mount Clarence and 401 along Marine Drive.
- 'Turtle trackers' (City of Albany and Murdoch University initiative) assist in recording oblong turtle movements and involve volunteers and DBCA. Signage is provided near busy roads where turtles are likely to cross during the breeding season.
- The Wildflower Society conducts Spring flora surveys and educational wildflower walks.

Observations by City staff include the following:

- Groups come and go, but leave a legacy for others.
- Champions often suffer from burnout.
- While supporting volunteers takes time, it brings numerous benefits to the biodiversity of the City of Albany.

6.5 ENVIRONMENTAL STRATEGIES AND PUBLICATIONS

Since its establishment in 1998, the City of Albany has developed several separate plans, guidelines, and strategies focused on specific elements of the natural environment, the most recent of which includes:

- City of Albany Waterwise Strategy (City of Albany, 2026)
- Environmental Impact Assessment Policy (City of Albany, 2013, Amended 2024);
- How to Identify Sydney Golden Wattle (City of Albany, 2023);
- Environmental Land Management Guidelines (Code of Conduct) (City of Albany, 2022);
- City of Albany Reserves Report (City of Albany, 2019a);
- Environmental Weed Management Plan (City of Albany, 2019b);
- 12 of Albany's most unwanted weeds (City of Albany, undated); and
- City Mounts Management Plan (City of Albany, 2006).

6.6 MANAGEMENT OF RESERVES

The City actively manages numerous. Management of these reserves is based on values, usage, and threatening processes. As of early 2025, the City has a dedicated Reserves team consisting of five Natural Area Maintenance Staff and a Natural Areas Supervisor who manages on-ground works, which include:

- Weed management;
- Pruning of native vegetation for safety (sight lines);
- Revegetation programs;
- Assisting Bushcare volunteers; and
- Maintaining access points, trails and nature-based campgrounds.

Two Reserve Officers manage reserves planning, process permits for access to reserves, evaluate environmental impact statements for work conducted in reserves, and ensure that activities on City-managed land minimise environmental impacts.

The City has hosted community planting days at Yakamia Creek, Cull Park Lake, and Wellington Street Park.

6.7 MANAGEMENT OF ROAD RESERVES

Road reserves in Albany hold significant biodiversity value, serving as crucial habitats for native plants and animals, including threatened species. They also function as corridors connecting larger areas of vegetation, supporting local communities and contributing to tourism. Furthermore, they provide windbreaks and shelter for the surrounding farmland. The City manages 1,629 km of roads and associated verges. The City has previously undertaken weed management in some road reserves, particularly for Sydney golden wattle.

7 THREATS TO BIODIVERSITY

Threats to Albany's biodiversity include:

- Clearing and fragmentation of habitat;
- Knowledge gaps;
- Climate change and variability;
- Altered hydrology;
- Inappropriate fire frequency and intensity;
- Inappropriate access;
- Weeds; and
- Disease and pests.

7.1 CLEARING AND FRAGMENTATION

The most significant human impact in south-west Australia has been the clearing of native vegetation. Clearing and development began in 1829 with the arrival of the first European settlers. However, due to the poor soils, development progressed slowly until the 1890s, when phosphate fertilisers were introduced. Today, most usable private land in the region is farmed, although it requires the application of phosphate, zinc, copper, cobalt, and molybdenum. While broadscale clearing is no longer common, the incremental loss of native vegetation continues to erode biodiversity values. Fragmented natural areas are more likely to be affected by edge effects from weed species, wind, water erosion, or overgrazing.

Today, most native vegetation loss is driven by degradation of the understory from agricultural activities and clearing for development. Fragmented landscapes limit the ability of native animals and plants to move across natural areas and restrict the dispersal of genetic material for plant species. The inability of populations to recolonise areas after a disturbance will likely result in the continued loss of species across a landscape long after the initial clearing. This affects biodiversity and reduces ecosystem resilience. Sustainable and strategic land-use planning is key to lowering biodiversity losses from development in the City. Like many local government areas, the City is facing increasing population pressures. Planning for new urban areas must preserve natural landscape features, biodiversity, and ecological linkages. The City will need to balance its biodiversity protection goals with economic and social growth.

Impacts, current responses and potential responses to clearing and fragmentation are included in TABLE 16.

TABLE 16: IMPACTS OF CLEARING AND FRAGMENTATION

Impacts	• Loss of habitat and plants, many of which cannot be preserved elsewhere. • Loss of ecosystem services provided by the plants and animals, such as pollination or control of nutrient run-off. • Loss of dispersal by native species. • Loss of water quality within the water catchment. • Land degradation (erosion, soil acidification). • Loss of economic opportunities dependent on high-quality natural areas. • Reduced resilience of protected areas to other threatening processes.
Current Responses	• Guidance from Local Planning Strategy. • Use of current provisions in Local Planning Scheme. • Assessment of rezoning, development applications, and input into structure plans.
Potential responses	• Use scoring data of LNA in assessment for development. • Promote linkage of LNA. • Communicate the expectation of a net positive outcome for LNA across the Albany landscape. Net positive means achieving a better environmental outcome than the current status quo.

7.2 CLIMATE CHANGE AND VARIABILITY

Climate change is a significant threat to biodiversity globally. Threats to south-west Western Australia include the following¹⁵:

- Higher temperatures;
- Mean temperatures have increased by about 1.1 °C since 1910, with the rate of warming higher since 1960;
- Mean, maximum and minimum temperatures are projected to continue to rise;
- Each season is projected to warm by about the same amount as the annual mean;
- Hotter and more frequent hot days – less frost;
- The temperature and frequency of very hot days are expected to increase, and heatwaves will get longer and more intense.;
- Less rainfall in winter and spring. Changes in other seasons unclear;

¹⁵ Department of Water and Environmental Regulation (2021) Western Australian Climate Projections Summary. https://www.wa.gov.au/system/files/2022-01/Western_Australian_Climate_Projections_Summary.pdf

- The south-west of Western Australia has experienced a marked drying trend since 1970, particularly in autumn and early winter;
- The decline in this region has been larger than anywhere else in Australia;
- Decreases in annual, winter and spring rainfall are projected with high confidence;
- By 2030, under all emission scenarios, winter rainfall is projected to decrease by up to 15%;
- By 2090, rainfall is projected to decrease by:
 - up to 25 per cent under intermediate emissions (RCP4.5); and
 - up to 45 per cent under high emissions (RCP8.5).
- Increased intensity of heavy rainfall events;
- Drought duration to increase; and
- Increased evaporation rates, reduced soil moisture and runoff.

The impacts of climate change on biodiversity are likely to include:

- Reduced water availability in wetlands and other groundwater-dependent ecosystems, and deterioration of water quality, causing negative ecological impacts;
- Changes to wildlife migration patterns;
- Changes to critical seasonal timing of reproduction;
- Movement of species to areas of adequate rainfall, impacting local biodiversity;
- Damage to natural areas causing hazards for wildlife; and
- Erosion and inundation of sensitive dune ecosystems threaten coastal and estuarine biodiversity.

Impacts of climate change on local biodiversity and the City's current and potential responses are outlined in TABLE 17.

TABLE 17: IMPACTS OF CLIMATE CHANGE

Impacts	Climate change has the potential to affect biodiversity in the City by: adversely • Altering the quality, extent, and distribution of native vegetation and habitat. • Reducing or modifying the range of numerous species. • Changing hydrology (the natural wetting and drying cycles, along with the frequency and duration of inundation) of wetlands and watercourses. • Affecting the diversity and abundance of wildlife that rely on those habitats.
Current responses	The City is developing a Water Strategy, which will guide: • Holistically managing surface water resources to improve water quality and natural values. • Identification and use of fit-for-purpose water resources and using technology to attain water use efficiencies.

	The City has a Climate Change Declaration that includes actions to reduce organisational greenhouse gas emissions and to maintain and improve local biodiversity despite the impacts of climate change.
Potential responses	- Examine development proposals and support actions that increase climate resilience and enhance the linkage and biodiversity outcomes of LNA across the municipality. - Develop a Climate Change Action Plan consistent with the ALBS, which includes: - Developing thresholds for unacceptable change in the condition of natural areas and appropriate corrective actions. - Designing Public Open Spaces to provide increased resilience and biodiversity. - Landscaping Public Open Spaces to incorporate species suited to projected conditions (high number of species for biodiversity resilience, drought-tolerance and resilience to heat). - Develop a Water Management Strategy to guide: - Implementation of a program for converting areas of irrigated turf that are not essential to amenity or recreation to eco-zoning and biodiversity plantings with reduced water needs. - Sustainable irrigation, enhanced urban greening, canopy cover and community wellbeing. - Other actions: - Work with partners to undertake a climate risk assessment to identify the impact of climate change on keystone species and natural areas within the City, to increase resilience to climate change.

7.3 FIRE REGIMES

Fire has been part of the Western Australian landscape for thousands of years – long before humans arrived – and has shaped the evolution of plants and animals. South-western Australia is among the most fire-prone regions globally, thanks to its Mediterranean climate with hot, dry summers and the extensive areas of flammable native vegetation.

Bushland in the south-western region of Western Australia was subjected to mosaic burns by Noongar people (DBCA, 2022¹⁶) using fire to shape the forest structure. However, some areas appear to have been burnt only rarely. Areas with varying ages since fire provide more diverse habitats. Mosaic burning has the potential to mitigate the catastrophic impacts of wildfires in the current landscape.

¹⁶ DBCA (2022) Cultural and Contemporary Burning in Western Australia
<https://www.dbca.wa.gov.au/media/567/download#:~:text=For%20thousands%20of%20years%20Aboriginal%20people%20have,protect%20plants%20and%20animals%20vulnerable%20to%20fire.&text=Cultural%20burning%20in%20parts%20of%20the%20Kimberley,which%20has%20reduced%20the%20severity%20of%20bushfires.>

Fire regimes in Australia have changed since European arrival and now often consist of large, hot, intense fires with shorter intervals between them. Although native plants are well adapted to fire, changes in burning regimes can significantly affect the composition and condition of natural vegetation. This is particularly evident where native vegetation now forms fragmented ‘islands’.

Altered fire patterns can cause changes in the structure and composition of vegetation (Bushfire Cooperative Research Centre and the Australasian Fire and Service Authorities Council, 2010¹⁷). If fires occur too frequently, fire-sensitive species may struggle to grow and reproduce. Conversely, if fires happen too infrequently, species that depend on fire for reproduction may have difficulty setting seeds or germinating. These changes affect not only the vegetation itself but also the habitat resources available to animals. Intense fires can damage populations of sensitive species, while frequent fires can hinder population recovery and encourage the growth of invasive weed species.

Excessively intense fires will affect the populations of sensitive species, and fires that occur too frequently will limit population recovery (Department of the Environment and Energy, 2016¹⁸). The frequency of bushfires has increased over the past decade due to a drying climate, likely resulting in reduced populations of native species and causing local extinctions. The effects of bushfires on biodiversity within the City include:

- Reduction in recruitment of native species due to vegetation patches functioning as islands;
- Increased weed infestation;
- Decreased success of native plant re-sprouting following each fire;
- Significant reduction in above-ground materials, including leaf litter and logs, which provide essential habitats for native fauna; and
- High mortality rates among native fauna species.

Managing the risk of bushfires requires a careful balance between safeguarding lives and infrastructure and preserving biodiversity. Achieving this balance can be challenging, as strategies to reduce bushfire risk may occasionally conflict with efforts to uphold ecosystem values.

The Shedley fire management principles (Shedley, 2007¹⁹) aim to enhance biodiversity conservation:

1. **Fire as a Natural Factor:** Fire has long influenced the landscapes and biodiversity of the south-west and will continue to do so.
2. **Species and Fire:** Species and ecological communities vary in their response to fire. Life histories and fire dependencies should inform fire management of these organisms.
3. **Ecosystem Response:** Ecosystems often shift to new states following fire due to factors such as topography, species life histories, and climatic events, making it difficult to attribute changes solely to fire.

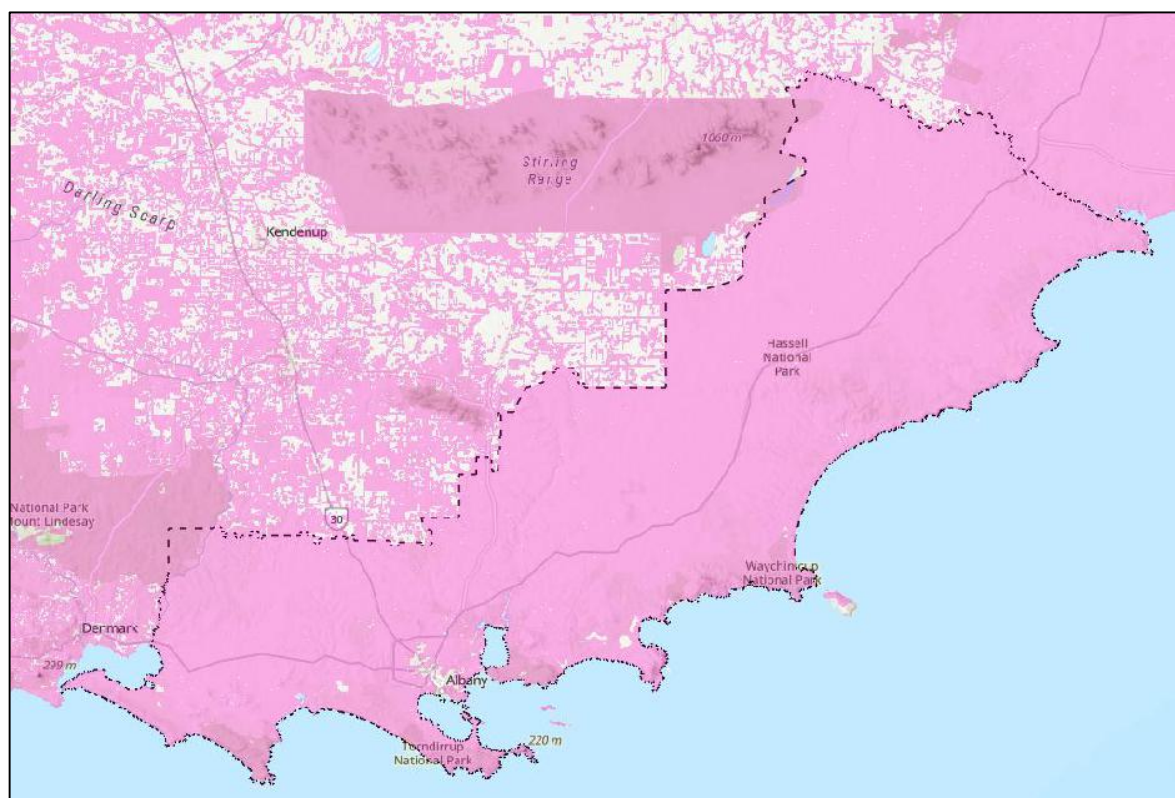
¹⁷ Bushfire Cooperative Research Centre and the Australasian Fire and Service Authorities Council (2010). Fire intervals and biodiversity responses in the south-west of WA. <https://www.afac.com.au/docs/default-source/fire-and-hazard-notes/064.pdf?sfvrsn=10&download=false>

¹⁸ Department of the Environment and Energy 2016. *Australia State of the Environment 2016*; Biodiversity, Commonwealth of Australia. <https://soe.dcccew.gov.au/sites/default/files/2022-05/soe2016-biodiversity-launch-version2-24feb17.pdf>

¹⁹ Shedley, E 2007, Fire and Biodiversity Guidelines for the Avon Basin, Consultant report to the Avon Catchment Council and the Department of Environment and Conservation, August 2007.

4. **Dual Purpose of Fire Management:** Fire management should balance two primary goals: conserving biodiversity and reducing the occurrence of large, intense wildfires.
5. **Fire Intensity and Impact:** The intensity and size of a fire are directly linked to its biological impact and the difficulty of suppression, as well as the rate of ecosystem recovery.
6. **Fire Diversity Promotes Biodiversity:** Diverse fire regimes, including variations in frequency, seasonality, intensity, and scale, contribute to biodiversity at the landscape level.
7. **Avoid Extreme Fire Regimes:** Applying the same fire regime over large areas or using extreme intervals (either too frequent or too infrequent) should be avoided.
8. **Mosaic Patterns:** Fire-induced mosaics should facilitate the movement of young animals, enhance boundary habitat, and promote connectivity across landscapes.
9. **Integrating Knowledge:** Fire regimes should be based on a thorough understanding of species life histories, attributes of native plants and animals, and traditional Nyoongar fire practices.
10. **Fire History and Landscape Context:** A region's fire history, vegetation complexes, and landscape units should inform the mix of fire intervals.
11. **Wildfire Risk:** Wildfire can damage both conservation and societal values; therefore, fire management requires a systematic and structured approach to assess and mitigate risks.
12. **Adaptive Management:** Fire management practices should evolve with new scientific knowledge, community expectations, and insights gained from ongoing monitoring and research.

Much of Albany is prone to bushfire (DFES, 2025; Figure 11). Since the introduction of the Western Australian Bushfire Guidelines in 2015, the requirements have been updated regularly to reduce bushfire risk. In some cases, these updates have increased the requirements for local vegetation modification. The clearing requirements within asset protection zones are now incorporated into the State planning framework and building regulations. While they may be reviewed and adjusted over time, they are not expected to be withdrawn.

FIGURE 10: BUSHFIRE PRONE AREAS

Source: DFES (2025). <https://www.albany.wa.gov.au/services/building-planning/development-in-a-bushfire-prone-area.aspx>

The City can exercise a degree of autonomy in setting local standards through the annual Fire Load and Fire Break Notice (Section 33(1) Notice under the Bush Fire Act 1954) for established dwellings. The City continues to participate in and monitor State policy and regulation to ensure that reasonable and appropriate local standards are maintained. However, if perverse outcomes are proposed, such as the loss of biodiversity assets for bushfire protection, the City can object to developments likely to result in poor biodiversity outcomes.

The impacts of unsuitable fire regimes on local biodiversity, along with the City's current and potential responses, are outlined in TABLE 18.

TABLE 18: IMPACTS OF FIRE MANAGEMENT

Impacts	• Potential decline in native species and increased weed infestation. • Possible decrease in the success of re-sprouting of native plants following each fire. • Significant loss of above-ground material, including leaf litter and logs, which provide crucial habitats for native fauna. • High mortality rates among native fauna species. • Opportunities rely on maintaining high-quality natural areas.
Current responses	• State Planning Policy 3.7 Planning in Bushfire Prone Areas and the Guidelines for Planning in Bushfire Prone Areas are applied through the planning and development approval

	process to ensure appropriate separation between new development and vegetated areas. Annual Fire Management Notice. Each year, the City issues a Fire Management Notice that outlines the minimum requirements for all landowners and occupiers to prepare for the bushfire season. The Fire Management Notice is issued under Section 33 of the Bush Fire Act 1954, and the requirements include maintaining emergency access and reducing fire hazards.
Potential responses	- Consult with technical experts in fire management, fire ecologists, and local Indigenous representatives to determine a mutually agreed approach for managing fire in areas of high ecological value. - Apply fire management principles in accordance with the South Coast Natural Resource Management (201820) Fire and Biodiversity Landholder Information Guide. - Map the fire history of City reserves.

7.4 DISEASES AND PATHOGENS

One of the most serious current threats to the natural vegetation of south-west Australia is the spread of a root disease known as *Phytophthora* dieback (DBCA, 2024²¹). This is caused by more than 60 water mould species, including the most common and destructive, *Phytophthora cinnamomi*.

The effects of the disease were first observed in the Jarrah forests in 1940, but the cause was not identified until 1965. By that time, thousands of hectares of forest had been infested. The root disease is now widespread in areas with annual rainfall exceeding 800 mm. In Albany, it is present in locations such as Torndirrup National Park, Mount Martin, Ledge Point, Millbrook Nature Reserve, Betty's Beach, and Mount Manypeaks, where it has caused mortality among susceptible plants, including Balga (*Xanthorrhoea* spp.) and members of the Proteaceae, especially *Banksia* species.

Important areas that are susceptible but not yet completely infested include parts of Gull Rock National Park, Millbrook Nature Reserve, Bakers Junction Nature Reserve, Down Road Nature Reserve, Cheyne Road Nature Reserve, and Water Corporation's Angove water supply area.

There is no cure for the disease, so minimising spread is crucial for reducing its impact. South Coast NRM and the Dieback Working Group maintain the WA dieback mapping database – Dieback Information Delivery Management System (DIDMS) to enhance disease management. This project has previously received funding from the Western Australian Government's State NRM Program.

Potential incursions of plant diseases such as Myrtle rust also threaten myrtaceous plant species already under threat from *Phytophthora* dieback. Myrtle rust is not yet present in Western Australia, but it could have an enormous impact on native plants.

In Marri (*Corymbia calophylla*), Marri canker has been identified as a major driver of its decline. In other species, such as karri (*Eucalyptus diversicolor*), Armillaria Root Disease has been implicated in their death and decline in some areas.

²⁰ South Coast Natural Resource Management (2018) *Fire and Biodiversity Landholder Information Guide*. https://southcoastnrm.com.au/wp-content/uploads/2019/05/FIRE_BIODIVERSITY_WEB-VERSION.pdf

²¹ DBCA (2024) *Phytophthora* dieback <https://www.dbca.wa.gov.au/management/threat-management/plant-diseases/phytophthora-dieback>

The impacts of plant diseases on local biodiversity, along with the City's current and potential responses, are identified in TABLE 19.

TABLE 19: IMPACTS OF DISEASES AND PATHOGENS

Impacts	Plant pathogens can reduce biodiversity by altering plant community structures and destroying habitat (e.g., nectivorous birds are at high risk of significant decline due to dieback).
Current responses	• Dieback warning signage at designated City-managed reserves. • Providing information about dieback on the City's website. • Implementing dieback hygiene practices for works in City reserves..
Potential responses	• Implement dieback hygiene procedures for all City operations (e.g., roadworks, infrastructure development, and maintenance). • Ensure that relevant staff and contractors receive 'Green Card Training' for dieback and biosecurity awareness. • Update and distribute information to private landholders and contractors regarding best practice natural area management.

7.5 UNCONTROLLED ACCESS

Uncontrolled access to natural areas for recreational activities such as trail bike riding and four-wheel driving poses a problem for the City, as these activities can cause significant damage to the landscape if not adequately managed. People use vehicles in bushland and along the coast for transport and recreational purposes, which can harm landscapes by physically removing vegetation, compacting soil, causing erosion, introducing and spreading dieback, disturbing soil, and disrupting fauna. Uncontrolled pedestrian access within natural areas can cause vegetation trampling, soil disturbance, erosion, and reduced aesthetic value of the natural landscape.

The impacts of uncontrolled access on local biodiversity and the City's current and potential responses are outlined in TABLE 20.

TABLE 20: IMPACTS OF UNCONTROLLED ACCESS

Impacts	Loss of biodiversity can occur from uncontrolled vehicle and pedestrian access due to: • Physical removal of vegetation. • Introducing weed species and pathogens. • Disturbing soil surfaces, which leads to erosion or compaction. • Disturbance, injury, or death of fauna. • Rubbish dumping. • Reducing the aesthetic value of the natural landscape. • Loss of economic opportunities reliant on high-quality natural areas. • Illegal firewood gathering.
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Current responses	- Supporting community volunteers involved in the management of bushland reserves. - Installing fencing, gates, and/or signage in priority reserves. - Cleaning up areas as needed or reported..
Potential responses	- Install and maintain access control, gates, and/or signage for reserves with high biodiversity value. - Engage the broader community to become stewards of local bushland by reporting activities that threaten biodiversity values.

7.6 WEEDS, PESTS AND FERAL ANIMALS

Invasive species threaten biodiversity and can diminish populations of native flora and fauna due to alterations in competition, predation, mortality, or habitat degradation.

It has been estimated that invasive species affect 82% of threatened taxa in Australia in 2018 (Australian Government, 2021²²). Foxes, cats and rabbits are among the invasive species most destructive to flora and fauna within the City.

Emerging biosecurity threats have the potential to impact biodiversity values within the City. These include invasive pests and diseases such as the Polyphagous Shot-hole Borer, Myrtle Rust and Avian Influenza (bird flu). While primary responsibility for monitoring and responding to these threats rests with State and Commonwealth agencies, the City may have a role in supporting local response efforts on land it manages, including reserves, wetlands and public open space.

Weed species often establish following disturbances such as clearing, rubbish dumping, trampling, and fire. They may lead to biodiversity loss by competing with native species and modifying or disrupting ecosystem processes²³.

The City has an Environmental Weed Management Plan (City of Albany, 2019²⁴) and has worked with the community for many years to manage environmental weeds.

The twelve most unwanted weeds identified are²⁵:

1. Pampas Grass (*Cortaderia selloana*);
2. Watsonia (*Watsonia* sp.);
3. Sydney Golden Wattle (*Acacia longifolia*);
4. Victorian Teatree (*Leptospermum laevigatum*);
5. Taylorina (*Psoralea pinnata*);
6. Dolichos Pea (*Dipogon lignosus*);

²² Australian Government (2021) State of the Environment 2021 [Link](#).

²³ DBCA (2024) [Link](#)

²⁴ City of Albany Environmental Weed Management Plan <https://www.albany.wa.gov.au/documents/469/environmental-weed-management-plan>

²⁵ Albany's 12 Most Unwanted Weeds <https://www.albany.wa.gov.au/documents/13966/12-of-albanys-most-unwanted-weeds>

7. Blackberry (*Rubus* spp.);
8. Arum Lily (*Zantedeschia aethiopica*);
9. Gorse (*Ulex europaeus*);
10. Holly-leaved Senecio (*Senecio glastifolius*);
11. Yellow-flowered Stinkwort (*Dittrichia viscosa*); and
12. Bridal Creeper (*Asparagus* spp.)

The impacts of weeds, pests, and feral animals on local biodiversity, along with the City's current and proposed responses, are detailed in TABLE 21.

TABLE 21: IMPACTS OF WEEDS, PESTS AND FERAL ANIMALS

Impacts	• Weeds compete with native vegetation by inhibiting growth and can displace native species over time, thereby reducing biodiversity. • Riparian native vegetation along wetlands and waterways can become choked with weed species, which can be transported downstream as seeds. • Grassy and other flammable weeds elevate the risk of bushfires. • Fauna habitat can be significantly altered by weed species overtaking native vegetation. • Weeds negatively impact the economic viability of agriculture, tourism, and bushland restoration programs. • Predation by foxes and cats significantly contributes to the decline of small mammals, native birds, and lizards. • The loss of nesting hollows is due to more aggressive introduced birds and feral bees. • Pests and feral animals compete for the limited food sources available. • Feral animals cause degradation through trampling, soil disturbance, and erosion. • Disease outbreaks affecting native fauna populations, including waterbirds and migratory bird species.
Current responses	• Implement weed control in accordance with the City's priorities and the City of Albany Environmental Weed Management Plan. • Support community volunteers undertaking weed control in priority reserves. • Manage landscaping practices through development approval processes. • Educate the community on suitable native and introduced species for planting. • Update the City's Weed Control Strategy. • Provide information on pest control through the City's website. • Develop and distribute educational materials on responsible cat ownership and property management to discourage feral animals.
Potential responses	• Targeted control of feral animals in priority reserves. • Gazettal of a new Cat Local Law and enforcement of 'Inside Cats Only' zones in areas designated for Environmental Conservation. • Update and distribute information to private landholders on best practices for natural area management.

	• Work with neighbouring local government areas and DBCA on coordinated feral animal control. • Update and distribute information to private landholders on best practices for natural area management. • Support biosecurity responses led by relevant State and Commonwealth agencies, including reporting, public education and management actions on City-managed land where required.
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7.7 ALTERED HYDROLOGY

Land uses such as agriculture and urbanisation have led to soil disturbance, groundwater drainage, road construction, impervious surfaces, traditional piped drainage networks, altered topography, and modified hydrological regimes. Water then flows through rural and urban areas into natural waterways, carrying waste, chemicals, nutrients, and sediment that degrade water quality in wetlands and waterways. Groundwater-dependent ecosystems can also be affected by fluctuations in groundwater levels, pollution, and nutrient levels.

Hydrology, the properties and movement of water on land, is influenced by land clearing, modifications to watercourses, and pressures such as landfills and overuse of fertilisers.

The impacts of altered hydrology on local biodiversity, along with the City's current and potential responses, are detailed in TABLE 22.

TABLE 22: IMPACTS OF ALTERED HYDROLOGY

Impacts	• Loss of habitat and biodiversity. • Changes in water quality within water catchments. • Land degradation (erosion, soil acidification). • Reduced resilience of protected areas to other threatening processes.
Current responses	• The City has developed a Water Management Strategy to guide activities that are the responsibility of the City concerning the management of water resources across the municipality in the medium term (next 10 years). It will also provide a platform to facilitate collaboration with external stakeholders to optimise the delivery of shared values, objectives, and outcomes. • Work with relevant State Government agencies to integrate water management into planning and development via Better Urban Water Management (WAPC, 2008 26) particularly for developments likely to impact hydrology. • Showcase projects such as the streamlining of Yakamia Creek.
Potential responses	• Restore native vegetation along priority waterways, drains and drainage basins.

²⁶ WAPC (2008) Better Urban Water Management. https://www.wa.gov.au/system/files/2021-07/GD_Better_Urban_Water_Management_0.pdf

8 OPPORTUNITIES

There are opportunities for the City and the community to protect, retain, and enhance biodiversity values. These include:

- Increase awareness and responsibility of City of Albany Staff through induction and ongoing training;
- Manage the City's biodiversity assets at a higher intensity than currently and in a more integrated way (e.g. multiple management methods simultaneously: weed control, pest control, revegetation) through partnerships with biodiversity-focused organisations and individuals.
- Managing more of the City's Crown Reserve assets in partnership with the community and aligned organisations;
- Using legislative tools available to local government, such as planning controls;
- Forming partnerships with organisations, tertiary educational institutions, community groups, and individuals to promote biodiversity outcomes and build on knowledge;
- Assisting landowners who wish to retain and/or enhance biodiversity values;
- Advocating for biodiversity outcomes and providing advice to regulators and decision-makers (e.g., to DWER for Part V vegetation clearing legislation under the EP Act);
- Seeking and providing funding for projects that contribute to improved biodiversity outcomes; and
- Promoting community involvement in biodiversity outcomes through education, raising awareness, and citizen science projects.

8.1 MANAGEMENT OF CITY OF ALBANY CROWN RESERVES

The City is responsible for managing some of the most significant biodiversity assets in the municipality. This includes areas such as Sandpatch, Cosy Corner, coastal and foreshore reserves, road reserves, and public open space. To ensure the maintenance and enhancement of biodiversity, the City will:

- Actively protect and manage high-value areas, particularly those facing threats such as uncontrolled access, weeds, dieback, and feral predators.
- Review and consolidate the City's environmental strategies and plans for threat mitigation (e.g., weed strategy, reserve management).
- Enhance resilience to threats at the landscape level.
- Consider the current purposes of reserves and incorporate biodiversity protection and environmental conservation aims, where relevant.
- Manage roadside vegetation (including unconstructed road reserves) as biodiversity corridors.
- Promote fire regimes that support biodiversity outcomes while also ensuring the protection of life and property.

TABLE 23 outlines opportunities for reserve management.

TABLE 23: OPPORTUNITIES - RESERVE MANAGEMENT

Impacts	• Protect biodiversity. • Increase resilience. • Reduce threatening processes. • Promote sustainable use and enjoyment.
Current Responses	• Management of access, signage, interpretation and threatening processes for priority Reserves. • Form partnerships with the community for management of Reserves with a focus on weed management and enhancing ecological functions (e.g. replanting of part of Yakamia Creek and drains).
Potential Responses	• Re-evaluate priority reserves based on biodiversity and other values to achieve on-ground outcomes to reduce threatening processes and increase ecological permeability. • Identify linkage opportunities (road reserves – made and unmade, and other linear features) to enhance ecological permeability. • Develop fire regimes based on biodiversity and cultural aspects while also considering protection of life and property.

8.2 SERVICES, EVENTS AND DEVELOPMENT BY THE CITY OF ALBANY

The City provides services and hosts events that benefit the community. It also undertakes community development, including road construction, civic projects, and other infrastructure. Even when organisations host events on behalf of the City or subcontractors carry out on-ground work, the City can set an example by carefully considering biodiversity impacts for each project, accounting for potential biodiversity effects, and ensuring that threatening processes are appropriately addressed.

TABLE 23 shows potential impacts of services, events, and civic works, along with potential responses.

TABLE 24: OPPORTUNITY - SERVICES, EVENTS, CIVIC WORKS

Opportunity	• By providing services, hosting events, and undertaking civic works, the City can convey appropriate messaging and consider biodiversity outcomes while reducing threatening processes.
Current Responses	• Undertaking environmental impact assessment of proposed works.
Potential Responses	• Consideration of biodiversity and the inclusion of environmental impact assessment clauses in tender documents, grant applications, and event requirements, as applicable.

8.3 LEGISLATIVE TOOLS FOR LOCAL GOVERNMENT

As discussed in Section 5, the City controls specific biodiversity outcomes through planning and development approvals under LPS2 and other legislation within its jurisdiction (e.g., rezoning and

structure plans). The City can make planning decisions based on the information in this Strategy, knowing that the community supports it.

The City will consistently apply legislation to protect biodiversity and implement existing policies and guidelines.

TABLE 25 indicates the current responses to use of legislative tools and potential responses.

TABLE 25: LEGISLATIVE TOOLS

Impacts	The City is part of a legislative system with the ability to influence the protection and enhancement of biodiversity assets.
Current Responses	- The City makes decisions relating to areas of legislation under its control, including development applications, rezoning and preparation of Structure Plans. - The City also has input and can provide advice relating to other regulators for development, such as subdivision.
Potential Responses	The City will provide consistent advice and consider development processes in line with legislation and this Strategy, where appropriate.

8.4 ADVOCACY AND PROVISION OF ADVICE

Local governments play a crucial role in advocating for biodiversity by directly managing public lands and indirectly influencing land management practices on private land. They achieve this through strategies such as the ALBS, supporting community initiatives, and advocating for improved biodiversity outcomes at the higher level.

The City provides advice to State government agencies regarding subdivision, development, and native vegetation clearing applications. The City can provide advice based on the information within this Strategy, which reflects the values of the Albany community.

The City also provides advice and input to State and Commonwealth organisations on development assessments. The main organisations include:

- Department of Planning, Lands and Heritage (*Planning and Development Act*).
- Environmental Protection Authority (Part IV of EP Act).
- Department of Water and Environmental Regulation (Part V of EP Act).
- Commonwealth Department of Climate Change, Environment, Energy, and Water (DCCEEW) (EPBC Act).

TABLE 26 shows potential impacts of advocacy gaps and potential responses.

TABLE 26: IMPACTS OF ADVOCACY

Impacts	- As a 'grassroots' level of government, the City can proactively advocate for biodiversity protection on behalf of its community. - Provision of advice relating to biodiversity protection and enhancement reflects the Albany community's desire for a more sustainable, resilient and biodiverse future.
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Current Responses	The City provides advice to DWER, DPLH and DCCEEW as required.
Potential Responses	Based on the ALBS, the City can advocate and provide advice on biodiversity values in the municipality, which the community and Council have endorsed.

8.5 PARTNERSHIPS

One of the most productive actions the City can take is to foster partnerships with other organisations, education providers, community groups, and individuals. This approach enhances the capacity and leverage of existing programs. For instance, if there are workshops, fencing, and rehabilitation projects, the City will ask, 'How can the City provide value and support?'

The City can assess the needs of various organisations and establish partnerships with groups including (but not limited to):

- Wagyl Kaip and other traditional custodian groups;
- South Coast NRM;
- Gondwana Link;
- Bush Heritage Australia;
- The Nature Conservancy Australia;
- Greening Australia;
- Australian Conservation Foundation;
- Conservation Council of WA;
- Catchment and Landcare Groups such as Torbay and Oyster Harbour Catchment Groups;
- Indigenous custodians, including for shared land management;
- Recreational groups such as Friends of the Bibbulmun Track and Mundabiddi Trail, off road vehicle groups, mountain bike, cycling and walking groups;
- State government agencies such as Department of Water and Environmental Regulation, Department of Primary Industry and Regional Development, Department of Biodiversity, Conservation and Attractions;
- Western Australian Local Government Association;
- Utilities such as Western Power, Water Corporation and Main Roads WA; and
- Educational institutions and organisations (schools, technical and further education (TAFE), Universities).

TABLE 27 presents the potential impacts of partnerships and the potential responses.

TABLE 27: IMPACTS OF PARTNERSHIPS

Impacts	By forming partnerships with the community and organisations, each contributing their unique strengths, biodiversity protection and enhancement will significantly increase through collaborative efforts to achieve tangible outcomes.
Current Responses	- Partnerships with bushcare groups: - Collaboration with organisations like South Coast NRM, Green Skills, and catchment groups.
Potential Responses	- Increase support for volunteers, Bushcare, and Friends groups. - Offer green waste rebates or tip passes to landowners removing weed species. - Provide vouchers for hiring a mulcher for weed management. - Identify potential partnerships with groups and organisations that have biodiversity goals.

8.6 FUNDING

The City will make resources available to seek funding to enhance biodiversity outcomes, such as:

- Dedicated resources within the City of Albany's Planning and Reserves Teams to effectively implement the ALBS on City-managed lands. Without adequate internal resourcing, delivery of on-ground actions will be significantly constrained
- Education and training of staff.
- Provision of staff to implement the ALBS.
- Support and coordination for research and citizen science projects.
- Offering grants for 'Biodiversity Assessment and Management Planning'.
- Developing a funding program for groups and landowners, e.g. Environmental Management Fund (EMF) Grants.
- Leveraging on the knowledge of the presence of threatened species for funding.
- Supporting landowners who actively manage valuable biodiversity assets by having rates waived or reduced.

TABLE 28 shows potential impacts of funding and potential responses.

TABLE 28: IMPACTS OF FUNDING

Impacts	- Seeking funding with partners can greatly enhance in-kind contributions and lead to adequate biodiversity protection and enhancement outcomes. - Providing seed funding to landowners and organisations for biodiversity projects is likely to yield outputs worth significantly more than the small amounts invested.
Current Responses	- Community organisation funding for various causes. - Support for groups through in-kind assistance.
Potential Responses	Create an annual fund of \$20,000 for up to five landowners who wish to assess the biodiversity values on their land and develop a management plan to reduce threatening processes or enhance biodiversity.

	• Investigate rate relief for landowners who demonstrate biodiversity stewardship (e.g. formally protect and enhance biodiversity values). • Fund citizen science events such as 'Bioblitz' in the City of Albany reserves.
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8.7 COMMUNITY INVOLVEMENT, EDUCATION AND AWARENESS

The City is a grassroots organisation operating at the community level. It plays a key role in community education and raising awareness. To promote the importance of biodiversity, the City will:

- Support initiatives and businesses that promote sustainable development through awards, public recognition, and other forms of support.
- Raise awareness by supporting and funding biodiversity projects, especially citizen science, which will enhance knowledge and protection of biodiversity assets (e.g. Bioblitz).
- Collaborate with traditional custodians to manage and conserve biodiversity, including the dual management of Crown reserves alongside traditional custodians and rangers.
- Introduce incentives to safeguard biodiversity – e.g. rate reduction for biodiversity protection and management on private property.

TABLE 29 presents the potential impacts of community involvement and potential responses.

TABLE 29: IMPACTS OF COMMUNITY INVOLVEMENT

Impacts	• An engaged, informed, and involved community will support the City in its biodiversity efforts and provide assistance for projects. • Recognition and awareness will establish a high benchmark by rewarding biodiversity champions. • Involvement of traditional custodians will enhance biodiversity outcomes, preserve ancient knowledge, and provide a solid foundation for reconciliation.
Current Responses	• Involvement of volunteers in bushcare activities.
Potential Responses	• Introduce a process to recognise and reward businesses, organisations, and individuals who achieve biodiversity outcomes. • Support and conduct Bioblitz projects in the City of Albany reserves. • Involve traditional custodians in biodiversity projects and the management of reserves, including cultural practices (e.g. fire management). • Consider incentives, including rate reductions, for formal biodiversity protection and management on freehold land.

9 CONSTRAINTS

The City faces several hurdles in addressing biodiversity threats. These include:

- Limited resources for personnel and funding of biodiversity initiatives.
- Previous planning decisions, demand for cleared land and ongoing incremental land clearing, degradation and fragmentation.
- Competing objectives (e.g. growth of Albany population, fire risk regulations, approved development, minor clearing) and historical land use planning decisions.
- Gaps in knowledge include:
 - Impacts of climate change;
 - How to build resilience;
 - Threatened species on private land or unsurveyed areas;
 - Keys to adaptation and building resilience at the landscape scale; and
 - Values of non-native habitat (blue gum plantations, pines, weeds, drains).

9.1 LIMITED RESOURCES

The most constraining factor for protecting biodiversity is the lack of resources to address knowledge gaps, fund planning, and provide people and tools for on-the-ground work.

In biodiversity protection, much of the work is either voluntary, underpaid, or poorly recognised compared with more mainstream economic ventures. An adequate level of resourcing doesn't have to be expensive; it needs to be targeted and sustained based on the priorities in this Strategy.

TABLE 30 shows potential impacts of resourcing and potential responses.

TABLE 30: IMPACTS OF ADEQUATE RESOURCING

Impacts	• With proper resourcing, the Albany community will receive information regarding biodiversity outcomes for a relatively small amount of money.
Current Responses	• Resourcing for volunteers in biodiversity activities.
Potential Responses	• Resourcing for training of City of Albany Staff. • Raise awareness in the community of simple but effective ways to protect and enhance biodiversity. • Set aside funding in the annual budget for biodiversity projects and outcomes based on the priorities in the ALBS. • Seek funds for biodiversity-related projects in partnership with key stakeholders.

9.2 PREVIOUS PLANNING DECISIONS AND DEMAND FOR CLEARED LAND

Albany is experiencing significant population growth, with the latest Regional Movers Index report ranking Albany as one of the top cities in Australia for capital city to regional area migration²⁷.

According to the report²⁸ Albany had the third-highest share of net internal migration in Western Australia at 10.8%, but experienced the second-highest growth in net capital-regional migration nationally, as more people choose to call our idyllic coastal city home. This reflected a remarkable more than five-fold annual growth rate, or a 465% increase in net capital-regional migration to Albany over the 12 months preceding June 2024. Albany experienced a 15.8% rise in capital-regional migration for the June 2024 quarter alone.

Albany’s positive increase in internal migration is driven by a combination of factors, including its mild climate, coastal lifestyle, steady job market, and growing remote-work opportunities.

Although planning decisions have already been made for areas that will become urbanised in the coming years, there are still opportunities to retain and enhance biodiversity through planning and development. For example, older structure plans will expire in 2025, allowing for review and consideration of biodiversity values.

TABLE 30 shows the potential impacts of planning decisions and potential responses.

TABLE 31: IMPACTS OF PLANNING DECISIONS

Impacts	While some bushland areas have been earmarked for development, there are others to which the planning process can consider the protection and enhancement of biodiversity features.
Current Responses	Assessment of development proposals by the City of Albany and input into the planning and environmental processes run by other regulators.
Potential Responses	Use information generated in this Strategy to assist in decision-making related to planning and development applications within the City’s processes and provide advice to other regulators, as appropriate.

9.3 KNOWLEDGE GAPS

Increasing community knowledge and awareness of local biodiversity is essential to improving sustainable behaviours and attitudes towards the natural environment. An informed community fosters a more receptive, sustainable, and engaged society.

This is crucial because many environmental issues require action by individuals and groups to be effectively addressed. The City also has gaps in its knowledge of the LNA it manages and of how best to manage biodiversity interactions.

²⁷ Albany’s population swells with internal migration *Published on Monday, 16 September 2024 at 11:14:15 AM*
<https://www.albany.wa.gov.au/news/albanys-population-swells-with-internal-migration/1233>

²⁸ Regional Movers Index June 2024
<https://regionalaustralia.org.au/common/Uploaded%20files/Files/2024/Regional%20Movers%20Index/RMI%20June%2024%20Report.pdf>

The City plays an essential role in promoting environmental awareness, engaging people in biodiversity conservation, and raising awareness across all age groups and segments of the community (including residents, businesses, and educational facilities).

Gaps in knowledge include:

1. Effective ways to enhance biodiversity.
2. Relationships between species.
3. Impacts of combinations of threats.
4. Out-of-date or incomplete data relating to biodiversity.

TABLE 32 presents the potential impacts of knowledge gaps and the potential responses.

TABLE 32: IMPACTS OF KNOWLEDGE GAPS

Impacts	• Gaps in knowledge can prevent practical actions and management.
Current Responses	• Advice from technical experts.
Potential Responses	• Strengthen partnerships to increase knowledge. • Implement the precautionary principle. • Do not delay positive actions in the absence of concrete knowledge. • Increase knowledge by hosting Bioblitz and other citizen science initiatives. • Highlight and celebrate community champions and biodiversity initiatives.

10 SCORING AREAS OF BIODIVERSITY

10.1 PRIORITY LOCAL NATURAL AREAS

The Albany Local Biodiversity Strategy (ALBS) is a local planning policy, developed following the Local Government Biodiversity Planning Guidelines (Del Marco *et. al.* 2004²⁹) designed to identify and prioritise LNA for conservation. ALBS meets the requirements of a Local Bushland Protection Strategy, as referred to in State Planning Policy 2.8 (Government of Western Australia 2010³⁰).

Community consultation indicates that all LNAs are considered essential and should be preserved or enhanced. However, it is helpful to identify areas where action may deliver the most benefit under current constraints.

The ecological criteria categories used to rank biodiversity values by the State Government of Western Australia include:

- Areas of recognised international, national or regional values, which could include areas of scientific or evolutionary importance.
- Representation of ecological communities, including vegetation unique to the Local Government area.
- Diversity – priority species and communities.
- Rarity – threatened species and ecological communities.
- Maintenance of ecological processes or natural systems (connectivity), noting that stepping stones are also important.
- Protection of wetlands, streamlines, estuarine and coastal vegetation.

TYPES OF LOCAL NATURAL AREAS

Protected LNA are natural areas within the City that are considered to have a level of biodiversity protection and include:

- Natural areas occurring on Crown land vested with the State Government, managed for conservation and/or reserved as Environmental Conservation;
- Natural areas occurring on Crown land vested with the City and managed for the purpose of conservation; and
- Private land over which a conservation covenant is applied.

Partially protected LNA refer to all natural areas that exist outside of the areas defined above. Partially protected natural areas are considered partially protected because they are subject to clearing or land-use controls, even if the City does not directly regulate them.

Some land use planning and environmental assessment processes are conducted under:

²⁹ Del Marco *et. al.* (2004) Local Government Biodiversity Planning Guidelines.

https://www.albany.wa.gov.au/Profiles/albany/Assets/ClientData/WALGA_LBP_Overview2023.pdf

³⁰ Government of Western Australia (2010). State Planning Policy 2.8 State Planning Policy 2.8.

https://www.wa.gov.au/system/files/2021-06/SPP_2-8_bushland_policy_perth_metro.pdf

- Parts IV and V of the *Environmental Protection Act 1986* (EP Act);
- *Biodiversity Conservation Act 2016* (BC Act); and
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The City has opportunities to advocate for an increase in the protection level in this category through planning and environmental process decisions.

Poorly protected LNA areas are areas where planning decisions indicate they will be cleared for development, or where processes threaten them without abatement.

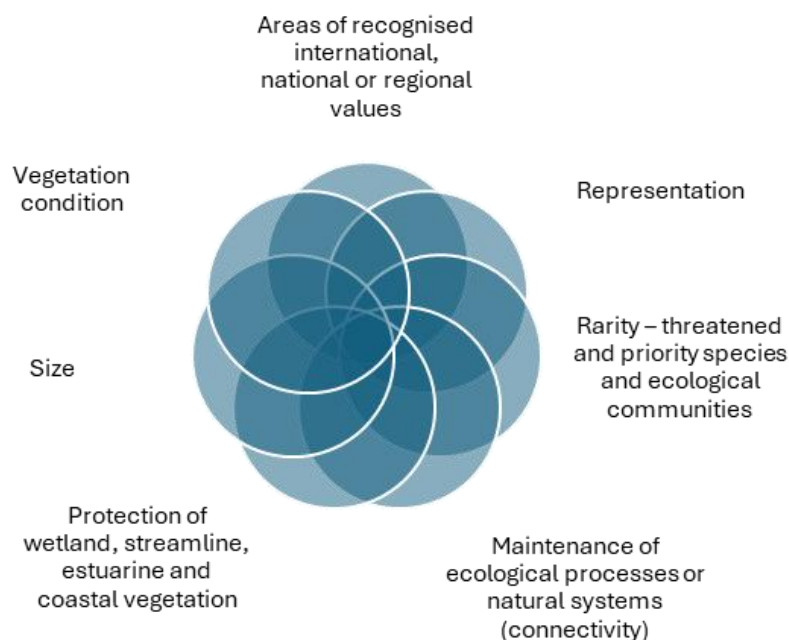
10.2 CONSERVATION SIGNIFICANCE CRITERIA

Background

The ALBS project is fortunate to have spatial data available to assist in identifying and scoring features, such as native vegetation, watercourses, wetlands, and locations of Threatened and Priority species and communities. These data align with the ecological criteria categories used by the State Government of Western Australia to rank biodiversity values. Figure 11 shows the types of biodiversity criteria.

The scoring framework is intended as a decision-support tool to inform management and planning. It does not imply that some natural areas are inherently more important than others. All Local Natural Areas contribute to biodiversity outcomes and should be retained and managed wherever practicable.

FIGURE 11: BIODIVERSITY CRITERIA



During the stakeholder engagement process (Workshop 1³¹), LNA were defined as:

“areas with value to natural systems across all land tenures, including non-vegetated areas with value for ecosystem processes.”

Attendees with technical knowledge of biodiversity parameters were asked how they would weigh the criteria for biodiversity scoring and planning. The results are shown in TABLE 32. Connectivity and physical features (e.g. waterways) were identified as key considerations, followed by rarity, vegetation condition, international or other significant status, vegetation type representation, presence of threats, and patch size.

At Workshop 2³² Stakeholders were asked whether the weighted criteria would be a valuable tool for scoring biodiversity areas. Attendees asked whether the City could create an example tool for testing. A tool was developed and was received favourably by the stakeholders who tested it. The tool will be available on the City of Albany website.

TABLE 33: RANKING OF BIODIVERSITY SIGNIFICANCE CRITERIA – STAKEHOLDER WEIGHTING

RANKING	CRITERIA PRIORITIES	WEIGHTING	IMPORTANT BECAUSE
1	Connectivity - Maintenance of ecological processes	40	Movement through the landscape, permeability - not just connectivity, i.e. hydrological process, renewal regimes, stepping-stones, linear, flowering, life cycles, species dispersal methods, nature link
2	Presence of wetlands, streamlines and estuarine vegetation	20	Closely linked with connectivity
3	Rarity (threatened and priority species)	10 - 15	Threatened and priority flora, fauna and communities are rare or not well understood.
4	Vegetation condition (could not be used as data is not available for the entire municipality)	10	Good return on effort made. It is easier and less expensive to maintain vegetation in good condition than to improve a degraded habitat. Development approval state – The City can implement more localised assistance (e.g. protection of habitat trees). Weeds (e.g. wattles). Regenerate and restore
5	Areas of recognised international, national or regional value	35	Links to social criteria Migratory shorebirds
6	Representation	3 - 5	Need at least 30% of each vegetation type to have a comprehensive and representative array of biodiversity – Best if it can be protected and managed.
7	Threats	4	Incomplete data for the municipality.

³¹ Held with key stakeholders on 29 August 2024.

³² Held with key stakeholders on 10 December 2024

RANKING	CRITERIA PRIORITIES	WEIGHTING	IMPORTANT BECAUSE
8	Size of patch	1 - 5	Large size is good, but smaller areas can also be significant. Score: 20 ha – 5, 10 – 20 ha – 4, 4 – 10 ha – 3, 1 – 4 ha -2, less than 1 ha - 1

Stakeholder input indicates that there are different approaches to ranking criteria. It is recommended that different ranking methodologies are trialled to determine the best fit for biodiversity action planning.

10.3 METHODOLOGY

The LNAs within the City have been ranked using multi-criteria spatial analysis based on a set of weighted ecological criteria (TABLE 32). These ecological criteria were derived from the *Local Government Biodiversity Planning Guidelines for the Perth Metropolitan Region* (Del Marco et al., 2004³³) and incorporate biodiversity considerations including connectivity, presence of wetlands and water courses, rarity, representation, areas of recognised international, national or state significance and size.

Through a series of workshops with key stakeholders, biodiversity criteria were discussed and assigned weightings based on their importance in biodiversity conservation and protection. Weightings are shown in TABLE 32.

Statistical analyses were performed by the City of Albany using ArcGIS Pro 3.3.0, where input source data (primarily spatial) was combined and processed in ArcGIS models to generate maps and tabulated results. The analysis created scores for all patches of native vegetation (LNA) mapped within the City.

Data output has been collated in a mapping tool (see Section 10.5), which was tested by DBCA, DPLH, South Coast Natural Resource Management Inc., and City of Albany staff to assess whether the predicted biodiversity values matched the scoring. There was agreement that, given the relatively limited data, the outputs adequately reflected biodiversity values in the various LNAs.

Analysis to identify and rank areas of biodiversity has relied on digital data provided by WALGA and the State government (including the DBCA). A list of the data is available in Appendix J.

The LNA mapping represents a snapshot in time and should be used alongside on-the-ground assessments of biodiversity values. Some areas with low scores may have limited data and or no or low survey effort rather than a lack of biodiversity values.

10.4 RESULTS

The results of the analysis include³⁴:

³³ Del Marco et. al. (2004) Local Government Biodiversity Planning Guidelines.

https://www.albany.wa.gov.au/Profiles/albany/Assets/ClientData/WALGA_LBP_Overview2023.pdf

³⁴ Vegetation statistics vary slightly throughout the report due to the use of different source datasets and reporting scales. Unless otherwise stated, the figures presented here and in Section 5.6 are the primary statistics adopted for the Albany Local Biodiversity Strategy. DBCA Legislated Lands and Waters that intersect with Native Vegetation Extent, Crown Reserves that have "Conservation" in their purpose and intersect with Native Veg Extent. LPS2 Environmental Conservation Zoning that intersects with Native Veg Extent and DBCA Conservation

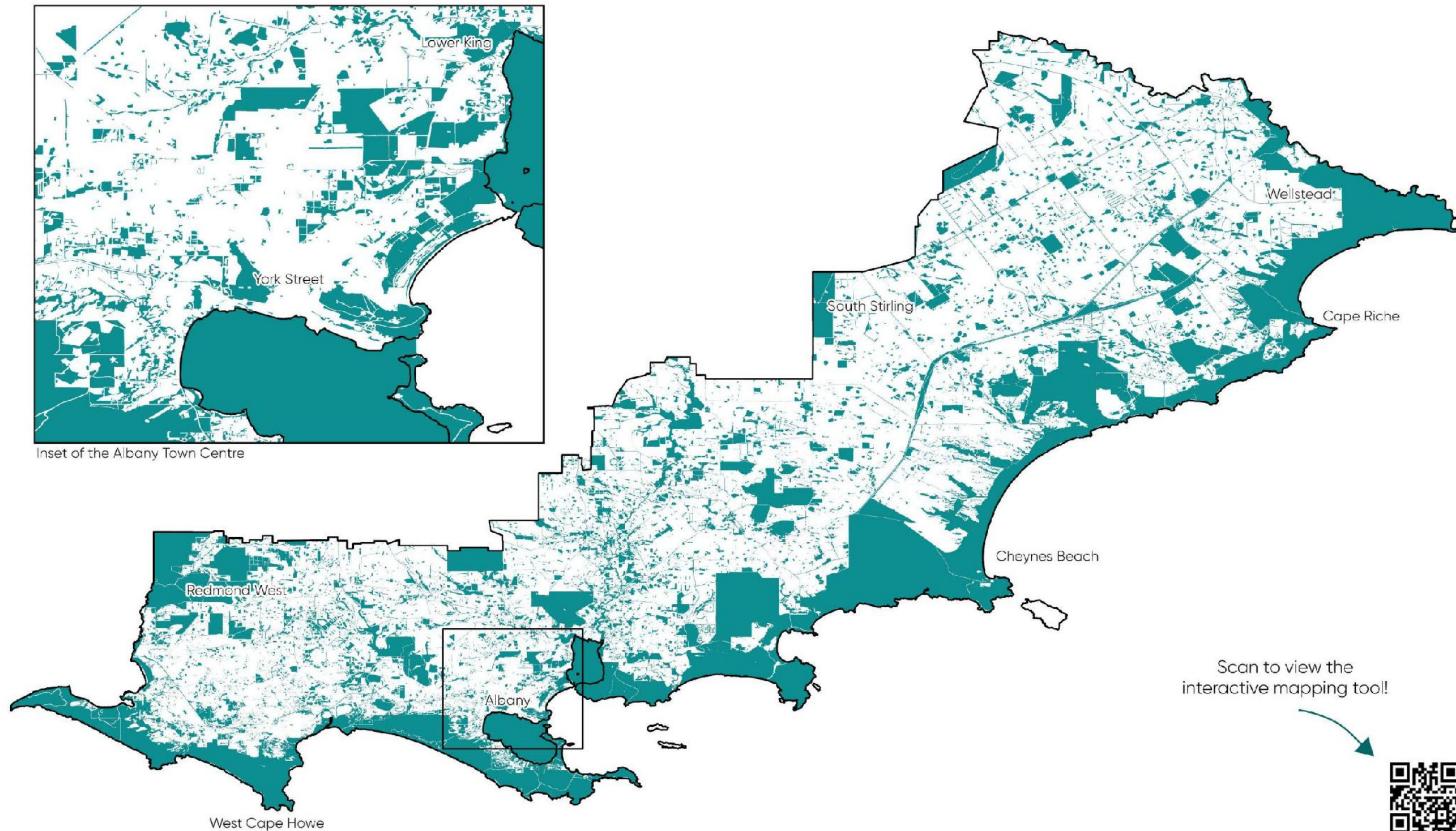
- City of Albany – Area – 430,807 hectares (ha) with pre-European vegetation illustrated in **MAP 1**.
- Native vegetation remaining: 154,022 ha (35.8% of original extent) (**MAP 2**).
- Native Vegetation in the DBCA Conservation Estate: 41,731 ha.
- Native Vegetation in Crown Reserves with a purpose of ‘Conservation’: 22, 252 ha.
- Native vegetation in areas zoned or reserved ‘Environmental Conservation’ under the City of Albany Local Planning Scheme: 79,344 ha.
- Native vegetation in areas protected by a conservation covenant: 1,860 ha.
- Area with some level of protection for Conservation: 18% of the original vegetation extent or 51.5% of the remaining vegetation extent (**MAP 3**).
- Native vegetation zoned or reserved for environmental conservation under Local Planning Scheme 2 (**MAP 4**).
- City of Albany freehold land (**MAP 5**).
- Poorly represented vegetation types – Pre-European vegetation: less than 30% of original extent remaining (**MAP 6**).
- Albany Regional Vegetation Survey (**MAP 7**).
- Vegetation condition for Albany Regional Vegetation Survey area, 2010 (**MAP 8**).
- Scoring of LNA in Mapping Toolkit.
- Local Natural Areas (**MAP 9**).

The local natural areas identified in ARVS2 (**MAP 9** and Appendix K) are important for biodiversity protection. While LNA have been defined broadly to be ‘areas with value to natural systems across all land tenures, including non-vegetated areas with value for ecosystem processes’—the mapping has only been applied to vegetated areas. This means a significant portion of the urban landscape is not shown as LNA and may be overlooked in biodiversity actions. This aspect will require attention during implementation.

Covenants that intersect with Native Veg Extent. The new combined number is the total footprint of all four layers combined (where overlaps exist, the area is just counted once).

Local Natural Areas

Local Natural Areas (LNA) are defined as “areas with value to natural systems across all land tenures, including non-vegetated areas with value for ecosystem processes”.



10.5 MAPPING TOOL

A mapping tool has been created and will be hosted on the City of Albany website at: <https://www.albany.wa.gov.au/ALBSmappingtool>

Data included in the mapping tool:

- ARVS Survey Area;
- City of Albany Boundary;
- LPS2 Urban Development Zone;
- Local Planning Strategy – Urban Growth Zone;
- Non-DBCA Crown Reserves with a Conservation Purpose;
- DBCA Legislated Lands and Waters;
- LPS2 Environmental Conservation Zones and Reserves;
- Ranking Matrix – Stakeholder Weighting;
- P1.1 Within Zone A and B of Macro Corridor;
- P2.1 Within 50 m of a South Coast Significant Wetland;
- P2.2 Within 50 m of a 'Directory of Important Wetlands' wetland;
- P2.3 Within 50 m of a waterway;
- P3.1 Contains Priority Fauna;
- P3.2 Contains Priority Flora;
- P3.3 Contains Threatened Fauna;
- P3.4 Contains Threatened Flora;
- P3.5 Contains Priority Ecological Communities (PEC);
- P3.6 Contains Threatened Ecological Communities (TEC);
- P4.1 DBCA Legislated Land and Water;
- P5.1 Less than 30% Pre-European Vegetation remaining;
- P5.2 Less than 10% Pre-European Vegetation remaining;
- P6.1 Size of Patch;
- Pre-European Vegetation – Native Vegetation Extent;
- LPS2 Zones and Reserves (Native Vegetation Extent); and
- WANow Aerial photographs.

The mapping tool maps and applies scores to LNA, allowing the community and decision-makers to see the relative context of vegetation patches. While all native vegetation is significant, the scoring process identifies areas where multiple biodiversity criteria coincide.

The mapping tool comes with the following disclaimers:

- Priority LNA mapping represents a snapshot in time, and the data has some limitations (such as the accuracy of linework, some patches have not been surveyed, etc.). On-the-ground assessments will be needed in addition to digital data to establish an area's value.
- The analysis does consider the quality of the vegetation in the LNA. Vegetation quality should be an additional consideration during planning assessments.
- Priority should not *only* be afforded to areas of highest ecological value (i.e. those areas with a high score), but to all LNAs as far as reasonably practicable.

10.6 PRIORITISING ACTIONS FOR LOCAL NATURAL AREAS

Due to the limitations of the data, ranking was not used for prioritising the LNA or biodiversity actions. However, the mapping tool allows for comparison of relative scores. Other features in the landscape such as hydrological features, upland areas and geology (lateritic and granite features) should also be taken into account.

Areas for Targeted Threat Reduction

- In the highest scoring crown reserves managed by the City with a Conservation purpose or 'Environmental Conservation' reserve status under LPS2 - Protect and manage to reduce threatening processes.
- In crown reserves managed by other organisations or in private ownership – advocate for protection and management.

Areas Requiring Focused Management

- In Crown reserves managed by the City - Protect and manage to reduce threatening processes.
- In crown reserves managed by other organisations or in private ownership – advocate for retention and management with input through the planning process.

Areas Where Protection and Enhancement opportunities exist

- Many areas are not protected by zoning or reservation and may have land uses not consistent with protection or preservation. The scoring tool can be used to identify areas where protection measures may be most effective.
- Conversely, areas with fewer mapped biodiversity attributes can be identified to improve values by managing threatening processes, improving connectivity, controlling land uses through planning and environmental processes, and potentially providing funding or partnership pathways to enhance or restore.
- Some LNA have not been mapped as they do not comprise native vegetation or other mapped features (e.g., drains, cleared areas). This means biodiversity action planning must consider areas

with biodiversity value or that would benefit from enhancement activities, regardless of mapping and scoring results.

11 ACTION PLAN

Feedback received during consultation indicated that key stakeholders and the community would like to see:

- Actions that strengthen the planning framework.
- On-ground protection of LNAs.
- Increased appreciation in the broader community regarding the importance of biodiversity.

Key stakeholders support actions that address the following:

- Funding, information, coordination, and support for biodiversity initiatives.
- Nature Positive – How to move beyond concepts of ‘no net loss’ into positive territory.
- Aim to turn around the trend line of loss and degradation.
- Natural capital, ecological services – calculate these to show the importance of biodiversity to our everyday lives.
- Show how our investment in biodiversity is paid back.
- Can the City and partners create a tool for natural capital?
- Rather than ‘connectivity’ – promote concepts of ‘ecological permeability’ – Nature link.
- Articulate relationships and social dynamics.
- Set targets for involvement and collaboration.
- Set revegetation targets.
- Weed management needs a different approach to consider biodiversity enhancement.
- LNA - what can we protect (e.g. bushland, wetland, watercourse) vs what can we enhance (e.g. drain, road reserve)

Actions associated with this Strategy need to be linked to biodiversity protection, enhancement and awareness, including:

Control

- Control matters directly within the City’s area of concern – for example, assessment of planning and development proposals, rezoning and structure plans.
- Matters within the City’s direct control, such as the protection and management of City parks and reserves, and the discharge of statutory responsibilities for which the City has a decision-making role.

Concern

- Relates to issues over which the City has limited influence or control, such as international agreements, broader societal trends, or the introduction of strategies by the State government

that seek to support growth while balancing social and economic outcomes. The City can monitor these changes and respond strategically.

- Appreciating concerns articulated by key stakeholders and the community.
- Actively managing areas of biodiversity for which the City has direct control.
- Where there is limited direct responsibility, advocate for greater concern about biodiversity outcomes.

Influence

- Taking a 'shared responsibility' approach to improving planning frameworks and implementation to protect and enhance biodiversity.
- Influence awareness in the community by sharing information about the importance of biodiversity.
- Matters outside the City's direct control, but over which it has a degree of influence. These include managing biodiversity on private land through education and support, community initiatives, and advocacy to influence state and federal policies. The City could influence the retention of biodiversity values by permitting higher density within urban areas and reducing demand for urban sprawl into areas of higher biodiversity
- The City has limited influence or control over some aspects of biodiversity, such as international agreements, broader societal trends, or the introduction of strategies by others. However, the City can identify these activities and their local-level application, demonstrating concern by monitoring changes and responding strategically.

Actions are outlined in a separate Action Plan document, available on the City of Albany web page.

12 MONITORING, REPORTING AND ADAPTIVE MANAGEMENT

12.1 LOCAL BIODIVERSITY ACTION PLAN

The ALBS will inform the development of a Biodiversity Action Plan to be implemented by the City. The Action Plan will be prepared by an internal working group to ensure the implementation of the strategy, including consideration of links with other environmental-related strategies. Some actions will need to be considered in collaboration with key stakeholders who have expertise in biodiversity and ecology, environmental management, planning, and operations.

The Action Plan will be reviewed every two years, include quantifiable, time-based, and prioritised actions, and outline the resources required to implement them. The list of priority actions will be published on the City's website, along with the proposed measures of success, as determined by the Monitoring and Evaluation Program outlined below.

12.2 MONITORING AND REPORTING

The City of Albany will establish a Monitoring and Evaluation Program to track the progress and relative success of the ALBS actions and assess whether the City is achieving its goals and strategic objectives. Actions need to be specific, measurable, actionable, realistic, and time-bound, ensuring that progress can be effectively measured, reported, and adapted as needed. Each year, the City will monitor and report against:

1. Progress toward the aspirational target to increase the conservation protection status of poorly protected biodiversity assets of native vegetation.
2. Progress toward the focus area goals of Retain and Protect, Learn, Manage and Enhance, and Engage.
3. Progress toward the ALBS vision and goals.
4. Achieving the actions and their determined, measurable targets under the Annual Local Biodiversity Action Plan for the given year.

Reporting will occur each year, with results included in the subsequent year's action plan. Reporting on the progress and success measures of the ALBS actions will be conducted through the City's Council Plan and included in the following year's action plan.

Additionally, key updates on the ALBS will be available on the City's Local Biodiversity landing page. The current native vegetation extent mapping has limited utility for tracking changes over time because data-collection parameters vary from year to year. When the State Government updates its data, the Mapping Tool will integrate the new information.

12.3 RESOURCING

To achieve the ALBS's targets, goals, and strategic objectives, the City will need to resource the action items adequately. This will include reviewing and enhancing existing natural area management and community programs, as well as developing new initiatives aligned with the Actions. Achieving these actions will require expanding the area of land managed for biodiversity and effectively implementing the ALBS, both of which will require significant funding and human resources.

Funding is a key determinant of the amount of land the City can realistically manage and conserve, particularly where on-the-ground management is necessary.

The community values the protection and management of LNAs, and the City is committed to prioritising resources to support biodiversity. This may involve exploring the community’s perspective on an environmental levy to help fund the proposed expansion of the City’s conservation estate.

The City will continue to monitor and apply for government or other environmental grants as opportunities arise to support its aims of protecting, growing, and enhancing local biodiversity.

Resources will be required to maintain the mapping tool and data in the City’s GIS system.

TABLE 34 outlines the benefits of monitoring, reporting, and adaptive management.

TABLE 34: IMPACTS OF MONITORING, REPORTING AND ADAPTIVE MANAGEMENT

Impacts	• Appropriate governance, including monitoring, reporting and adaptive management, will ensure the successful implementation of the Albany Local Biodiversity Strategy.
Actions	• Establish an internal working group comprising City staff and a councillor. Key stakeholders may be involved as required. The role of the group will be to prepare Action Plans (including budget plans), updates, and annual Monitoring and Evaluation Reports for consideration by City executives and Councillors. • Outcomes from ALBS will be tied to key performance indicators of the City CEO. • The City to budget funding and human resources for the Annual Biodiversity Action Plan preparation and implementation.

12.4 REVIEW

The Action Plan will be reviewed every one to two years to enable adaptive management.

ALBS will be reviewed in 10 years to analyse changes in native vegetation extent and associated ecological values, and to determine whether the ALBS needs adjustment to address any new issues or actions that have proven ineffective. Other updates may also be needed when significant legislative changes affecting the Strategy occur.

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Torbay Catchment Group

Oyster Harbour Catchment Group

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Department of Planning, Lands and Heritage

Anne Bondin (Birdlife Australia and Albany Bird Group)

Albany Community Environment Centre

City of Albany Staff

14 GLOSSARY AND ACRONYMS

TERM	DEFINITION	REFERENCE
Aboriginal people	Aboriginal and Torres Strait Islander people. We acknowledge that many Aboriginal people prefer to be referred to by their language group, nation, tribe, or clan, given the many distinct groups across Western Australia.	Government of Western Australia (2022[1])
Biodiversity	Biodiversity means the variability among living organisms and the ecosystems of which those organisms are a part, and includes the following: (a) diversity within native species and between native species; (b) diversity of ecosystems; (c) diversity of other biodiversity components.	WALGA (2023) An introduction to Local Biodiversity Planning for Local Government in the South-west of Western Australia
Bushland	Land on which there is vegetation that is either a remainder of the natural vegetation of the land or, if altered, is still representative of the structure and floristics of the natural vegetation and provides necessary habitat for fauna.	
Clearing	Refers to the killing or destruction of, the removal of, the severing or ringbarking of trunks or stems, or the doing of any other substantial damage to some or all the native vegetation in an area. Clearing includes draining or flooding land, burning vegetation, grazing stock, or any other activity that kills or substantially damages native vegetation.	
Comprehensive, adequate and representative (CAR) reserve system	A reserve system characterised by the following: • Comprehensive: includes the full range of ecosystems recognised at an appropriate scale within and across each bioregion • Representative: areas that are selected for inclusion in reserves reasonably reflect the biotic diversity of the ecosystems from which they derive. • Adequate: maintains the ecological viability and integrity of populations, species and communities	Department of Conservation and Land Management (2004)
Condition	Refers to vegetation condition as assessed using published methodologies. Keighery's (1994) methodologies are widely used.	
Connectivity	Refers to the degree of connection between natural areas.	
Conservation Purpose	Conservation purpose (e.g., nature conservation) or private lands where the biodiversity values are secured for preservation under zoning or covenanting.	
Corridors	Contiguous natural areas or revegetated areas that directly connect larger natural areas, allowing the	

TERM	DEFINITION	REFERENCE
	movement of organisms between larger areas over time.	
Ecological Community	A naturally occurring group of plants, animals, and other organisms interacting in a unique habitat.	
Ecological Linkage	Non-contiguous natural areas that connect larger natural areas by forming stepping stones that allow the movement of organisms between larger areas over time.	
Ecosystem Services	The role of organisms in creating a healthy environment for human beings includes, for example, producing oxygen, forming soil, and maintaining water quality.	
Edge Effects	Threatening processes acting at the edges of natural areas. Examples of edge effects include weed invasion, grazing and trampling, increased sun and wind exposure, pollutants (fertiliser, pesticide, toxin, excess water) drift or runoff, air pollution from traffic or industry, noise, artificial lighting at night, rubbish accumulation or dumping and exposure to feral animals, pests, and diseases from surrounding land uses.	
Endemic	A species having a natural distribution confined to a particular geographical region.	
Environmental Weeds	Plants that establish themselves in natural ecosystems and proceed to modify natural processes, usually adversely, resulting in the decline of the communities they invade.	
Floristic Community Type	Floristic assemblages as defined by Gibson et al. (unpub. 1994). The presence or absence of individual taxa in standard areas (plots, sites, quadrats) is used to define floristic groupings based on shared species.	Gibson N., Keighery, B., Burbidge, A. and Lyons, M. (1994) A Floristic Survey of the Southern Swan Coastal Plain. Unpublished report for the Australian Heritage Commission, prepared by the Department of Conservation and Land Management and the Conservation Council of Western Australia Inc.
Freehold	Property tenure where an estate of inheritance in fee simple, fee tail, or for life is held. It refers to a landholding that is owned by a landholder having certain rights over that land, for example, private land or Council-owned land that can be sold.	
Habitat	The natural environment of an organism or community, including all biotic (living) or abiotic (non- living) elements; a suitable place for an organism or community to live.	
Habitat Fragmentation	The process of isolating (usually by land clearing) a once continuous habitat into smaller, isolated natural areas.	

TERM	DEFINITION	REFERENCE
Indigenous	That which is naturally existing within a given region as a result of natural processes, with no human intervention.	Government of Western Australia (2022[2])
Local Natural Areas	Local natural areas (LNAs) are defined as natural areas that exist outside lands managed by the Department of Biodiversity, Conservation and Attractions and that are regionally significant. Note: In Albany, 'regionally significant areas' have not been defined.	Del Marco et al, 2004. WALGA, 2023
Monitoring	The regular collection and analysis of information to assist timely decision-making, ensure accountability and provide the basis for evaluation and learning.	
Native Vegetation	Indigenous aquatic or terrestrial vegetation. It does not include vegetation that was intentionally sown, planted or propagated unless that vegetation was sown, planted, or propagated as required under the <i>Environmental Protection Act 1986</i> or another written law; or that vegetation is of a class declared by regulation to be included in this definition. Native vegetation does not include dead vegetation unless that dead vegetation is of a class declared by regulation to be included in this definition. Native vegetation includes non-vascular plants (e.g., mosses, fungi, algae) and marine plants (seagrasses, macroalgae [seaweed]). Native vegetation is more than trees and includes understorey and groundcover plants.	
Natural Area	A naturally vegetated area or non-vegetated area such as a water body (generally a river, lake or estuary), bare ground (typically sand or mud), or a rock outcrop.	EPA Guidance Statement 33 (2008)
Natural Area	Describes an area that contains native species or communities in a relatively natural state and hence contains biodiversity. Natural areas can be areas of native vegetation, vegetated or open water bodies (lakes, swamps), or waterways (rivers, streams, creeks – often referred to as channel wetlands, estuaries), drains, springs, rock outcrops, bare ground (generally sand or mud), caves, coastal dunes, or cliffs.	
Net Positive	A net positive environmental impact means that an organisation's or activity's overall effect on the environment is beneficial, going beyond minimising harm to create a positive contribution. It's about giving back more to nature and society than is taken away, resulting in a net gain for the environment. This can involve restoring ecosystems, reducing pollution beyond legal requirements, and contributing to the planet's overall health and well-being.	Australian Government, Department of Climate Change, Environment, Energy and Water. Nature Positive Plan: better for the environment, better for business December 2022 https://www.dcceew.gov.au/sites/default/files/documents/nature-positive-plan.pdf
Priority Local Natural Area	LNAs that demonstrate one or more prioritisation criteria defined by the Perth Biodiversity Project (2012).	

TERM	DEFINITION	REFERENCE
Protection	Refer to natural areas that are secured for conservation, either as public lands, best suited for a	
Regionally significant natural area	a component of remnant native vegetation, rock outcrop or water body that collectively aims to form a comprehensive, adequate and representative system of conservation areas. To determine whether an area falls into this category, it must be part of the existing or proposed conservation system, or meet (in whole or in part) a range of agreed criteria (EPA 2003a).	EPA Guidance Statement 33 (2008)
Rehabilitation	The restoration of a natural area that has been temporarily and grossly disturbed, and no natural components are present.	
Reserves	Areas of Crown land reserved for various public purposes, for example, parks, recreation, drainage, or church sites.	
Restoration	The return of a community to its pre-disturbance or natural state, in terms of abiotic (non-living) conditions, community structure, and species composition, to reinstate a long-term, self-regenerating natural ecosystem.	
Retention	The process of ensuring a natural area is retained, but not necessarily afforded protection to ensure its continued existence and viability. For example, a natural area may be preserved by the Council refusing or conditionally approving a development application.	
Revegetation	The planting or direct seeding of native species in areas that have been cleared or highly modified. The mix of species may not be the same as originally occurring in that patch of vegetation. In and around natural areas, local native species of local provenance should be used. Revegetation should occur only in areas within or around natural areas where regeneration techniques are not feasible to support natural regeneration.	
Tenure	Commonly referred to as ownership. However, land differs from goods in that no one person can possess land in absolute ownership. Tenure is the system of holding land in the Crown's name.	
Threatening Processes	Any occurrence, activity or institutional process or structure that threatens, or may threaten, the survival, abundance or evolutionary development of a native species or ecological community.	
Traditional Owners	Aboriginal people who are native title claimants, native title holders or who have otherwise been recognised as having a right and responsibility to speak for country.	Government of Western Australia (2022[3])
Viability	(as in ecological viability): the likelihood of long-term survival of a particular ecosystem or species.	

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APPENDIX A

Community Survey Analysis

Local Biodiversity Community Survey

Prepared July 2024

A community survey was conducted by the City of Albany in 2024 to collect community feedback on local biodiversity and urban forest in the City of Albany. The information collected will be used to guide the development of the new Local Biodiversity Strategy and the revised Urban Forest Strategy.

A combined survey was implemented as the two strategies are closely related, but with different purposes and geographical ranges. A combined survey was used to avoid confusion between the topics and reduce survey effort. The results have been analysed separately.

Key Findings

Survey Effort	- The high number of responses received, and effort taken to complete the survey signify that Biodiversity and Urban Forest are important community issues. - Responses received from 42 localities within the City of Albany, with 84% stating that they lived in urban Albany.
Biodiversity Conservation	93% of respondents feel that biodiversity conservation in the City of Albany is Important to Very Important - There was a strong desire amongst respondents for better protections on native bushland with the municipality.
Biodiversity Loss	96% of respondents are concerned about biodiversity loss within the City of Albany 56.7% of respondents believe that biodiversity is Declining or Declining Significantly in the City of Albany - The highest perceived threats by respondents were: - Clearing for land subdivision - Non-native animals (feral cats, foxes, rabbits) - Weeds - Dieback - Tree canopy loss - Climate change impacts - Uncontrolled pet cats was also a concern for multiple respondents in the open-ended response.
Biodiversity Values	- The highest ranked values for biodiversity were: - To preserve the biodiversity of life and ecosystem processes - Living close to nature - The role biodiversity plays in mitigating climate change - Respondents recognise the value of native vegetation for preserving and enhancing corridors or wildlife and protecting plants, animals and other organisms. - Respondents value the location of native vegetation for enhancing biodiversity values.
Actions by the City of Albany	- Strong support for more action by the City of Albany to protect biodiversity. - In general, there was slightly higher support for direct actions such as managing weeds and pests and slightly less support for changes to policy and community education. The exception was for the Council to consider

	nature and biodiversity in all decision making. 85% of respondents believed this was Very Important which was the highest ranked action. - Concerns included: - The council would take away rights of property owners to manage vegetation on their private property. - Biodiversity values would take precedence over bushfire management and safety.
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Background

The following background information has been taken from the summary of the Urban Forest Community Survey.

The survey for Local Biodiversity and Urban Forest Survey included contextual information on the purpose of the two strategies, and maps to define areas of interest. A variety of question types were used to gather a comprehensive range of insights and maximize respondent engagement. These included: multiple-choice, open-ended questions, Likert scale to indicate their level of agreement or disagreement, rating scale and matrix questions.

The survey was promoted and accessed via:

- City of Albany website – Public Comment page
- Media Release 6/3/24
- Social media posts- City of Albany Facebook and Instagram pages,
- Facebook Boosting (19 March to 12 April 2024)
- Quarter Page Advertisement -The Extra (22 March and 5 March 2024).
- City of Albany E-newsletter
- Albany Advertiser Community Pages
- Radio Advertisement -Great Southern FM (25 March to 12 April 2024)
- Hard copies were available at the North Road Administration, with one response received
- via this method.

The survey was open from 6 March through to 14 April 2024:

- 693 responses were received.
- 88% completion rate.
- Average time taken to complete survey – 14 minutes.

Compared to other recent City of Albany surveys, the number of responses received is to be considered as high. Only one paper copy was received, indicating that the online survey was an accessible and convenient option for respondents to have their say. The average time taken to complete the survey and the completion rate demonstrate a high level of effort and signify that Biodiversity and Urban Forest are important community issues.

Results

Demographics

The following data on demographics has been taken from the summary of the Urban Forest Community Survey.

84% of survey respondents stated that they lived in urban Albany and 16% did not. A map of the Urban Area of Interest was provided for survey respondents to refer to.

Albany has numerous localities that contain areas of urban and semi-rural lots, so it is difficult to simply classify each locality as urban or rural.

Survey respondents came from 42 localities within the City of Albany, with representation from urban and rural zoned areas.

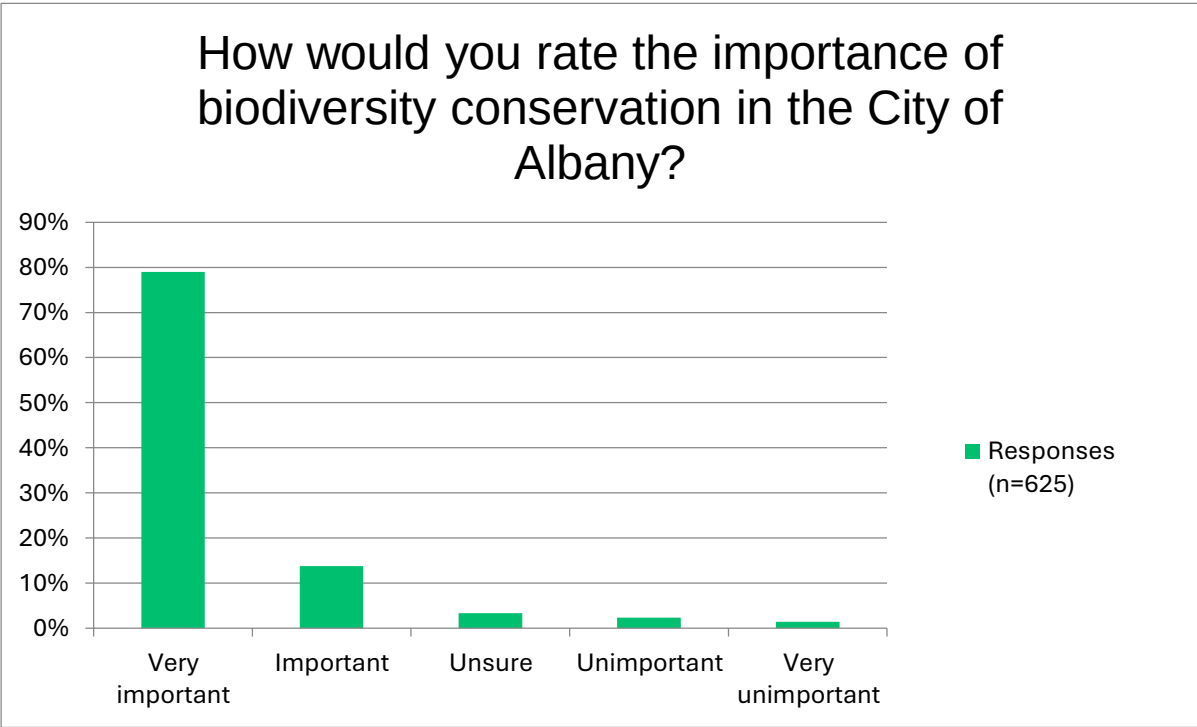
Less than 2% of survey respondents did not reside in the City of Albany.

The top 12 suburbs with the highest number of respondents are listed in the table below:

Suburb	# Respondents	% Respondents
Bayonet Head	58	8.6
Mira Mar	48	7.1
Spencer Park	43	6.3
Mt Melville	41	6
Yakamia	39	5.7
Lower King	36	5.3
Little Grove	33	4.8
Mt Clarence	32	4.7
Central/Port Albany	30	4.4
Milpara	29	4.2
McKail	27	3.9
Kalgan/Kalgan Heights	23	3.4

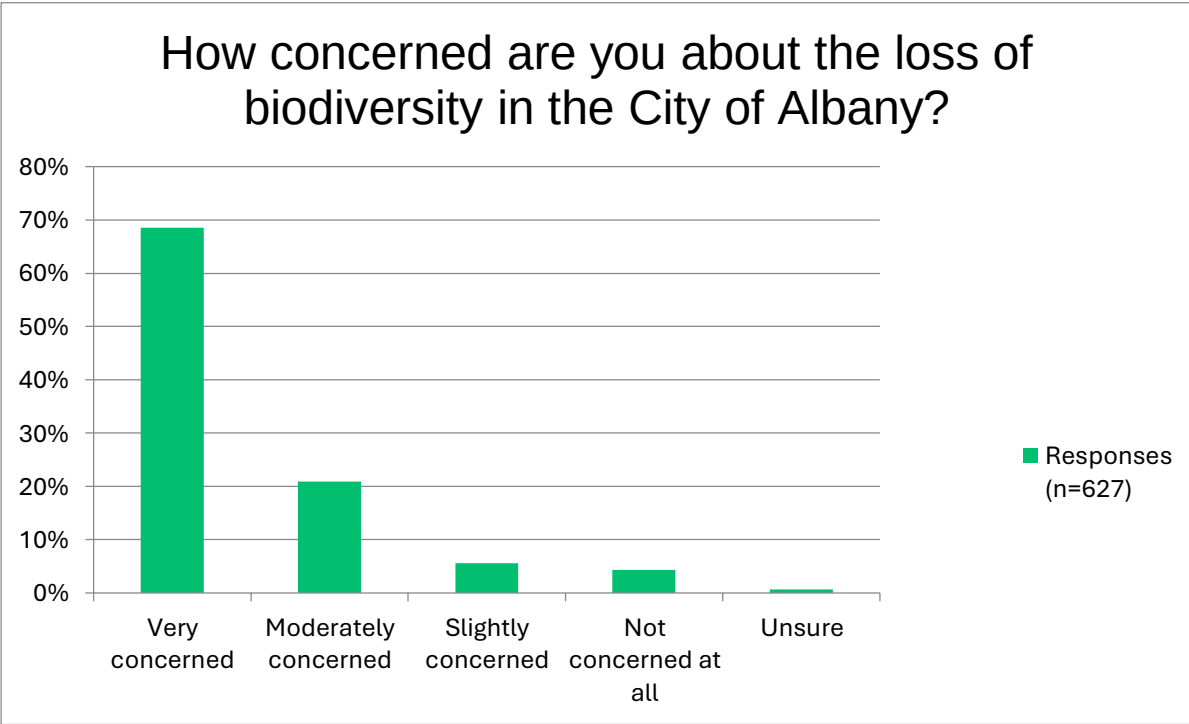
The following analysis relates to the Local Biodiversity Survey Questions (20 – 26).

20. How would you rate the importance of biodiversity conservation in the City of Albany?



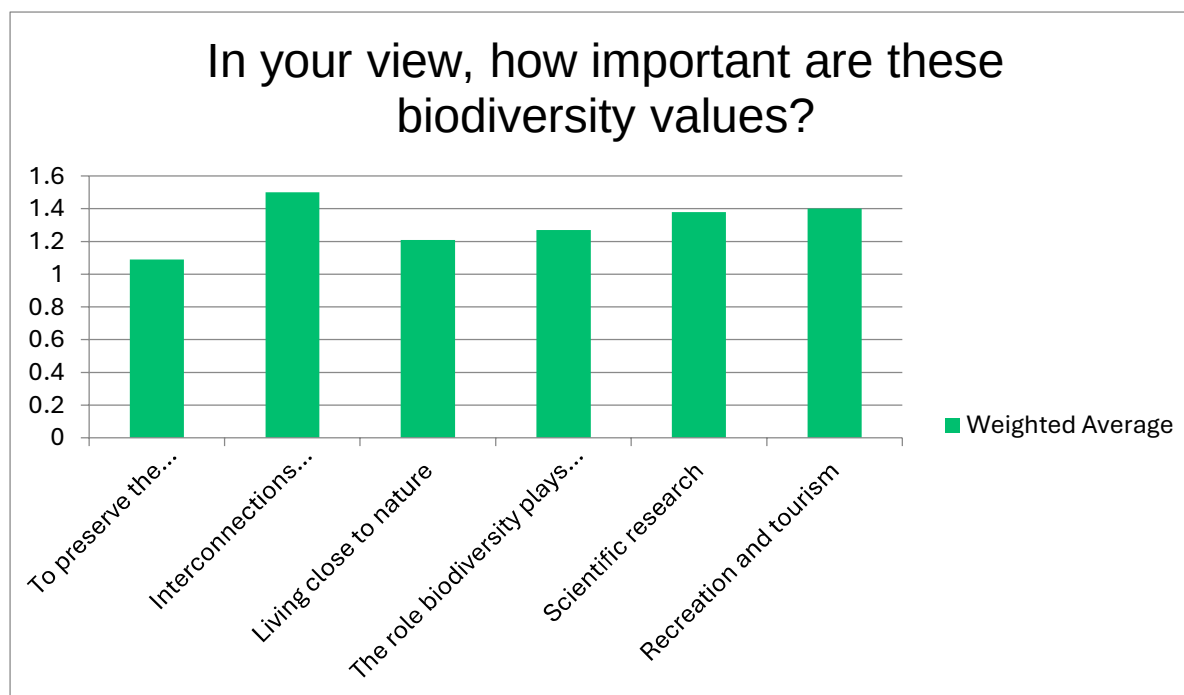
- Biodiversity conservation is a significant value for the City of Albany community
- 625 respondents described the importance of biodiversity conservation in the City of Albany as Very Important (79%), Important (14%), Unimportant (2%) or Very Unimportant (1%).

21. How concerned are you about the loss of biodiversity in the City of Albany?



- Concern over biodiversity loss in the City of Albany was high amongst respondents
- 627 respondents described their attitude toward the loss of biodiversity in the City of Albany as Very Concerned (69%), Moderately Concerned (21%), Slightly Concerned (6%) and Not Concerned at All (4%).
- Open ended responses generally reflected a strong sentiment for the importance of native fauna in the local area and the retention of native vegetation.
- There were 106 open-ended responses to this question. These have been categorised into the following subcategories:
 - o Importance of native bushland:
 - Vital for carbon storage
 - Albany is a biodiversity hotspot
 - Albany is home to threatened fauna such as the Western Ringtail Possum and Black Cockatoos
 - o Concerns to local biodiversity include:
 - Not enough vegetated areas to encourage fauna
 - Existing vegetation is not adequately protected by the City, and what remains is zoned for development
 - Prescribed burning is causing damage to bushland areas and should be changed to suit the Albany area
 - Roaming pet cats
 - Weeds such as Sydney Golden Wattle, Taylorina, Blackberry Pampas Grass
 - Foxes
 - Noticeable decline in variety of native fauna
 - Climate change
 - Reserves are becoming increasingly isolated which prevents fauna movement
 - Leaves from non-native deciduous trees are messy and clog drainage systems
 - Streetlights are too bright for nocturnal fauna
 - o Suggestions include:
 - Maximise use of already cleared land
 - Native vegetation should not be cleared except in extreme circumstances
 - Focus on restoration and recovery strategies not just retention of bushland
 - Positive feedback on the wetland development behind ALAC. Suggest more of these.
 - o Specific areas of concern:
 - Weeds at Lake Seppings
 - Protecting Yakamia Forest from clearing
 - Loss of biodiversity in King George Sound
 - o Comments against biodiversity:
 - Cities are not the places to retain biodiversity
 - There are already enough trees to retain biodiversity

22. In your view, how important are these biodiversity values?

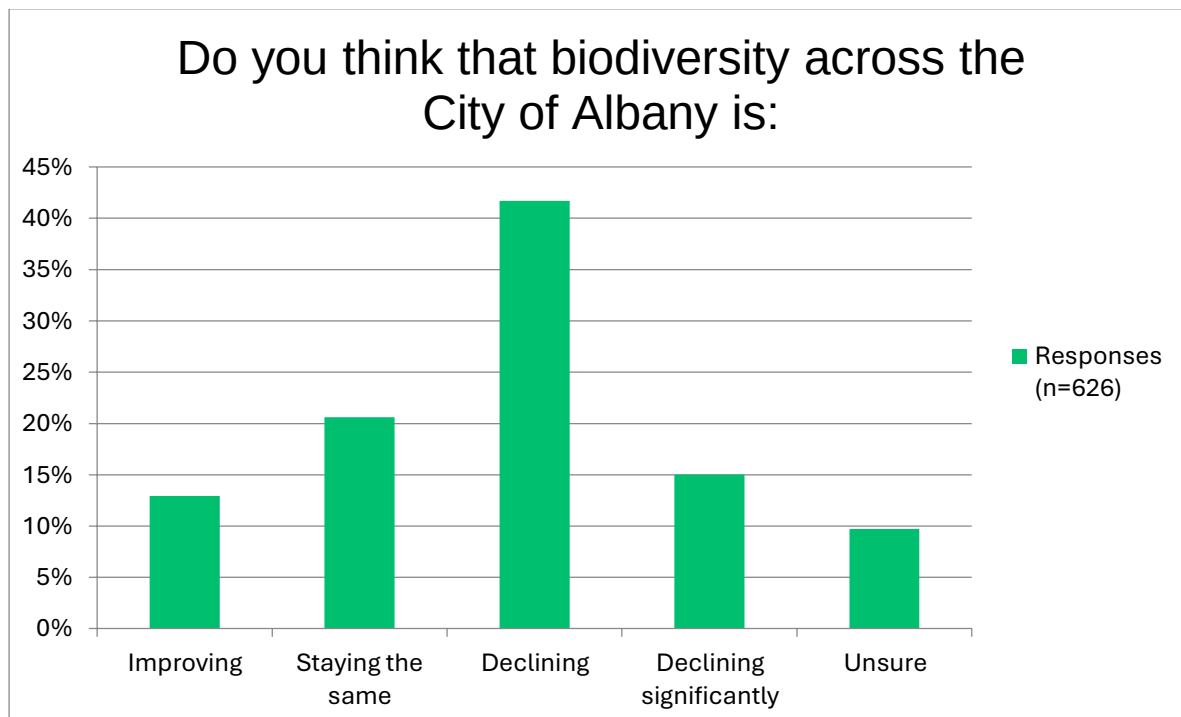


	Very Important	Somewhat Important	Not Important
To preserve the biodiversity of life and ecosystem processes	92%	7%	1%
Living close to nature	81%	17%	2%
The role biodiversity plays in mitigating climate change	79%	15%	6%
Scientific research	67%	28%	5%
Recreation and tourism	64%	31%	5%
Interconnections between biodiversity, indigenous knowledge, and cultural practices	61%	28%	11%

- Preserving life and ecosystem processes was the highest ranked value of biodiversity by survey respondents (99% said it is very or somewhat important).
- Living close to nature was also highly ranked (99% said it is very or somewhat important) indicating a strong connection between respondents and the natural environment around them. It may also show a preference for natural bushland areas rather than artificial green spaces/parks.
- 95% of respondents believe that biodiversity plays a role in mitigating climate change.
- Scientific research and recreation/tourism were also considered important values of biodiversity, although fewer respondents ranked these as Very Important.
- There were 43 open-ended responses to this question. Other values included:
 - o Benefit of natural areas/biodiversity on physical and mental health
 - o Spiritual/religious connections to land (not just Indigenous)
 - o Several respondents wanted to clarify that tourism and recreational uses of natural areas needs to be carefully managed to protect biodiversity
 - o Biodiversity is a strong tourist attraction and can help fund biodiversity projects
 - o Education
 - o Preserving natural areas will promote fauna biodiversity

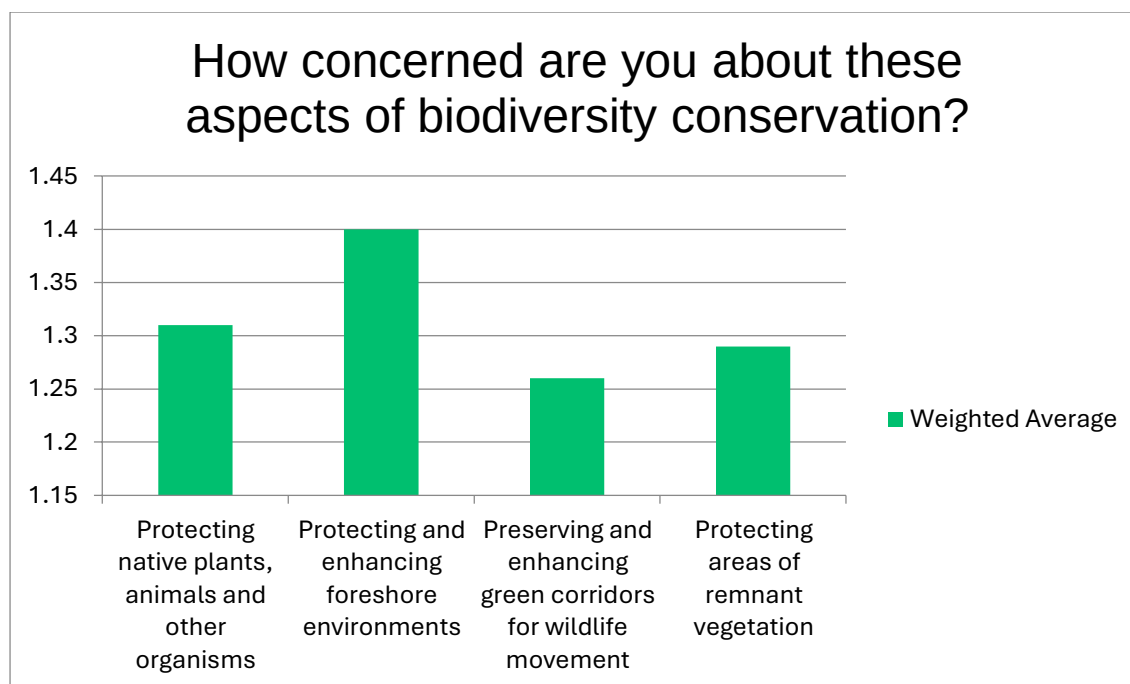
- o Pollution control
- o Increases oxygen
- o Protection of water resources
- o Albany is unique and beautiful, and we don't want it to become like suburban Perth
- o While biodiversity is important, the City/planning also needs to protect properties and residents from fire, mould, shading neighbours' gardens.
- o There are already enough trees

Q23: Do you think that biodiversity across the City of Albany is:



- Over half (56.7%) of respondents believe that biodiversity in the City of Albany is declining.
- 20.6% believe that biodiversity is staying the same and 12.9% believe biodiversity is improving
- There were 112 open-ended responses to this question. The primary concern was that there is too much land clearing for housing developments or subdivisions and that there need to be better protections on native bushland with the municipality.
- Other responses included:
 - o Biodiversity loss due to clearing, bushfires, dieback, weeds, feral animals, climate change, mountain biking (and other recreational uses).
 - o Some respondents had seen improvements – more street trees; planting at Centennial Park (replacing old trees), Lake Seppings and Middleton Road.
 - o Concern that City would impose unnecessary rules on private property owners
 - o More effort should be made to preserve granite outcrop habitats (e.g. Mount Wilyung (quarry) and Mount Melville (rubbish tip)
 - o Concern over increasing habitat fragmentation
 - o Suggestion to prioritise urban infill

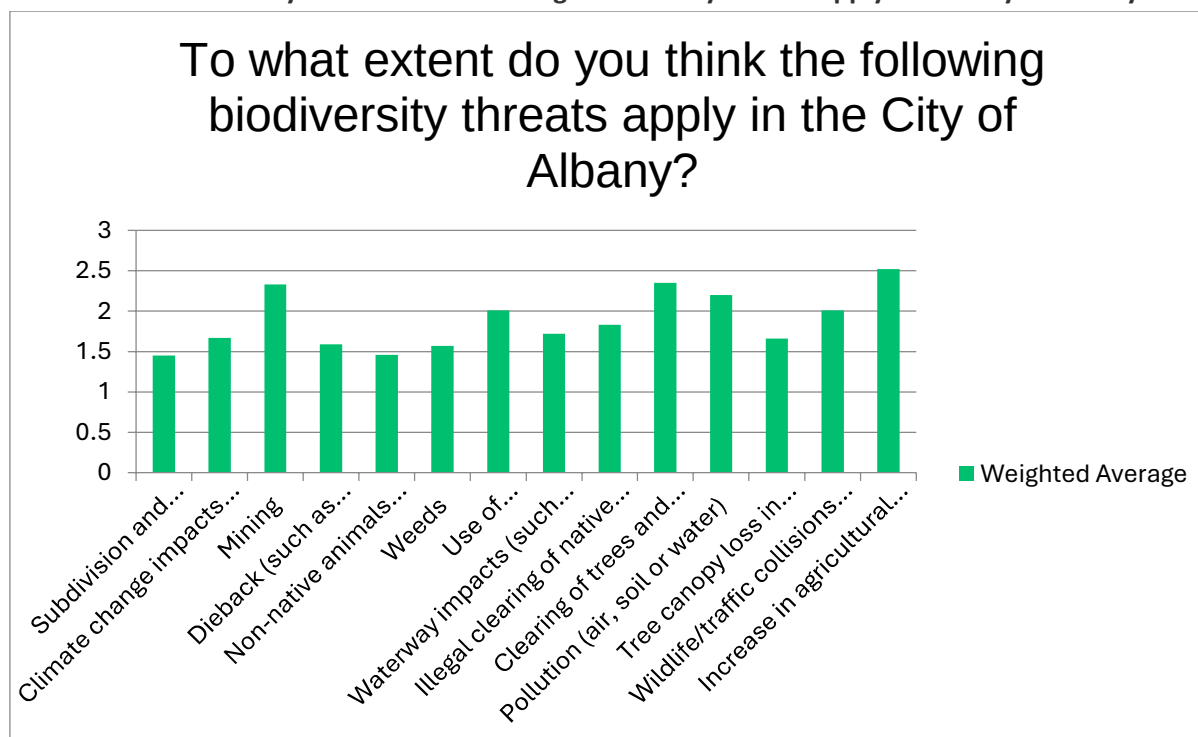
24. How concerned are you about these aspects of biodiversity conservation?



	Very Concerned	Moderately Concerned	Somewhat Concerned	Not Concerned
Protecting native plants, animals and other organisms	79%	14%	4%	3%
Protecting and enhancing foreshore environments	70%	22%	4%	3%
Preserving and enhancing green corridors for wildlife movement	82%	11%	5%	2%
Protecting areas of remnant vegetation	80%	13%	4%	3%

- The highest concern respondents had for biodiversity was preserving and enhancing corridors for wildlife.
- The second highest concern was for protecting plants, animals and other organisms.
- This indicates that respondents also value the location of native vegetation and recognise the importance of reducing habitat fragmentation. Although they highly value protecting remnant vegetation, there is some recognition (at least intellectually) of the strategic value of some locations over others.
- Only 3% of respondents were not concerned about protecting areas of native vegetation.
- Other concerns from the open-ended responses included:
 - Beaches and coastal environments (damage to seagrass, damage caused from surf reef and driving on beaches)
 - Existing reserves
 - Habitat in front and back yards
 - Damage from pet cats, dumping of greenwaste in native bushland, weeds and dieback
 - Fire risk should be a priority
 - Proactive in restoring bushland areas not just preserving

25: To what extent do you think the following biodiversity threats apply in the City of Albany?

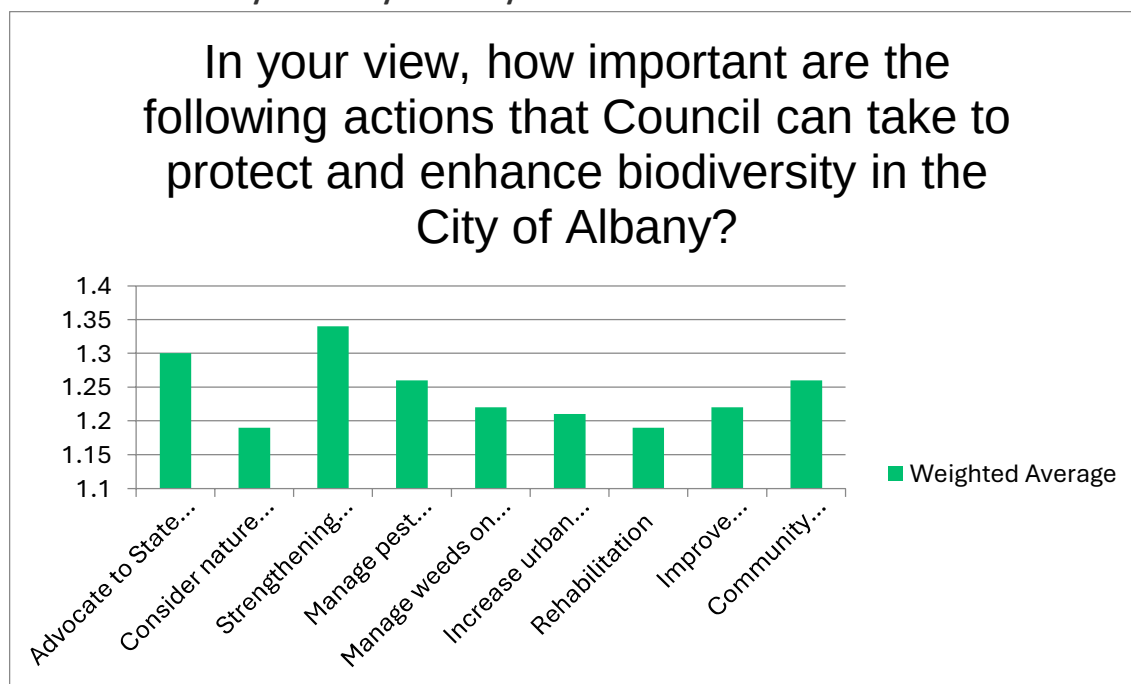


The following questions are listed in their order of importance from respondents from highest threat at the top to lowest.

	Large Threat	Medium Threat	Small Threat	No Threat	Unsure
Subdivision and development of land	69%	21%	7%	2%	1%
Non-native animals (such as foxes, feral cats and rabbits)	65%	27%	6%	1%	1%
Weeds	57%	34%	6%	1%	2%
Dieback (such as introduced diseases, fungus and insects that kill native plants)	57%	33%	7%	1%	2%
Tree canopy loss in urban areas	53%	33%	10%	3%	1%
Climate change impacts (such as drought, extreme rainfall events, warmer temperatures)	54%	31%	8%	6%	1%
Waterway impacts (such as litter, sediment, erosion, flow)	47%	40%	10%	1%	2%
Illegal clearing of native vegetation	49%	32%	12%	3%	5%
Use of herbicides/pesticides	38%	37%	16%	5%	4%
Wildlife/traffic collisions (road kill)	34%	39%	21%	5%	2%
Pollution (air, soil or water)	27%	39%	25%	4%	5%
Mining	32%	27%	25%	9%	7%
Clearing of trees and vegetation to help protect homes from bushfire	22%	39%	26%	9%	4%
Increase in agricultural land	21%	34%	24%	14%	7%

- The first six threats were considered the highest threats, with over 50% of respondents identifying them as a Large Threat to biodiversity.
- Subdivision and development of land and non-native animals are considered the highest threats with 69% and 65% of respondents identifying them as a Large Threat respectively.
- Increase in agricultural land was considered the lowest threat to biodiversity and 14% of respondents did not believe it to be a threat at all.
- Other threats mentioned in the open-ended section were:
 - Clearing for large roads/infrastructure
 - People lighting fires, dumping rubbish and ablutions in bush and coastal dunes
 - Pesticides
 - Prescribed burns
 - The way agricultural land is used
 - Pet cats
 - Clearing bush on rural blocks
 - Polyphagus shothole borer
 - Block sizes too small for tree planting
 - Legal clearing
 - Recreational vehicles and bike tracks
- There was some support for agricultural activities and that using agricultural land for housing developments was not sustainable.
- Some respondents stated that large-scale clearing for agriculture has not occurred in the region since the 1980's and therefore that question was unfair
- Comment that people should have the right to remove trees on their own property.

26. In your view, how important are the following actions that Council can take to protect and enhance biodiversity in the City of Albany?



	Very Important	Somewhat Important	Not Important
Advocate to State and Federal Governments to take biodiversity-supportive actions	76%	18%	6%
Consider nature and biodiversity in all Council decision making	85%	12%	4%
Strengthening planning policies and other regulations to protect trees/native vegetation and other biodiversity on private land	74%	18%	8%
Manage pest animals on Council land	77%	21%	2%
Manage weeds on Council land	80%	19%	2%
Increase urban tree canopy	81%	16%	2%
Rehabilitation	82%	16%	2%
Improve management practices	80%	18%	2%
Community education and awareness raising about protecting and enhancing biodiversity	77%	19%	3%

- There was strong support for more action from the City of Albany to protect biodiversity. All options were considered Very Important by >74% of respondents.
- In general, there was slightly higher support for direct actions such as managing weeds and pests and slightly less support for changes to policy and community education. The exception was for the Council to consider nature and biodiversity in all decision making. 85% of respondents believed this was Very Important which was the highest ranked action.
- Strengthening policies and regulations for private land owners had the lowest support.
- Other actions from the open-ended responses included:
 - o Put aside significant natural reserves as part of bicentenary celebrations. Suggestions included Yakamia Forest and Bayonet Head
 - o Lawnmowers accidentally ringbarking verge trees
 - o High quality school-based education programs
 - o Consequences to ensure people comply
 - o Fire threat needs to be considered
 - o Listen to local experts
 - o Integrated weed management (not just glyphosate)
 - o Restricting vehicle access to beaches
 - o Deal with rabbits
 - o Ban plant nurseries from selling declared weeds
 - o Weeds on private properties
 - o Dogs should always be on leads. Pet cats should be banned
 - o Council rates should go towards biodiversity projects
 - o Wildlife rehabilitation centre with paid staff
 - o No native vegetation clearing on council-managed land
 - o Don't take away people's rights to remove trees on their own property

APPENDIX B

Stakeholder Workshop Information



ALBANY LOCAL BIODIVERSITY STRATEGY

"Biodiversity – Our sense of place – Our key to future resilience"

Thursday 5 December 2024
- 5 pm to 7 pm

Stakeholder workshop No. 2
Presentation Outcomes





1



Welcome

- We are on Menang Noongar boodja
- Our biodiversity was shaped and managed by traditional custodians
- We acknowledge their continued connection to country and pay our respects to elders past, present and emerging

2

Workshop Agenda

- Outputs from Workshop 1 (10 minutes)
- Define: Vision (20 minutes)
- Priority criteria and maps (10 minutes)
- Prioritising and weighting of criteria for biodiversity areas (20 minutes)
- Identify: Opportunities and Constraints (20 minutes)
- Biodiversity Protection Options for local government (10 minutes)
- Knowledge Gaps (10 minutes)
- What's next.... And Questions (20 mins)

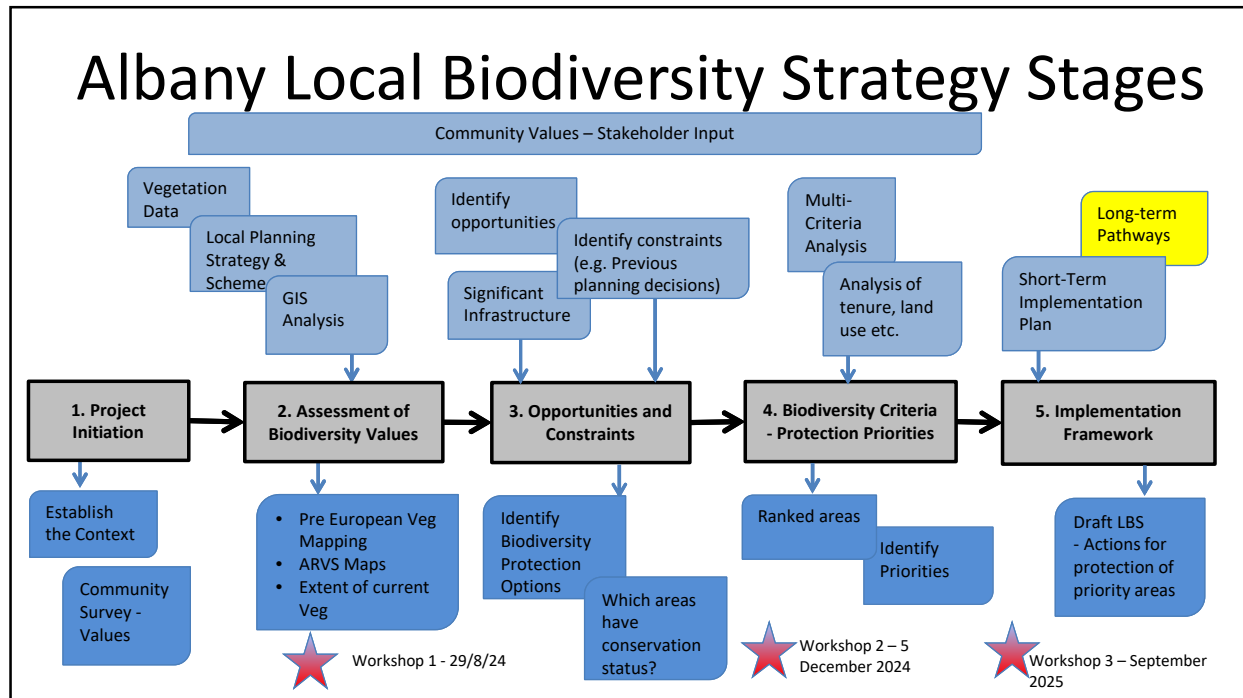
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Attendees

1. David Rastrick – Albany Community Environment Centre
2. Peter Stewart – Friends of Yakamia Forest
3. Annabel Paulley – Friends of Yakamia Forest Boodja
4. Sandra Mac – City of Albany Reserves Officer
5. Rebecca Palandri – DWER
6. Lyn MacLan – City of Albany Councillor
7. Jan van der Mescht City of Albany Planner
8. Shane Ossinger – Wilson Inlet Catchment Council
9. Keith Bradby – Gondwana Link
10. Nicolie Sykora – DWER
11. Mark Blythman – DBCA
12. Sandra Gilfillan – Ecologist
13. Peter Barnes – Torbay Catchment Group

Facilitators: Melanie Price - Aurora and Adrian Nicoll – City of Albany

4



5

Outputs from Workshop 1

- A local natural area: vegetation in all land tenures, including non vegetated areas of value for ecosystem processes. Considers areas adjacent to CoA.



6

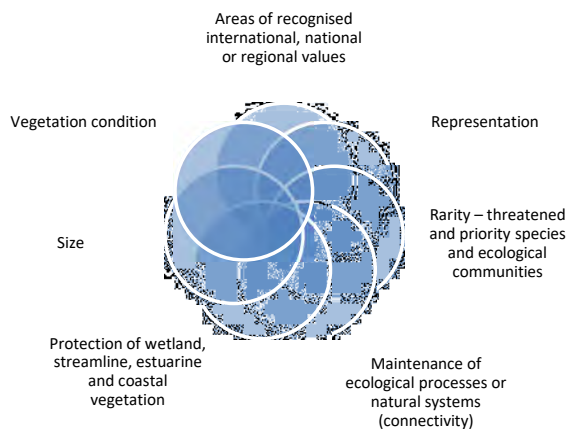
Stakeholders say:

- The CoA has an important role as an advocate and to facilitate collaboration.
- Clear partnerships with others such as:
 - Gondwana Link
 - South Coast NRM
 - Green Skills
 - Oyster Harbour Catchment Group
 - Torbay Catchment Group
 - Friend's groups
 - Community members
 - Educational institutions
- Educational role e.g. urban backyards
- CoA needs to make community more aware of efforts by reporting publicly
- How else can the CoA engage with interested people?
- Many groups and individuals are interested in weed management – e.g. review weed strategy?
- Review of other CoA environmental plans



7

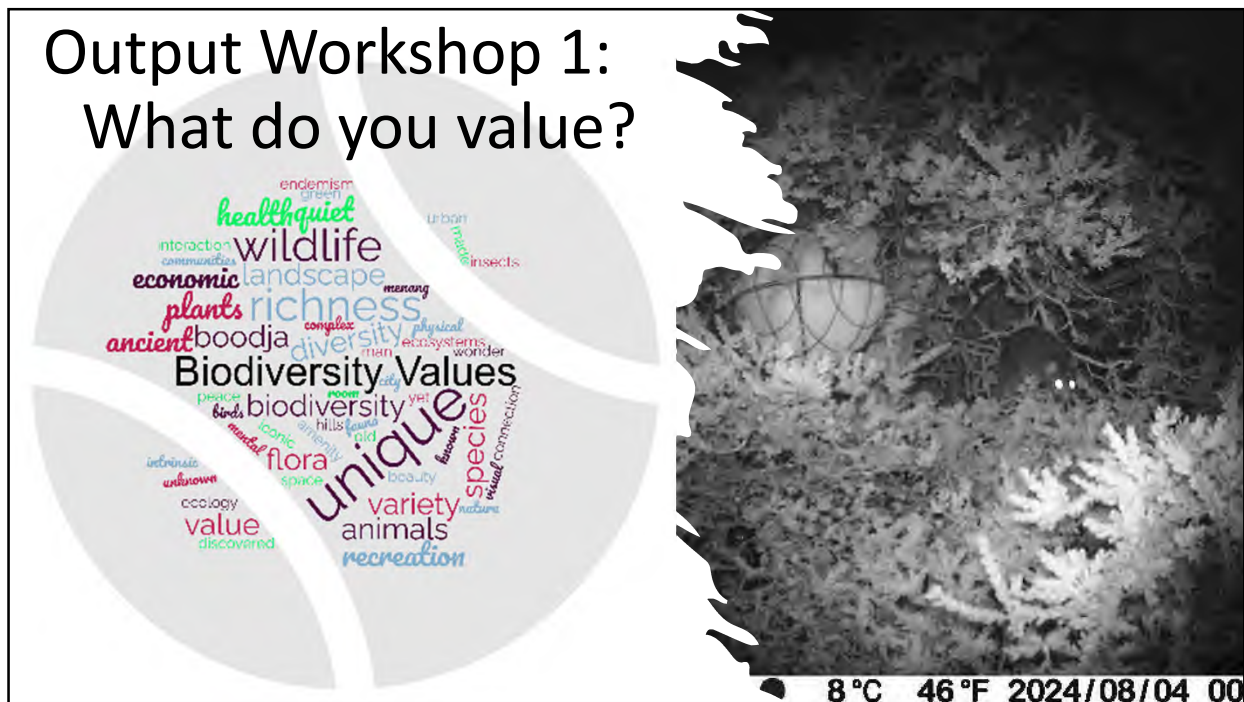
Ecological Criteria for Prioritising Areas of Local Natural Value (As ranked by you)



Criteria Ranking	Criteria Priorities	Votes	Percentage	Comments
1	Connectivity - Maintenance of ecological processes	30	38	Movement through the landscape Permeability - not just connectivity i.e. hydrological process, renewal regime Stepping stones, linear, Flowering, life cycles Species dispersal methods Nature link
2	Protection of wetlands, streamlines, estuarine and coastal vegetation	16	21	Closely linked with connectivity
3	Rarity (threatened and priority species)	12	15	
4	Vegetation condition	7	9	Good return on effort made Easier and cheaper to keep vegetation in good condition than improve degraded habitat Development approval state - CoA can implement more localised assistance e.g. fencing of remnant vegetation, protection of existing habitat trees Weeds (e.g. wattles) Regenerate and restore
5	Areas of recognised international, national or regional value	5	6	Links to social criteria Migratory shorebirds
6	Representation	4	5	
7	Other: Regional holistic approach to reduce threats	3	4	
8	Other: Diversity, Migratory birds, Visitor bird hotspots, Nomad birds	1	1	
9	Size of patch	0	0	Large size is good but don't want to discount smaller areas
		78	100	

8

10



Vision: Some Examples

- City of Canning: Over the next 20 years, the diversity of indigenous species and ecosystems is conserved, resilient to threats, restored and valued by the local community.
- City of Kalamunda: The City and its community will protect, manage, and value the local biodiversity to ensure a lasting legacy for future generations.
- City of Swan: Protect, retain and manage a network of natural areas that support the diversity of local indigenous biodiversity (plants, animals, fungi and microorganisms) in our region for the future
- Shire of Mundaring: Biodiversity and natural areas are protected, connected and cared for through informed community stewardship and Shire leadership, empowering a strong culture of conservation.
- Eastern Metropolitan Regional Councils: Urban biodiversity values are protected managed and enhanced in the Swan River Precinct of Perth's Eastern Region to enable future generations to experience continued social benefits and ecological services.



11

Vision – Some ideas

- Albany - Where nature can thrive and adapt with minimal human management
- Albany – Where community support ensures that nature thrives and adapts
- Albany – Resilient and biodiverse network of natural systems
- Albany – Where the community supports our natural environment and the environment supports us



12

Vision: Ideas from Group

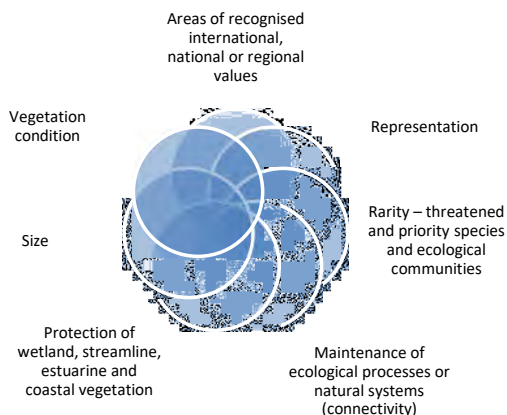
- There were different ideas from the group, some of whom wanted quite a comprehensive statement and others who wanted something very simple.
- Biodiversity and natural areas are protected, connected and cared for through informed community stewardship and City of Albany leadership, empowering a strong culture of conservation.
- Caring for Country – Kinjarling - where nature can thrive and adapt.
- The community of Kinjarling - Albany values biodiversity and resilient natural areas which are protected, connected and cared for (through informed community stewardship and City leadership, empowering a strong culture of conservation)
- Kinjarling is a majestic landscape of resilient, revitalised and interconnected bushland, forests and waterways with rural and urban areas that support our unique wildlife.
- Where the community supports our natural environment and the environment supports us.
- Albany – Kinjarling, a majestic landscape where nature and people thrive together.

Decided to collate ideas and send to group for input.



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Ecological Criteria for Prioritising Areas of Local Natural Value (As ranked by you)



Criteria Ranking	Criteria Priorities	Votes	Percentage	Comments
1	Connectivity - Maintenance of ecological processes	30	38	Movement through the landscape Permeability - not just connectivity i.e. hydrological process, renewal regime Stepping stones, linear, Flowering, life cycles Species dispersal methods Nature link
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5	Areas of recognised international, national or regional value	5	6	Links to social criteria Migratory shorebirds
6	Representation	4	5	
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8	Other: Diversity, Migratory birds, Visitor bird hotspots, Nomad birds	1	1	
9	Size of patch	0	0	Large size is good but don't want to discount smaller areas
		78	100	

14

Ecological Criteria for Prioritising Areas of Local Natural Value

- Discussion regarding the difficulty of conceptualising the prioritising of parcels of vegetation.
- It was decided that the Project Team would develop a ranking system and then present it at the next workshop.



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Opportunities

- City of Albany area: 430,807 ha
- Vegetation remaining (Pre European): 154,022 ha or 35.8%
- Areas protected with purpose of 'Conservation' (reserve status): 77,541 ha 18% of original, 50.3% of remaining vegetation
- Work with State and Commonwealth controls on clearing and environmental impacts
- Reviewing and consolidating CoA environmental strategies and plans for threat mitigation (e.g. Weed strategy, reserve management)
- Support of volunteers
- Forming partnerships and collaborations
- Protecting and managing high value and vulnerable areas
- Increasing resilience to threats at the landscape level and valuing environmental services
- Education and awareness raising
- Supporting initiatives and businesses that propose sustainable development
- Carbon sequestration and biodiversity projects
- Working with traditional custodians
- Offsets



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Opportunities from Group

- Dual management with traditional custodians and rangers (leases, resourcing)
- Appropriate conservation purpose of reserves
- Incentives to protect biodiversity (carrot)
- Leverage on the knowledge of the presence of threatened species for funding
- Stronger legislation for protection (stick) and properly implement current rules
- Partnerships with other organisations (UWA, CENRM, SCNRM, catchment groups)
- Resourcing priorities
- Unconstructed road reserves as corridors



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Constraints

- Land clearing, degradation and fragmentation
- Resources (personnel, funding)
- Competing objectives (growth of Albany population, fire risk regulations, approved development, minor clearing)
- Threats (weeds, disease, pests)
- Climate change (poorly known interactions and outcomes)
- Gaps in knowledge



18

Knowledge Gaps...

Input from group:

- Impacts of climate change
 - Overarching impacts
 - How to build resilience
- Threatened species on private land or unsurveyed areas
- What are the keys to adaptation at the landscape scale
- Use of non native habitat (blue gum plantations, pines, weeds, drains)
- Use of road reserves



19

Mechanisms for Protection

- Local Planning Strategy
- Local Planning Scheme
- Input into planning (Structure Plans, Development Applications)
- Input into clearing application decisions
- Purpose of Crown Land
- Management of Crown Land
- Offsets (CoA Freehold Land)
- Education - awareness raising
- Engagement with stakeholders
- Assistance for landowners (mulcher and tip pass for weeds)



20

General Discussion

- Asked by City of Albany Councillor to stakeholders present: What do partners need from the City of Albany, DWER, DBCA?
- Funding, information, coordination, support
- Nature Positive – How to move beyond concepts of ‘no net loss’ into positive territory
- Aim to improve trend line of loss and degradation
- Natural capital, ecological services – calculate these to show importance of biodiversity to our everyday lives. Show how our investment in biodiversity is paid back.
- Can the City and partners create a tool for natural capital?
- Rather than ‘connectivity’ – ‘ecological permeability’ – Nature link
- Articulate relationships and social dynamics
- Set targets for involvement and collaboration
- Set revegetation targets.
- Weed management needs a different approach to consider biodiversity enhancement
- Local Natural Areas – Natural (what can we protect eg bushland, wetland watercourse) vs Nature (what can we enhance – eg drain, road reserve)



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Next Steps

- Prioritise/ categorise areas of biodiversity - using agreed criteria & weighting
- Mapping tools – show biodiversity hotspots, linkages and score vegetation
- Additional engagement with the community (Workshop 3 and Draft Strategy)
- Set targets for protection, rehabilitation or other actions
- Identify framework for implementation
- Prepare draft LBS for advertising
- City of Albany Council to adopt LBS



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Thank you Any questions?

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melanie.price@auroraenvironmental.com.au

Adrian Nicoll:

Adrian.Nicoll@albany.wa.gov.au



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Evaluation – feedback from group

Seven evaluation sheets were returned from 13 attendees.

1. Do you feel that this workshop was useful in helping the City of Albany plan for future management of biodiversity?

1	2	3 (3)	4 (4)	5
No value	Somewhat valuable	Good value	Very Good value	Excellent value

Comments:

- Would like to see local Menang Elders attend and SWALC reps too
- Need to have key stakeholders here to properly inform discussion e.g. SCNRM.
- Always good to discuss ideas.

2. Do you feel that the balance between provision of information and discussion of the biodiversity strategy was about right?

1	2 (1)	3 (5)	4 (1)	5
No value	Somewhat valuable	Good value	Very Good value	Excellent value

Comment:

- Need more data and examples of other biodiversity strategies e.g. SCNRM
- Need to be clear about what is evidence and what is opinion.

3. Was the overall content pitched at an appropriate level?

1	2 (2)	3 (2)	4 (2)	5 (1)
No value	Somewhat valuable	Good value	Very Good value	Excellent value

Comments:

- Getting there...

4. Was the facilitation effective?

1	2	3 (4)	4 (3)	5
No value	Somewhat valuable	Good value	Very Good value	Excellent value

Comment:

5. What elements or sessions do you remember as particularly effective or worked well?

Comments:

- Identifying opportunities was good.
- Knowledge sharing to reach a shared understanding.
- Discussion.
- Constraints.
- Input and discussion amongst participants – good listening and respect for each others opinions.

6. Suggestions for improvement?

Comment:

- Need input by professionals and university experts in biodiversity.
- Timing in evenings as opposed to business hours. Can we change to day time?
- Please provide food.
- Food.
- Invite participants to bring a slide to tell us one important thing relevant to their work/ biodiversity

7. How would you rate the overall value of the workshop?

1	2 (1)	3 (4)	4 (2)	5 (2)
No value	Somewhat valuable	Good value	Very Good value	Excellent value

Comment:



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Data and Maps

Attendees were invited to view maps of data which is being used to inform the biodiversity strategy.

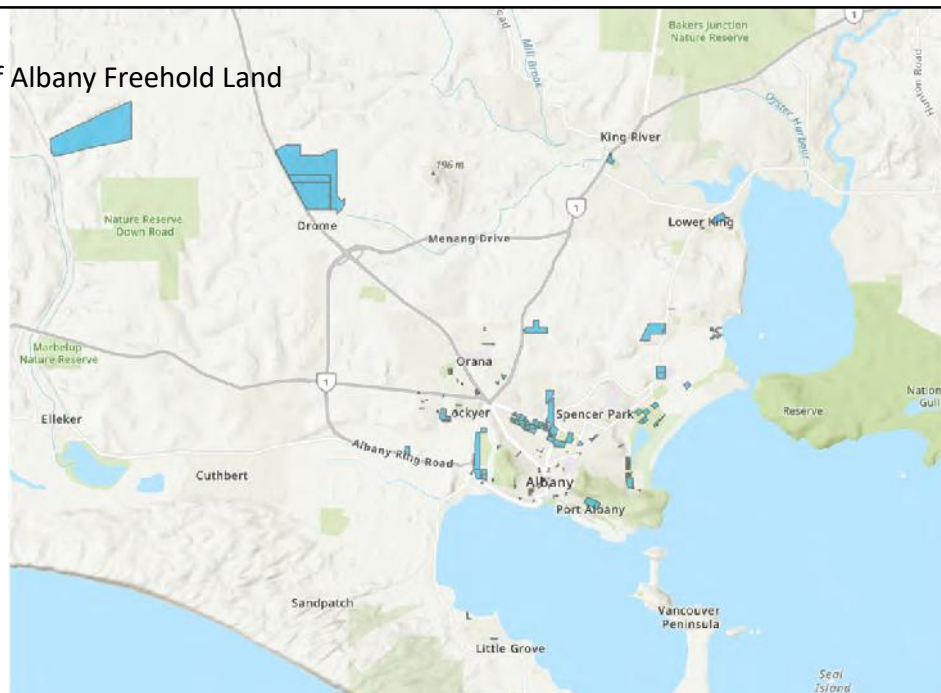
Discussion included:

- That there was a lot of data.
- Some data was only for ARVS area while some was for whole City of Albany.
- As with most data, there are some short comings with data sets.



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City of Albany Freehold Land



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APPENDIX C

List of Conservation Significant Flora – City of Albany

THREATENED AND PRIORITY FLORA – CITY OF ALBANY

STATUS	NUMBER OF SPECIES	
Threatened Species	Biodiversity Conservation Act	EPBC Act
Cr – Critically endangered species (facing an extremely high risk of extinction in the wild in the immediate future)	12 species <i>Banksia anatona</i> <i>Banksia brownii</i> <i>Banksia montana</i> <i>Banksia verticillata</i> <i>Calectasia cyanea</i> <i>Conospermum quadripetalum</i> <i>Daviesia ovata</i> <i>Daviesia pseudaphylla</i> <i>Drakaea confluens</i> <i>Grevillea maxwellii</i> <i>Isopogon uncinatus</i> <i>Scaevola macrophylla</i>	6 <i>Vulnerable</i>
EN – Endangered species facing a very high risk of extinction in the wild in the near future	12 species <i>Caladenia bryceana</i> subsp. <i>bryceana</i> <i>Caladenia granitora</i> <i>Diuris drummondii</i> <i>Drakaea micrantha</i> <i>Isopogon buxifolius</i> var. <i>buxifolius</i> <i>Microtis globula</i> <i>Myoporum cordifolium</i> <i>Sphenotoma drummondii</i> <i>Styphelia exilis</i> <i>Verticordia fimbriolepis</i> subsp. <i>australis</i> <i>Verticordia helichrysantha</i>	
VU - Vulnerable species facing a high risk of extinction in the wild in the medium-term future	6 species <i>Andersonia pinaster</i> <i>Banksia goodii</i> <i>Caladenia harringtoniae</i> <i>Chordifex abortivus</i> <i>Conostylis misera</i> <i>Kennedia glabrata</i> <i>Tribonanthes purpurea</i>	
Priority Species		
Priority 1: Poorly-known species - known from few locations, none on conservation lands	21 species <i>Acacia microneura</i> <i>Prasophyllum paulinae</i> <i>Prostanthera verticillaris</i> <i>Thomasia multiflora</i>	

STATUS	NUMBER OF SPECIES	
Threatened Species	Biodiversity Conservation Act	EPBC Act
	<i>Thomasia purpurea x solanacea</i> <i>Trymalium litorale</i> <i>Usnea pulvinata</i> <i>Austrostipa everettiana</i> <i>Caladenia evanescens</i> <i>Calytrix djinda</i> <i>Conospermum coerulescens subsp. coerulescens</i> <i>Drosera grieviei</i> <i>Drosera paleacea</i> <i>Hibbertia sandifordiae</i> <i>Lasiopetalum hapalocalyx</i> <i>Lepidosperma sp. Mt Chester (S. Kern et al. LCH 16596)</i> <i>Netrostylis sp. Warren (M. McCallum Webster 23/2/1979)</i> <i>Schoenus sp. Grey Rhizome (K.L. Wilson 2922)</i> <i>Schoenus sp. Mt Barker (G.J. Keighery 9679)</i> <i>Stackhousia sp. Stirling Range (W.R. Barker 2399)</i> <i>Tetratheca affinis subsp. Cape Riche (T.D. Macfarlane TDM 1832)</i>	
Priority 2: Poorly-known species - known from few locations, some on conservation lands	47 species <i>Acacia arcuatis</i> <i>Agrostocrinum scabrum subsp. littorale</i> <i>Andersonia carinata</i> <i>Asterolasia hyalina</i> <i>Caladenia startiorum</i> <i>Chamelaucium orarium</i> <i>Chamelaucium sp. Cape Riche (C.A. Gardner 2153)</i> <i>Chamelaucium xanthocladum</i> <i>Chordifex leucoblepharus</i> <i>Chordifex ornatus</i> <i>Comesperma lanceolatum</i> <i>Degelia flabellata</i> <i>Diuris heberlei</i> <i>Gyrostemon thesioides</i> <i>Lepidium desvauxii</i> <i>Leucopogon bracteolaris</i> <i>Pterostylis heberlei</i> <i>Schizaea rupestris</i> <i>Spyridium riparium</i> <i>Stylidium daphneae</i> <i>Stylidium falcatum</i> <i>Thelymitra porphyrosticta</i> <i>Amanita wadulawitu</i> <i>Astartea transversa</i> <i>Bossiaea sp. Mt Frankland (L. Graham 2174)</i> <i>Caladenia applanata subsp. erubescens</i> <i>Calandrinia sp. Torndirrup (S.D. Hopper et al. SDH 8712)</i>	

STATUS	NUMBER OF SPECIES	
Threatened Species	Biodiversity Conservation Act	EPBC Act
	<i>Calectasia grandiflora</i> <i>Carpobrotus</i> sp. Lateral Flowers (N. Gibson & M. Lyons 973) <i>Conospermum spectabile</i> <i>Gastrolobium ferrugineum</i> <i>Gonocarpus keigheryi</i> <i>Grevillea merceri</i> <i>Hydrocotyle serendipita</i> <i>Lasiopetalum maxwellii</i> <i>Leucopogon acicularis</i> <i>Melaleuca ordinifolia</i> <i>Monotoca aristata</i> <i>Petrophile carduacea</i> <i>Scaevola xanthina</i> <i>Schoenus</i> sp. Grassy (E. Gude & J. Harvey 250) <i>Stenanthemum sublineare</i> <i>Stylidium articulatum</i> <i>Stylidium keigheryi</i> <i>Stylidium oreophilum</i> <i>Styphelia cymbiformis</i> <i>Tricostularia</i> sp. Two Peoples Bay (G. Wardell-Johnson GWJ 114)	
Priority 3: Poorly-known species - known from several locations	65 species <i>Andersonia setifolia</i> <i>Andersonia</i> sp. Mitchell River (B.G. Hammersley 925) <i>Calytrix pulchella</i> <i>Chorizema carinatum</i> <i>Gonocarpus trichostachyus</i> <i>Juncus meianthus</i> <i>Melaleuca pritzelii</i> <i>Microcorys glabra</i> var. <i>pubescens</i> <i>Poa billardierei</i> <i>Styphelia rotundifolia</i> <i>Synaphea incurva</i> <i>Synaphea preissii</i> <i>Verticordia huegelii</i> var. <i>tridens</i> <i>Acacia ataxiphylla</i> subsp. <i>ataxiphylla</i> <i>Acacia errabunda</i> <i>Acacia keigheryi</i> <i>Amanita drummondii</i> <i>Amanita fibrilloses</i> <i>Amanita preissii</i> <i>Anzybas abditus</i> <i>Austrostipa mundula</i> <i>Banksia biterax</i> <i>Boronia crassipes</i> <i>Bossiaea lalagoides</i>	

STATUS	NUMBER OF SPECIES	
Threatened Species	Biodiversity Conservation Act	EPBC Act
	<i>Calectasia obtusa</i> <i>Calycopeplus marginatus</i> <i>Caustis</i> sp. <i>Boyanup</i> (G.S. McCutcheon 1706) <i>Centrolepis milleri</i> <i>Commersonia rotundifolia</i> <i>Desmocladius biformis</i> <i>Eucalyptus newbeyi</i> <i>Goodenia</i> sp. <i>South Coast</i> (A.R. Annels ARA 1846) <i>Hakea lasiocarpa</i> <i>Hakea oldfieldii</i> <i>Hibbertia argentea</i> <i>Hopkinsia adscendens</i> <i>Isopogon spathulatus</i> subsp. <i>obovatus</i> <i>Kunzea micrantha</i> subsp. <i>hirtiflora</i> <i>Lachnagrostis billardieri</i> subsp. <i>billardieri</i> <i>Lasiopetalum parvuliflorum</i> <i>Lasiopetalum</i> sp. <i>Denmark</i> (B.G. Hammersley 2012) <i>Latrobea recurva</i> <i>Leucopogon alternifolius</i> <i>Leucopogon elegans</i> subsp. <i>psorophyllus</i> <i>Melaleuca micromera</i> <i>Netrostylis</i> sp. <i>Blackwood River</i> (A.R. Annels 3043) <i>Opercularia acolytantha</i> <i>Pimelea rosea</i> subsp. <i>annelsii</i> <i>Pultenaea calycina</i> subsp. <i>calycina</i> <i>Pultenaea pinifolia</i> <i>Schoenus benthamii</i> <i>Sphaerolobium validum</i> <i>Spyridium oligocephalum</i> <i>Stylidium lepidum</i> <i>Stylidium pseudohirsutum</i> <i>Stylidium roseonanum</i> <i>Synaphea intricata</i> <i>Thelymitra jacksonii</i> <i>Thomasia pygmaea</i> <i>Thysanotus cymosus</i> <i>Thysanotus gageoides</i> <i>Tricostularia davisii</i> <i>Tricostularia sandifordiana</i> <i>Verticordia endlicheriana</i> var. <i>angustifolia</i>	
Priority 4: Rare, Near Threatened and other species in need of monitoring	54 Species <i>Adenanthos x cunninghamii</i> <i>Andersonia</i> sp. <i>Jamesii</i> (J. Liddelow 84) <i>Asplenium decurrens</i> <i>Banksia parva</i>	

STATUS	NUMBER OF SPECIES	
Threatened Species	Biodiversity Conservation Act	EPBC Act
	<i>Bossiaea divaricata</i> <i>Calothamnus robustus</i> <i>Corysanthes limpida</i> <i>Drosera fimbriata</i> <i>Eucalyptus calcicola</i> subsp. <i>unita</i> <i>Eucalyptus newbeyi</i> <i>Eucalyptus x kalganensis</i> <i>Gahnia sclerioides</i> <i>Gonocarpus pusillus</i> <i>Gonocarpus simplex</i> <i>Kunzea pauciflora</i> <i>Lysinema lasianthum</i> <i>Microtis pulchella</i> <i>Ornduffia submersa</i> <i>Pleurophascum occidentale</i> <i>Thomasia quercifolia</i> <i>Trithuria australis</i> <i>Verticordia harveyi</i> <i>Acacia declinata</i> <i>Adenanthos filifolius</i> <i>Andersonia grandiflora</i> <i>Banksia concinna</i> <i>Banksia plumosa</i> subsp. <i>denticulata</i> <i>Banksia seneciifolia</i> <i>Banksia serra</i> <i>Banksia sessilis</i> var. <i>cordata</i> <i>Boronia virgata</i> <i>Calothamnus microcarpus</i> <i>Eucalyptus buprestium x staeri</i> <i>Eucalyptus marginata x pachyloma</i> <i>Eucalyptus melanophitra</i> <i>Eucalyptus preissiana x staeri</i> <i>Eucalyptus x missilis</i> <i>Jacksonia calycina</i> <i>Lepidium pseudotasmanicum</i> <i>Marianthus granulatus</i> <i>Microtis quadrata</i> <i>Muiriantha hassellii</i> <i>Myosotis australis</i> subsp. <i>australis</i> <i>Pomaderris grandis</i> <i>Rumex drummondii</i> <i>Sphenotoma</i> sp. <i>Stirling Range</i> (P.G. Wilson 4235) <i>Spyridium spadiceum</i> <i>Stylidium gloeophyllum</i> <i>Tecticornia uniflora</i> <i>Thomasia solanacea</i>	

STATUS		NUMBER OF SPECIES	
Threatened Species		Biodiversity Conservation Act	EPBC Act
		<i>Thysanotus isantherus</i> <i>Thysanotus parviflorus</i> <i>Xanthosia eichleri</i>	

Source: DBCA (2024) NatureMaps. Conservation significant species under *Biodiversity Conservation Act 2016*. Note: *Priority status is not a listing under the BC Act*.

APPENDIX D

Definitions of Conservation Categories

CONSERVATION CATEGORY DEFINITIONS

For Western Australian Fauna and Flora

Threatened, Extinct and Specially Protected fauna or flora¹ are species² which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such.

Categories of Threatened, Extinct and Specially Protected fauna and flora are:

T Threatened species

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is the species of fauna that are listed as critically endangered, endangered or vulnerable threatened species.

Threatened flora is the species of flora that are listed as critically endangered, endangered or vulnerable threatened species.

The assessment of the conservation status of threatened species is in accordance with the BC Act listing criteria and the requirements of [Ministerial Guideline Number 1](#) and [Ministerial Guideline Number 2](#) that adopts the use of the International Union for Conservation of Nature (IUCN) [Red List of Threatened Species Categories and Criteria](#)³, and is based on the national distribution of the species.

CR Critically endangered species

Threatened species considered to be “*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines.

Examples of use:

- The western ringtail possum (*Pseudocheirus occidentalis*) is listed as a critically endangered threatened species under the *Biodiversity Conservation Act 2016*.
- Western ringtail possum is listed as critically endangered under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: CR.

EN Endangered species

Threatened species considered to be “*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines.

Examples of use:

- *Caladenia hopperiana* is listed as an endangered threatened species under the *Biodiversity Conservation Act 2016*.
- *Caladenia hopperiana* is listed as endangered under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: EN.

VU Vulnerable species

Threatened species considered to be “facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines”.

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines.

Examples of use:

- The forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) is listed as a vulnerable threatened species under the *Biodiversity Conservation Act 2016*.
- Forest red-tailed black cockatoo is listed as vulnerable under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: VU.

Extinct species

Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.

EX Extinct species

Species where “there is no reasonable doubt that the last member of the species has died”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Examples of use:

- *Acacia kingiana* is listed as an extinct species under the *Biodiversity Conservation Act 2016*.
- *Acacia kingiana* is listed as extinct under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: EX.

EW Extinct in the wild species

Species that “is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no fauna or flora species listed as extinct in the wild.

SP Specially protected species

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered, or vulnerable) or extinct species under the BC Act cannot also be listed as specially protected species.

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; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Migratory species include birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA)⁴, China (CAMBA)⁵ or The Republic of Korea (ROKAMBA)⁶, and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention)⁷, an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Examples of use:

- The wedge-tailed shearwater (*Ardenna pacifica*) is listed as a specially protected migratory species under the *Biodiversity Conservation Act 2016*.
- Wedge-tailed shearwater is listed as migratory under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: MI.

CD Species of special conservation interest (conservation dependent)

Species of special conservation need that are dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Currently only fauna are listed as species of special conservation interest.

Examples of use:

- The wambenger, south-western brush-tailed phascogale (*Phascogale tapoatafa wambenger*) is listed as a specially protected species of special conservation interest under the *Biodiversity Conservation Act 2016*.
- Wambenger, south-western brush-tailed phascogale, is listed as conservation dependent under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: CD.

OS Species otherwise in need of special protection (other specially protected)

Species otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Currently only fauna are listed as species otherwise in need of special protection.

Examples of use:

- The dugong (*Dugong dugon*) is listed as a specially protected species otherwise in need of special protection under the *Biodiversity Conservation Act 2016*.
- Dugon is listed as other specially protected fauna under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: OS.

P Priority species

Priority is not a listing category under the BC Act. The Priority Flora and Fauna lists are maintained by the department and are published on the department's website.

All fauna and flora are protected in WA following the provisions in Part 10 of the BC Act. The protection applies even when a species is not listed as threatened or specially protected, and regardless of land tenure (State managed land (Crown land), private land, or Commonwealth land).

Species that may possibly be threatened species that do not meet the criteria for listing under the BC Act because of insufficient survey 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 prioritisation for survey and evaluation of conservation status so that consideration can be given to potential listing as threatened.

Species that are adequately known, meet criteria for near threatened, or are rare but not threatened, or that have been recently removed from the threatened species list or conservation dependent or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of priority status is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

1 Priority 1: Poorly-known species - known from few locations, none on conservation lands

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, for example, agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; 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 for threatened listing and appear to be under immediate threat from known threatening processes. These species are in urgent need of further survey.

Examples of use:

- *Borya stenophylla* is listed as a Priority 1 species by the Department of Biodiversity, Conservation and Attractions.
- *Borya stenophylla* is listed as Priority 1 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P1.

2 Priority 2: Poorly-known species - known from few locations, some on conservation lands

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, for example, national parks, conservation parks, nature reserves 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 for threatened listing and appear to be under threat from known threatening processes. These species are in urgent need of further survey.

Examples of use:

- *Caladenia nivalis* is listed as a Priority 2 species by the Department of Biodiversity, Conservation and Attractions.
- *Caladenia nivalis* is listed as Priority 2 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P2.

3 Priority 3: Poorly-known species - known from several locations

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.

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. These species need further survey.

Examples of use:

- *Acacia nitidula* is listed as a Priority 3 species by the Department of Biodiversity, Conservation and Attractions.
- *Acacia nitidula* is listed as Priority 3 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P3.

4 Priority 4: Rare, Near Threatened and other species in need of monitoring

(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 are close to qualifying for vulnerable but are not listed as a conservation dependent specially protected species.

(c) Species that have been removed from the list of threatened species or lists of conservation dependent or other specially protected species, during the past five years for reasons other than taxonomy.

(d) Other species in need of monitoring.

Examples of use:

- *Banksia aculeata* is listed as a Priority 4 species by the Department of Biodiversity, Conservation and Attractions.
- *Banksia aculeata* is listed as Priority 4 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P4.

¹ The definition of flora includes algae, fungi, and lichens.

² Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

³ Western Australia has assigned species to threat categories using the *IUCN Red List of Threatened Species Categories and Criteria* since 1996 (referencing all criteria).

⁴ JAMBA - first included in the WA migratory species list in 1980.

⁵ CAMBA - first included in the WA migratory species list in 2010.

⁶ ROKAMBA - first included in the WA migratory species list in 2010.

⁷ Bonn Convention (Birds) - first included in the WA migratory species list in 2015.

APPENDIX E

Albany Regional Vegetation Assessment – Vegetation Units

ALBANY REGIONAL VEGETATION SURVEY – VEGETATION UNITS

Vegetation Unit	Albany Vegetation Unit				Regional and local significance criteria										Threats	
	Vegetation unit name	No. of relevés	Restricted to ARV5 area	Rarity (<1500ha)	(mean species / relevé)	TEC/PEC	Threatened Flora	Priority flora species	Wetland/Dampland /Riparian/buffer	Wetland of National significance	Estuarine	Coastal dune	<10% in IUCN Reserves	Phytophthora dieback	Hydrological change	Fire sensitive
1	Yate Coastal Forest	7		●	11.7											
2	Peppermint Low Forest	10		●	10							●				
3	Coastal Heath	16			21.1		●					●				
4	Coastal <i>Banksia ilicifolia</i> / Peppermint Low Woodland	17		●	21.9		●	●						●		
5	Limestone Coastal Heath	18			14.6			●				●				5c
6	<i>Eucalyptus goniantha</i> / <i>E.angulosa</i> Limestone Mallee	4	o	●	18.8			●								
7	<i>Leucophyta brownii</i> Coastal Shrubland/Grassland	1		●	18								●			
8	Beach Herbland/Grassland	2		●	5.2			●				●				
9	Karri Forest	11		●	10.6			●					●			
10	Marri/Jarrah Forest/Peppermint Woodland	24			18.5			●	●				●			10b
11	Jarrah Woodland	8		●	20.3								●	●		
12	Jarrah/Marri/Sheoak Laterite Forest	40	o		25.7			●					●	●		12b
13	Jarrah/Sheoak/ <i>E.staeri</i> Sandy Woodland	41	o		28		●	●						●		
14	<i>Banksia coccinea</i> Shrubland/ <i>Eucalyptus staeri</i> /Sheoak Open Woodland	41	o	●	27.6	●	●	●						●		●
15	<i>Banksia coccinea</i> Shrubland <i>Melaleuca striata</i> / <i>Leucopogon flavescens</i> Heath	6	o	●	27.5	●	●							●		●
16	<i>Melaleuca striata</i> / <i>Banksia</i> spp Coastal Heath	4	o	●	24.8	●								●		●
17	Marri/Jarrah Coastal Hills Open Forest	49	o	●	25.9			●						●		17a &b
18	Gardner/ <i>Hakea</i> spp Shrubland	8	o	●	24.3			●					●	●		●
19	<i>Hakea elliptica</i> Shrubland/ <i>Eucalyptus doratoxylon</i> Mallee	3	o	●	10			●					●			●
20	<i>Eucalyptus goniantha</i> Mallee	4		●	9.5			●					●			
21	Coastal Shrubland Complex	15		●	21.4									●		●
22	<i>Hakea</i> spp Transitional Shrubland	4		●	27.8											●
23	<i>Gastrolobium bilobum</i> / <i>Hakea elliptica</i> Granite Shrubland/Yate Woodland	11	o	●	10.8								●			●
24	<i>Taxandria marginata</i> Granite Shrubland	9		●	12.3		●	●						●		●
25	<i>Acacia sulcata</i> / <i>Leucopogon assimilis</i> Granite Shrubland.	9		●	15.8			●								
26	<i>Darwinia diosmoides</i> Granite Shrubland	1		●	14											
27	<i>Melaleuca viminea</i> Granite Thicket	3		●	5			●					●			●
29	Jarrah Woodland/ <i>Eucalyptus falcata</i> Mallee	1		●	28			●								
30	Eastern Jarrah/Sheoak Woodland	36	o	●	27.4			●					●	●		●
31	<i>Hakea</i> spp Shrubland/Woodland Complex	72			31.2		●	●						●		●
32	<i>Taxandria spathulata</i> Heath	6	o	●	20	●		●					●	●		●
33	<i>Eucalyptus patens</i> Low Woodland	3		●	13				●				●			
34	<i>Banksia occidentalis</i> / <i>Kunzea clavata</i> Shrubland	3	●	●	13.7	●			●				●			●
35	<i>Eucalyptus megacarpa</i> Riparian Forest	1		●	14				●	●			●			
36	<i>Callistachys</i> spp Thicket	1		●	6				●							
37	<i>Adenanthos cuneatus</i> / <i>Banksia quercifolia</i> Transitional Heathland	2	o	●	18		●		●					●		●
38	<i>Taxandria parviceps</i> Transitional Shrubland	10		●	23.7				●					●		●
39	<i>Pericalymma spongiocaule</i> Low Heath	32	o	●	25.3				●					●		●
40	Takalarup Damp Heath	8		●	27.3			●	●				●	●		●
41	<i>Xanthorrhoea</i> Lowland Sedgeland	1		●	19			●	●				●			
42	<i>Lepidosperma longitudinale</i> Sedgeland	1		●	5				●				●			
43	<i>Banksia littoralis</i> Open Woodland/ <i>Anarthria laevis</i> Sedgeland	1		●	9				●							
44	<i>Banksia littoralis</i> Woodland/ <i>Melaleuca incana</i> Shrubland	3	o	●	13	●			●					●	●	
45	Mixed <i>Banksia littoralis</i> Open Woodland	5		●	19.6				●					●		
46	<i>Evandra aristata</i> Sedgeland	48			18.6			●	●	●				●		●
47	<i>Homalospermum firmum</i> / <i>Callistemon glaucus</i> Peat Thicket	19			12.5				●	●				47b		●
48	<i>Melaleuca microphylla</i> Shrubland/ Low Forest	9		●	8.2				●							●
49	<i>Melaleuca preissiana</i> Low Woodland	7		●	15.7			●	●				●			●
51	<i>Gahnia trifida</i> Sedgeland/Wet Shrubland	3	o	●	13			●	●					●		●
52	<i>Melaleuca cuticularis</i> /M. <i>preissiana</i> Open Woodland	10		●	17.9			●	●							●
53	<i>Kunzea recurva</i> / <i>Petrophile squamatua</i> Wet Shrubland	6		●	21.8			●	●				●			●
54	<i>Melaleuca spathulata</i> / <i>Melaleuca viminea</i> Swamp Heath	2		●	4.5	●			●				●			●
55	<i>Melaleuca densa</i> Swamp Heath	8		●	8.9				●				●			●
56	<i>Astartea scoparia</i> Swamp Thicket	9	o	●	6.9	●		●	●				●			●
57	<i>Melaleuca raphiophylla</i> Woodland/Low Forest Complex	10		●	6.5				●							●
58	<i>Melaleuca raphiophylla</i> / <i>Banksia littoralis</i> Woodland	2		●	10				●						●	●
59	<i>Taxandria juniperina</i> Closed Forest	5		●	6.8				●	●			●			●
60	Coastal <i>Melaleuca incana</i> / <i>Taxandria juniperina</i> Shrubland	3	o	●	9.7	●			●		●		●			●
61	<i>Melaleuca croxfordiae</i> Low Woodland	1		●	13				●				●			●
62	<i>Eucalyptus occidentalis</i> Tall Woodland	1		●	4				●				●			
63	Mixed Sedgeland	0		●	n/a				●				●			●
64	<i>Baumea articulata</i> Sedgeland	1		●	2				●	●					●	●
65	Coastal <i>Melaleuca cuticularis</i> Low Forest	5		●	6				●	●	●		●			●
66	<i>Juncus kraussii</i> Sedgeland	4		●	3				●	●	●		●			
67	Coastal Saltmarsh	4		●	5.3				●	●	●		●			

APPENDIX F

Status and Recommendations – ARVS2

STATUS AND RECOMMENDATIONS FOR ALBANY REGIONAL VEGETATION SURVEY ALBANY VEGETATION UNITS

AVU	2010 ¹ EXTENT (HA)	% OF CURRENT EXTENT PROTECTED ²	COMMENTS AND ³ RECOMMENDATIONS
1	417.65	21.60%	Further protection is dependent on conservation on private land (ARVS2_LNA1, ARVS2_LNA8 and ARVS2_LNA22). 10ha in R25550 - Water Corporation.
2	1230.18	46.21%	Manage threats.
3	3735.69	54.45%	Manage threats.
4	505.08	42.45%	R25295 CoA is designated Environmental Conservation under LPS2 (ARVS2_LNA12) proposed due to the presence of other priority AVUs will increase the protection status of AVU4.
5	1848.00	53.37%	Manage threats.
6	29.21	100.00%	Manage threats.
7	0.07	100.00%	Manage threats.
8	22.22	32.33%	It is a widespread unit along beaches in south west WA. Manage threats.
9	884.50	1.56%	Climate refugial community, the eastern occurrences are the eastern limits of this ecological community, priority for consideration - retention and protection on private lands to maintain/improve connectivity between the Waychinicup National Park and Lake Pleasant Nature Reserve (ARVS2_LNA21). Private land conservation (ARVS2_LNA1 and ARVS2_LNA5), consider changing DBCA Timber (in ARVS2_LNA1) reserve to a conservation reserve.
10	1594.34	4.20%	This AVU has >70% of its current extent in modified or transformed condition. Only 19% of its current extent is on reserved land, with small portion protected. 5.75ha is in the CoA R2031 for which change of vesting purpose is proposed. Further AVU10 occurs in several CoA reserves vested for recreation (ARVS2_LNA5), drainage, Fire station and DBCA Timber reserve. 36ha of AVU 10 will be retained in Parks & Recreation reserves in the Kalgan Rural Village. The full extent of AVU10 in the Conservation covenant L689873 and the adjoining the Waychinicup National Park should be investigated. Opportunities to protect on Private lands should be investigated within ARVS2_LNA6 and ARVS2_LNA1.
11	169.93	10.10%	R12599 is designated Environmental Conservation under LPS2. Discuss opportunities as outlined for ARVS2_LNA5, Reserve vesting for R18012, R12012 & R42854 - refer to ARVS2_LNA1.

¹ Figures for ARVS1 (Sandiford and Barrett, 2010).

² Not including areas designated 'Environmental Conservation' local reserves in LPS2

³ ARVS2_LNA - areas where specific opportunities are identified to achieve improved level of protections for AVU. See Appendix L)

AVU	2010 ¹ EXTENT (HA)	% OF CURRENT EXTENT PROTECTED ²	COMMENTS AND ³ RECOMMENDATIONS
12	13092.83	10.94%	Potentially restricted to the study area - high priority: 750ha in R13802 Water Catchment and 9ha in R2031; 114ha is designated Environmental Conservation under LPS2 in Kalgan Rural Village, R24000 (Timber, Firewood, CoA), R24661 (camping & Recreation CoA) is designated Environmental Conservation under LPS2. Opportunities for private land conservation within ARVS2_LNA9 should be investigated.
13	5120.93	27.29%	Potentially restricted to the study area & believed to be retained at <30% - high priority: 12ha in R2031 CoA, 263ha in R13802 Water catchment, R35381 (Recreation, CoA), R18779 (Gov requirement & use, CoA), R329 (Recreation, CoA) (if we assume that the current extent is approximately 25% of the original extent, 3482ha should be protected to achieve the 17% protection target. After considering the protected areas, additional 2084ha should be secured. The proposed changes to reserve vesting will not achieve this assumed target. In addition, as of the total mapped extent, only 70% or 3614ha is mapped as being in good condition (residual).
14	1324.95	45.96%	Manage threats, highly vulnerable, PEC, most occurrences observed to be affected by dieback. Further opportunities to protect this AVU should be sought. Opportunities exist: 57ha in R33308 (CoA, recreation & Botanical garden, 191ha in R13802 (Water catchment, Water Corporation). This AVU is considered restricted to the study area, with <30% of original extent remaining. If we assume that the current extent is approximately 25% of the original extent, 900ha should be protected to achieve the 17% protection target. After considering the protected areas, an additional 292ha should be secured. The proposed changes to reserve vesting will not achieve this assumed target. In addition as of the total mapped extent, only 76% or 1022ha is mapped as being in good condition (residual).
15	161.89	13.07%	55ha or 34% of the current extent is in R13802 (Water catchment, Water Corporation), 68ha or 42% of the current extent is in R2031 (vested in the City of Albany) and adjoining the R13802. Both of these reserves are Class C.
16	30.33	100.00%	Manage threats.
17	1237.57	35.38%	155ha in R13802 & 9ha in R2031, utilise opportunities to protect as considered potentially restricted to the study area.
18	138.46	0.00%	All in R2031 - CoA, is designated Environmental Conservation under LPS2.
19	24.68	0.00%	All in R2031 - CoA, is designated Environmental Conservation under LPS2.
20	34.32	0.00%	8ha in R 2031, CoA, and rest in ARVS2_LNA21.
21	32.84	66.42%	Manage threats.
22	33.05	58.95%	Manage threats
23	163.24	0.83%	11ha in R2031, CoA, R25295 - Recreation, CoA - is designated Environmental Conservation under LPS2, R33308 - CoA, Recreation & Botanical garden, ARVS2_LNA6
24	110.42	18.58%	ARVS2_LNA12, ARVS2_LNA11, R27068 (Recreation, CoA), 3ha in R2031 (CoA).

AVU	2010 ¹ EXTENT (HA)	% OF CURRENT EXTENT PROTECTED ²	COMMENTS AND ³ RECOMMENDATIONS
25	16.72	10.14%	R33308 (DBCA, 6.67ha -vested Recreation & Botanical Garden), R13802 (Water Corporation, 3.5ha), R27068 (CoA, Parks & Recreation), R2681 (CoA, Park & Telecommunication) & R26204 (Animal Welfare) - is designated Environmental Conservation under LPS2 so protection levels have increased to over 90% of the current extent.
26	2.55	40.86%	R25295 (CoA, recreation) is designated Environmental Conservation under LPS2
27	11.33	0.00%	R2031 is designated Environmental Conservation under LPS2 and protects all the extent of AVU27,
28	39.04	14.67%	R13802 (Water Corporation) includes 7ha, R33308 (DBCA) includes 8.8ha, R25295 (CoA, recreation), ARVS2_LNA8 (Parks & Recreation reserve).
29	5.93	100.00%	Manage threats.
30	1041.66	0.01%	It appears that all is within R13802, Water catchment.
31	2352.41	45.67%	Already well protected, another 971ha or 41% of current extent in R13802 and 90ha in the adjoining CoA reserve R2031. Includes 1 P1 flora and 3 P3 flora species.
32	303.70	0.00%	All in R13802, Water catchment vested in Water Corporation.
33	101.44	1.83%	ARVS2_LNA3, R26888 (CoA, recreation (4.6ha); R2000 (CoA, Recreation (3.3ha), private land conservation initiatives within ARVS2_LNA1.
34	11.67	0.41%	R24514, CoA, camping & recreation - 6.12ha (IHCVA2), R20367, CoA, common. Areas are designated Environmental Conservation under LPS2.
35	42.99	6.73%	Very limited opportunities exist for increased protection of AVU35 within already reserved lands. Largest occurrence of AVU35 is within ARVS2_LNA8, with small portion within a Drainage & Recreation reserve and the rest on private land zoned Rural. ARVS2_LNA12
36	35.88	7.51%	This AVU occurs naturally in small patches, but is vulnerable to weed invasion. As it is spread across the study area, changes to vesting purposes of larger reserves/ designation of Environmental Conservation under LPS2 will result in greater protection levels in AVU36 as this AVU is often present. For example: R13802, R2031, action within ARVS2_LNA1.
37	5.62	100.00%	Manage threats.
38	108.75	40.04%	The AVU 38 is represented in 5 separate conservation reserves and further occurrences will be protected by designation of Environmental Conservation under LPS2 (e.g. R2031).
39	875.82	22.93%	This potentially restricted AVU is below the 30% protection threshold. It is represented in more than 5 conservation reserves, and 230 ha has been protected by designation of 'Environmental Conservation' under LPS2 (CoA R2031). R13802 Water catchment, would benefit from having an additional purpose of 'Environmental Conservation' which would increase the protection levels to nearly half of the current extent. If the current extent is approximately 25% of the original extent, 595ha should be protected to achieve the 17% protection target. After considering the protected areas, an additional 395ha should be secured. The proposed changes to reserve vesting will not achieve this assumed target. In addition, as of the total mapped extent, only 76% or 696ha is mapped as being in good condition (residual).

AVU	2010 ¹ EXTENT (HA)	% OF CURRENT EXTENT PROTECTED ²	COMMENTS AND ³ RECOMMENDATIONS
40	165.37	0.00%	All in R13802, Water catchment vested in Water corporation.
41	8.20	0.00%	>70% of the current extent modified, with most of the low laying areas where it was recorded cleared in the study area. The only example on reserved land is within CoA reserves with purpose of Camping and Recreation. However, this area is designated Environmental Conservation under LPS2. Extending the purpose of the existing reserve to conservation and including adequate management action to conserve this AVU is recommended. All other occurrences are on private lands. Support for management
42	0.15	0.00%	Within a Fire Station/Recreation Reserve R32825 (CoA) and is designated Environmental Conservation under LPS2 which affords protection of the single occurrence of this vegetation type in the study area.
43	0.79	69.30%	The only other opportunity to improve protection levels of AVU 43 in the study area exist within a CoA reserve R15949, which is vested for gravel and sand but is designated Environmental Conservation under LPS2 . Other Priority AVUs in this reserve include PEC (AVU14), and potentially restricted AVU 12,13 &39.
44	3.86	23.45%	All occurrences are on reserved land, but only small portion is reserved for conservation, R931 vested for Government requirements, Dep. Of Regional Development, R 25550 vested for Water with Water Corporations and R35754 CoA recreation (0.42ha).
45	25.82	12.29%	R20367 CoA, vested for common use of settlers, R25295 CoA Recreation reserve (ARVS2_LNA12) R27068 CoA recreation reserve. ARVS report suggests that examples on private lands were highly degraded (Big Grove area).
46	1743.93	12.75%	Appears to be common outside the study area and its eastern extent is just east of the ARVS area. It is represented in more than 5 different conservation reserves. With the changing purpose of R13802 (Water Corporation) an additional 417ha of AVU46 will be protected.
47	2070.27	13.16%	Considered widespread. 58ha of AVU47 is mapped within R 13802 (Water catchment) considered for change of purpose. It is also represented in several CoA reserves where change of purpose or addition of conservation purpose should be investigated. As this AVU is one of few that provides habitat for Rakali (water rat), conservation on private land should be supported.
48	24.48	12.79%	Eastern limit of this AVU in the study area, further opportunities to protect in R2031 (CoA), R9888 CoA Recreation (3.4ha) within ARVS2_LNA1 but on private property fragmented, reduced to small isolated patches.
49	669.95	7.88%	Considered to be common in the Warren IBRA. Represented in more than 5 conservation reserves, additional 49ha could be added to protection by changing the vesting purpose of R13802 (Water Corporation).
50	258.56	8.74%	Seek retention to maintain ecological processes along creeklines.
51	20.61	100.00%	Manage threats.
52	257.90	37.91%	Distribution outside study are unknown, sensitive to increased salinity. Therefore, additional areas should be protected with opportunities in R25556 (Water Corporation)

AVU	2010 ¹ EXTENT (HA)	% OF CURRENT EXTENT PROTECTED ²	COMMENTS AND ³ RECOMMENDATIONS
53	19.01	1.79%	ARVS2_LNA1, where part of a mosaic. R23464 CoA recreation & fire station - is designated Environmental Conservation under LPS2.
54	9.50	0.00%	Likely to reach eastern limit in the study area, in mosaic with AVU52, 53, 57. 5.5ha is in Major Road Reserve and on Rural zoned land (ARVS2_LNA2), ARVS2_LNAARVS2_LNA3 (Rural zoned land and Public Purpose Reserve (drainage)).
55	22.12	5.71%	Nearly all in R13802, Water catchment vested in Water Corporation.
56	15.37	2.97%	Potentially restricted to the study area, R24548 Camping & recreation (ARVS2_LNA7), in ARVS2_LNA4 largest concentration but in fragmented patches on rural land or within a mosaic in a road reserve - limited opportunity to protect, the best opportunity in CoA Reserve R 15879 (Recreation) and adjoining Public Purposes land (not reserved yet) as part of large mosaic and adjoins a conservation reserve (ARVS2_LNA13). Assuming that the current extent is approximately 25% of the original extent, the original area would be less than 100ha. In addition, as of the total mapped extent, only 54% or 8.4ha is mapped as being in good condition (residual).
57	493.59	12.20%	>70% is considered modified or transformed, susceptible to weed invasion. This AVU is spread across the study area, with small patches in several reserves. Good opportunity to improve its protection status exists in R24514 (vested with the CoA) for recreation and camping). This area is designated Environmental Conservation under LPS2. Also R 42256 (Water Corporation, vested for recreation and drainage). AVU57 extends into the adjoining private lands zoned Rural, support for retention and management of this AVU should be provided.
58	24.56	100.00%	Manage threats.
59	777.76	10.20%	R13802, ARVS2_LNA4, ARVS2_LNA13.
60	8.35	0.00%	All occurrences are in one location adjoining Little Grove Structure Plan area, only 1.25ha in Parks & Recreation reserve, 1 ha spread over R22735 Water Corporation and R24747 CoA Fire Station. The rest has been approved for residential development in the Little Grove Structure Plan.
61	2.51	0.00%	All in R13802, Water catchment vested in Water Corporation.
62	3.89	0.00%	Occurs at its southern range, non reserved, private land conservation within ARVS2_LNA21 - part of a mosaic, the second occurrence is within a road reserve.
63	12.01	0.00%	All in R13802, Water catchment vested in Water Corporation.
64	56.10	37.12%	Represented in 3 conservation reserves, Typha infestations recorded as a problem, further opportunities to protect exist in ARVS2_LNA21.
65	206.78	9.46%	Mostly reserved for Environmental Conservation around Oyster Harbour, AVU 65 also within ARVS2_LNA7.
66	70.34	19.92%	
67	78.25	12.35%	
Total (HA)	43947.93	23.42%	

APPENDIX G

List of Conservation Significant Fauna

FAUNA SPECIES - CONSERVATION SIGNIFICANCE

INVERTEBRATES	COMMON NAME	BC ACT	EPBC ACT
<i>Helicarion castanea</i>	a helicarionid land snail	EX	
<i>Trioza barrettiae</i>	Banksia brownii plant-louse	EN	EN
<i>Westralunio carteri</i>	Carter's freshwater mussel	VU	VU
<i>Atelomastix culleni</i>	Cullen's atelomastix millipede	VU	
<i>Windbalea viride</i>	green west wind katydid (Albany-Cape Riche)	P1	
<i>Zephyrarchaea mainae</i>	Main's assassin spider	VU	
<i>Bertmainius tumidus</i>	thick-legged pygmy trapdoor spider	EN	
<i>Zephyrarchaea melindae</i>	Toolbrunup assassin spider	VU	
<i>Cynotelopus notabilis</i>	Western Australian pill millipede	EN	
<i>Hylaeus globuliferus</i>	woolybush bee	P3	
FISH	COMMON NAME	BC ACT	EPBC ACT
<i>Nannatherina balstoni</i>	Balston's pygmy perch	VU	VU
<i>Galaxiella nigrostriata</i>	black-stripe minnow, black-striped dwarf galaxias	EN	EN
<i>Carcharodon carcharias</i>	great white shark	VU	VU & MI
<i>Nannoperca pygmaea</i>	little pygmy perch	EN	EN
<i>Galaxiella munda</i>	mud minnow, western dwarf galaxias	VU	
<i>Geotria australis</i>	pouched lamprey	P3	
<i>Galaxias truttaceus</i> (Western Australian population)	western trout minnow, western spotted galaxias	EN	EN
REPTILES	COMMON NAME	BC ACT	EPBC ACT
<i>Dermochelys coriacea</i>	leatherback turtle	VU	EN & MI
<i>Caretta caretta</i>	loggerhead turtle	EN	EN & MI
<i>Elapognathus minor</i>	short-nosed snake	P2	
BIRDS	COMMON NAME	BC ACT	EPBC ACT
<i>Stercorarius parasiticus</i>	Arctic jaeger, Arctic skua	MI	MI
<i>Sterna paradisaea</i>	Arctic tern	MI	MI
<i>Thalassarche chlororhynchos</i>	Atlantic yellow-nosed albatross	VU	MI
<i>Botaurus poiciloptilus</i>	Australasian bittern	EN	EN
<i>Ixobrychus dubius</i>	Australian little bittern	P4	
<i>Ninox connivens connivens</i> (southwest subpopulation)	barking owl (southwest subpopulation)	P3	
<i>Limosa lapponica</i>	bar-tailed godwit	MI	MI
<i>Zanda baudinii</i>	Baudin's cockatoo	EN	EN
<i>Thalassarche melanophris</i>	black-browed albatross	EN	VU & MI
<i>Limosa limosa</i>	black-tailed godwit	MI	MI
<i>Oxyura australis</i>	blue-billed duck	P4	
<i>Onychoprion anaethetus</i>	bridled tern	MI	MI
<i>Calidris falcinellus</i>	broad-billed sandpiper	MI	MI
<i>Stercorarius antarcticus lonnbergi</i>	brown skua, subantarctic skua	P4	
<i>Zanda latirostris</i>	Carnaby's cockatoo	EN	EN
<i>Hydroprogne caspia</i>	Caspian tern	MI	MI
<i>Tringa nebularia</i>	common greenshank	MI	MI
<i>Actitis hypoleucos</i>	common sandpiper	MI	MI
<i>Thalasseus bergii</i>	crested tern	MI	MI
<i>Calidris ferruginea</i>	curlew sandpiper	CR	CR & MI
<i>Charadrius bicinctus</i>	double-banded plover	MI	MI

<i>Numenius madagascariensis</i>	eastern curlew	CR	CR & MI
<i>Ardena carneipes</i>	flesh-footed shearwater	VU	MI
<i>Calyptorhynchus banksii naso</i>	forest red-tailed black cockatoo	VU	VU
<i>Apus pacificus</i>	fork-tailed swift	MI	MI
<i>Plegadis falcinellus</i>	glossy ibis	MI	MI
<i>Calidris tenuirostris</i>	great knot	CR	CR & MI
<i>Charadrius leschenaultii</i>	greater sand plover, large sand plover	VU	VU & MI
<i>Pluvialis squatarola</i>	grey plover	MI	MI
<i>Tringa brevipes</i>	grey-tailed tattler	MI & P4	MI
<i>Gelochelidon nilotica</i>	gull-billed tern	MI	MI
<i>Thinornis cucullatus</i>	hooded plover, hooded dotterel	P4	
<i>Puffinus huttoni</i>	Hutton's shearwater	EN	
<i>Thalassarche carteri</i>	Indian yellow-nosed albatross	EN	VU & MI
<i>Charadrius mongolus</i>	lesser sand plover	EN	EN & MI
<i>Calidris subminuta</i>	long-toed stint	MI	MI
<i>Leipoa ocellata</i>	malleefowl	VU	VU
<i>Tringa stagnatilis</i>	marsh sandpiper	MI	MI
<i>Tyto novaehollandiae novaehollandiae</i>	masked owl (southwest)	P3	0
<i>Atrichornis clamosus</i>	noisy scrub-bird, tjimiluk	EN	EN
<i>Glareola maldivarum</i>	oriental pratincole	MI	MI
<i>Pandion haliaetus</i>	osprey	MI	MI
<i>Pluvialis fulva</i>	Pacific golden plover	MI	MI
<i>Calidris melanotos</i>	pectoral sandpiper	MI	MI
<i>Falco peregrinus</i>	peregrine falcon	OS	
<i>Cereopsis novaehollandiae grisea</i>	Recherche Cape Barren goose	VU	VU
<i>Calidris canutus</i>	red knot	EN	EN & MI
<i>Calidris ruficollis</i>	red-necked stint	MI	MI
<i>Phaethon rubricauda</i>	red-tailed tropicbird	MI & P4	MI
<i>Sterna dougallii</i>	roseate tern	MI	MI
<i>Arenaria interpres</i>	ruddy turnstone	MI	MI
<i>Calidris pugnax</i>	ruff	MI	MI
<i>Calidris alba</i>	sanderling	MI	MI
<i>Calidris acuminata</i>	sharp-tailed sandpiper	MI	MI
<i>Ardena tenuirostris</i>	short-tailed shearwater	MI	MI
<i>Thalassarche cauta cauta</i>	shy albatross	VU	EN & MI
<i>Phoebastria fusca</i>	sooty albatross	EN	VU & MI
<i>Ardena grisea</i>	sooty shearwater	MI	MI
<i>Stercorarius maccormicki</i>	south polar skua	MI	MI
<i>Macronectes giganteus</i>	southern giant petrel	MI	EN & MI
<i>Xenus cinereus</i>	Terek sandpiper	MI	MI
<i>Diomedea exulans</i>	wandering albatross	VU	VU & MI
<i>Dasyornis longirostris</i>	western bristlebird	EN	EN
<i>Pezoporus flaviventris</i>	western ground parrot	CR	CR
<i>Platycercus icterotis xanthogenys</i>	western rosella (inland)	P4	
<i>Psophodes nigrogularis</i>	western whipbird	EN or P4	
<i>Psophodes nigrogularis nigrogularis</i>	western whipbird (western heath)	EN	EN
<i>Psophodes nigrogularis oberon</i>	western whipbird (western mallee)	P4	

<i>Numenius phaeopus</i>	whimbrel	MI	MI
<i>Zanda sp. 'white-tailed black cockatoo'</i>	white-tailed black cockatoo	EN	EN
<i>Oceanites oceanicus</i>	Wilson's storm-petrel	MI	MI
<i>Tringa glareola</i>	wood sandpiper	MI	MI
MAMMALS	COMMON NAME	BC ACT	EPBC ACT
<i>Neophoca cinerea</i>	Australian sea lion	EN	EN
<i>Macrotis lagotis</i>	bilby, dalgyte, ninu	VU	VU
<i>Balaenoptera musculus</i>	blue whale	EN	EN & MI
<i>Dasyurus geoffroii</i>	chuditch, western quoll	VU	VU
<i>Parantechinus apicalis</i>	dibbler	EN	EN
<i>Balaenoptera physalus</i>	fin whale	EN	VU & MI
<i>Potorous gilbertii</i>	Gilbert's potoroo	CR	CR
<i>Megaptera novaeangliae</i>	humpback whale	CD & MI	MI
<i>Orcinus orca</i>	killer whale	MI	MI
<i>Arctocephalus forsteri</i>	New Zealand fur seal, long-nosed fur seal	OS	0
<i>Arctocephalus forsteri</i>	New Zealand fur-seal, long-nosed fur-seal	OS	0
<i>Myrmecobius fasciatus</i>	numbat, walpurti	EN	EN
<i>Balaenoptera musculus brevicauda</i>	pygmy blue whale	EN	EN & MI
<i>Caperea marginata</i>	pygmy right whale	MI	MI
<i>Isodon fusciventer</i>	quenda, southwestern brown bandicoot	P4	
<i>Setonix brachyurus</i>	quokka	VU	VU
<i>Phascogale calura</i>	red-tailed phascogale, kenngoor	CD	VU
<i>Eubalaena australis</i>	southern right whale	VU	EN & MI
<i>Phascogale tapoatafa wambenger</i>	south-western brush-tailed phascogale, wambenger	CD	
<i>Physeter macrocephalus</i>	sperm whale	VU	MI
<i>Notamacropus eugenii derbianus</i>	tammar wallaby	P4	
<i>Hydromys chrysogaster</i>	water-rat, rakali	P4	
<i>Notamacropus irma</i>	western brush wallaby	P4	
<i>Falsistrellus mackenziei</i>	western false pipistrelle, western falsistrelle	P4	
<i>Pseudocheirus occidentalis</i>	western ringtail possum, ngwayir	CR	CR
<i>Bettongia penicillata ogilbyi</i>	woylie, brush-tailed bettong	CR	EN

Source: DBCA (2024) NatureMaps.

APPENDIX H

ARVS Fauna Habitat Matrix

ARVS PROJECT: FAUNA HABITAT MATRIX

Albany Vegetation Unit	Western Ringtail Possum #	Carnaby's Black Cockatoo #	Forest Red-tailed Black Cockatoo #	Baudin's Black Cockatoo #	Quenda #	Main's Assassin Spider #	Honey Possum	Western Yellow Robin	Firetail	Quokka #	Brush Wallaby	Grey-bellied Dunnart	Brush-tailed Phascogale	Water rat	Australasian Bittern #	Shorebirds (collective) #	Barking Owl & Masked Owl	Western Whipbird	Western Crested Shrike-tit *	Southern Emu Wren	Pill Millipede *	Chelodina oblonga	Total potential habitats
1	y	R	y		y				y								y						6
2	y	F/R			y	y			y					y									6
3	y	F/R		F	y	y	y					y								y			8
4	y	F/R		F	y	y	y					y								y			8
5	y	F/R		F	y	y	y					y								y			8
6		F	F			y																	3
7					y																		1
8																							0
9	y	R/F/B	F/R	F/R	y	y		y	y				y				y		y		y		12
10	y	F/R	F/R	F/R	y		y	y		y				y									9
11	y	F/R	F/R	F/R	y			y															6
12	y	F/R	F/R	F/R	y			y					y				y		y				9
13	y	F/R	F/R	F/R	y		y	y															7
14	y	F			y		y													y			5
15	y	F			y		y													y			5
16		F			y		y											y		y			5
17	y	F/R	F/R	F/R	y		y			y	y						y	y					10
18	y	F	F		y		y																5
19		F			y																		2
20					y																		1
21	y	F			y	y	y																5
22	y	F			y																		3
23	y	F/R	F		y				y	y													6
24		F			y																		2

Albany Vegetation Unit	Western Ringtail Possum #	Carnaby' s Black Cockatoo #	Forest Red-tailed Black Cockatoo #	Baudin's Black Cockatoo #	Quenda #	Main's Assassin Spider #	Honey Possum	Western Yellow Robin	Firetail	Quokka #	Brush Wallaby	Grey-bellied Dunnart	Brush-tailed Phascogale	Water rat	Australasian Bittern #	Shorebirds (collective) #	Barking Owl & Masked Owl	Western Whipbird	Western Crested Shrike-tit *	Southern Emu Wren	Pill Millipede *	Chelodina oblonga	Total potential habitats
25																							0
26																							0
27																							0
28																							0
29		F/R			Y																		2
30	y	F/R	F	F/R	Y							Y					Y						7
31	y	F			Y		Y					Y						y		Y			7
32		F			Y																		2
33	y	F/R		F	Y			y	Y														6
34	y				Y		Y																3
35	y	F/R	F/R	R	Y			y	Y								Y		Y				9
36	y				Y				Y														3
37		F			Y		Y																3
38		F			Y				Y														3
39					Y																		1
40							Y																1
41																							0
42																							0
43		F			Y		Y																3
44		F			Y		Y																3
45					Y		Y																2
46	y	F					Y																3
47	y	F							Y					Y									4
48	y				Y																		2
49	y	F			Y																		3
50					Y				Y														2
51																							0

	Albany Vegetation Unit	Western Ringtail Possum #	Carnaby's Black Cockatoo #	Forest Red-tailed Black Cockatoo #	Baudin's Black Cockatoo #	Quenda #	Main's Assassin Spider #	Honey Possum	Western Yellow Robin	Firetail	Quokka #	Brush Wallaby	Grey-bellied Dunnart	Brush-tailed Phascogale	Water rat	Australasian Bittern #	Shorebirds (collective) #	Barking Owl & Masked Owl	Western Whipbird	Western Crested Shrike-tit *	Southern Emu Wren	Pill Millipede *	Chelodina oblonga	Total potential habitats
52						Y																		1
53						Y		Y																2
54																								0
55																								0
56																								0
57		Y				Y				Y					Y								Y	5
58		Y				Y				Y														3
59		Y	R			Y				Y					Y								Y	6
60		Y				Y																		2
61						Y																		1
62		Y	R		R	Y				Y								Y						6
63																Y								1
64																Y							Y	2
65		Y				Y				Y					Y								Y	5
66																	Y							1
67																	Y							1
68																Y							Y	2
Total Potential		41017	41252	24017	29464	39685	8270	20114	7922	6604	2994	1237	9499	13976	6370	108	148	4933	3619	14019	9955	884	1572	

= EBPC listed species

* = WA threatened and priority species

All others are locally significant species in the ARVS area

Y = potential habitat for selected species

For cockatoo species: R = roosting habitat; F = feeding habitat; B = breeding habitat

APPENDIX I

Protected Matters Search Tool – EPBC Act



Australian Government

**Department of Climate Change, Energy,
the Environment and Water**

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. Please see the caveat for interpretation of information provided here.

Report created: 05-May-2025

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment 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:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	115
Listed Migratory Species:	69

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 <https://www.dcceew.gov.au/parks-heritage/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 Lands:	27
Commonwealth Heritage Places:	None
Listed Marine Species:	94
Whales and Other Cetaceans:	31
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	62
Regional Forest Agreements:	1
Nationally Important Wetlands:	3
EPBC Act Referrals:	39
Key Ecological Features (Marine):	None
Biologically Important Areas:	12
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]		
Name	State	Legal Status
Natural		
Stirling Range National Park	WA	Listed place

Commonwealth Marine Area [Resource Information]
Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.
Feature Name
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]		
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. Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.		
Community Name	Threatened Category	Presence Text
Empodisma peatlands of southwestern Australia	Endangered	Community likely to occur within area
Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community likely to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species [Resource Information]		
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.		
Scientific Name	Threatened Category	Presence Text
BIRD		
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Atrichornis clamosus Noisy Scrub-bird, Tjimiluk [654]	Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Dasyornis longirostris Western Bristlebird [515]	Endangered	Species or species habitat known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Psophodes nigrogularis nigrogularis Western Heath Whipbird [64449]	Endangered	Species or species habitat known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
Zanda baudinii listed as Calyptorhynchus baudinii Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding known to occur within area
Zanda latirostris listed as Calyptorhynchus latirostris Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area
FISH		
Galaxias truttaceus (Western Australian population) Western Trout Minnow [89857]	Endangered	Species or species habitat known to occur within area
Galaxiella munda Western Dwarf Galaxias, Western Mud Minnow [79240]	Vulnerable	Species or species habitat known to occur within area
Galaxiella nigrostriata Blackstriped Dwarf Galaxias, Black-stripe Minnow [88677]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Nannatherina balstoni Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat known to occur within area
Nannoperca pygmaea Little Pygmy Perch [88315]	Endangered	Species or species habitat known to occur within area
INSECT		
Trioza barrettae Banksia brownii plant louse [87805]	Endangered	Species or species habitat known to occur within area
MAMMAL		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Myrmecobius fasciatus Numbat [294]	Endangered	Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Parantechinus apicalis Dibbler [313]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Potorous gilbertii Gilbert's Potoroo, Ngilkat [66642]	Critically Endangered	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 known to occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area
OTHER		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area
PLANT		
Adenanthos pungens subsp. pungens Spiky Adenanthos [19429]	Vulnerable	Species or species habitat may occur within area
Andersonia pinaster Two Peoples Bay Andersonia [67444]	Vulnerable	Species or species habitat known to occur within area
Androcalva perlaria Pearl-like Androcalva [86388]	Endangered	Species or species habitat known to occur within area
Apium prostratum subsp. Porongurup Range (G.J.Keighery 8631) Fine-leaved Apium, Porongurup Celery [82019]	Vulnerable	Species or species habitat likely to occur within area
Banksia anatona Cactus Dryandra [82758]	Critically Endangered	Species or species habitat known to occur within area
Banksia brownii Brown's Banksia, Feather-leaved Banksia [8277]	Critically Endangered	Species or species habitat known to occur within area
Banksia goodii Good's Banksia [16727]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Banksia pseudoplumosa False Plumed-Banksia [82760]	Endangered	Species or species habitat likely to occur within area
Banksia rufa subsp. pumila [85008]	Endangered	Species or species habitat may occur within area
Banksia verticillata Granite Banksia, Albany Banksia, River Banksia [8333]	Vulnerable	Species or species habitat known to occur within area
Caladenia bryceana subsp. bryceana Dwarf Spider-orchid [64503]	Endangered	Species or species habitat known to occur within area
Caladenia christineae Christine's Spider Orchid [56716]	Vulnerable	Species or species habitat likely to occur within area
Caladenia granitora [65292]	Endangered	Species or species habitat known to occur within area
Caladenia harringtoniae Harrington's Spider-orchid, Pink Spider-orchid [56786]	Vulnerable	Species or species habitat known to occur within area
Calectasia cyanea Blue Tinsel Lily [7669]	Critically Endangered	Species or species habitat known to occur within area
Chordifex abortivus Manypeaks Rush [64868]	Endangered	Species or species habitat known to occur within area
Conostylis misera Grass Conostylis [21320]	Endangered	Species or species habitat known to occur within area
Darwinia oxylepis Gillam's Bell [13188]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Daviesia glossosema Maroon-flowered Daviesia [65037]	Critically Endangered	Species or species habitat likely to occur within area
Daviesia obovata Paddle-leaf Daviesia [17311]	Endangered	Species or species habitat likely to occur within area
Daviesia ovata Broad-leaf Daviesia [21193]	Critically Endangered	Species or species habitat known to occur within area
Daviesia pseudaphylla Stirling Range Daviesia [56747]	Critically Endangered	Species or species habitat may occur within area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat known to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat may occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat known to occur within area
Gastrolobium humile [78418]	Endangered	Species or species habitat known to occur within area
Gastrolobium luteifolium Yellow-leafed Gastrolobium [78405]	Critically Endangered	Species or species habitat may occur within area
Grevillea maxwellii Maxwell's Grevillea [21745]	Endangered	Species or species habitat known to occur within area
Hibbertia wheelerae Wheeler's Buttercup [90414]	Critically Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<u>Isopogon uncinatus</u> Albany Cone Bush, Hook-leaf Isopogon [20871]	Endangered	Species or species habitat known to occur within area
<u>Kennedia glabrata</u> Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat known to occur within area
<u>Lambertia fairallii</u> Fairall's Honeysuckle [4881]	Critically Endangered	Species or species habitat may occur within area
<u>Lambertia orbifolia</u> Roundleaf Honeysuckle [15725]	Endangered	Translocated population known to occur within area
<u>Leucopogon gnaphalioides</u> Stirling Range Beard Heath [21609]	Critically Endangered	Species or species habitat may occur within area
<u>Microtis globula</u> South-Coast Mignonette Orchid [6780]	Vulnerable	Species or species habitat likely to occur within area
<u>Myoporum cordifolium</u> Jerramungup Myoporum [24223]	Vulnerable	Species or species habitat known to occur within area
<u>Phaius australis</u> Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
<u>Ricinocarpos trichophorus</u> Barrens Wedding Bush [19931]	Endangered	Species or species habitat may occur within area
<u>Roycea pycnophylloides</u> Saltmat [21161]	Endangered	Species or species habitat may occur within area
<u>Scaevola macrophylla</u> Large-flowered Scaevola [11806]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Sphenotoma drummondii Mountain Paper-heath [21160]	Endangered	Species or species habitat known to occur within area
Thelymitra psammophila Sandplain Sun-orchid [4908]	Vulnerable	Species or species habitat may occur within area
Tribonanthes purpurea Granite Pink [16244]	Vulnerable	Species or species habitat known to occur within area
Verticordia apecta Hay River Featherflower, Scruffy Verticordia [65545]	Critically Endangered	Species or species habitat likely to occur within area
Verticordia carinata Stirling Range Featherflower [24342]	Vulnerable	Species or species habitat likely to occur within area
Verticordia fimbriilepis subsp. australis Southern Shy Featherflower [24630]	Vulnerable	Species or species habitat known to occur within area
Verticordia helichrysantha Coast Featherflower [8204]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
SHARK		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species	[Resource Information]
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Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardeenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardeenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophrys Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Migratory Marine Species		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may 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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Gallinago stenura Pin-tailed Snipe [841]		Roosting known to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - ALBANY TRAINING DEPOT [50136]	WA
Defence - ALBANY TRAINING DEPOT [50137]	WA
Defence - ALBANY TRAINING DEPOT ; AIRTC ALBANY [50115]	WA
Defence - ALBANY TRAINING DEPOT ; AIRTC ALBANY [50116]	WA
Unknown	
Commonwealth Land - [51621]	WA
Commonwealth Land - [52155]	WA
Commonwealth Land - [52156]	WA
Commonwealth Land - [52167]	WA
Commonwealth Land - [52162]	WA
Commonwealth Land - [52168]	WA
Commonwealth Land - [52160]	WA
Commonwealth Land - [52147]	WA
Commonwealth Land - [51033]	WA
Commonwealth Land - [51038]	WA
Commonwealth Land - [52149]	WA

Commonwealth Land Name	State
Commonwealth Land - [51398]	WA
Commonwealth Land - [51030]	WA
Commonwealth Land - [51032]	WA
Commonwealth Land - [51035]	WA
Commonwealth Land - [51036]	WA
Commonwealth Land - [50308]	WA
Commonwealth Land - [51034]	WA
Commonwealth Land - [51399]	WA
Commonwealth Land - [51017]	WA
Commonwealth Land - [52226]	WA
Commonwealth Land - [50309]	WA
Commonwealth Land - [52170]	WA

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardenna grisea as Puffinus griseus		
Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Arenaria interpres		
Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting known to occur within area overfly marine area
Glareola maldivarum Oriental Pratincole [840]		Roosting known to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Pterodroma macroptera Great-winged Petrel [1035]		Breeding known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Puffinus assimilis Little Shearwater [59363]		Breeding known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Reptile		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Berardius arnuxii Arnoux's Beaked Whale [70]		Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Globicephala melas Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Mesoplodon hectori Hector's Beaked Whale [76]		Species or species habitat may occur within area
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	
Arpenteur	Nature Reserve	WA	
Bakers Junction	Nature Reserve	WA	
Bald Island	Nature Reserve	WA	
Basil Road	Nature Reserve	WA	
Blue Gum Creek	Nature Reserve	WA	
Bon Accord Road	Nature Reserve	WA	
Breaksea Island	Nature Reserve	WA	
Cheyne Island	Nature Reserve	WA	
Cheyne Road	Nature Reserve	WA	
Down Road	Nature Reserve	WA	
Eclipse Island	Nature Reserve	WA	
Gledhow	Nature Reserve	WA	
Granite Hill	Nature Reserve	WA	
Green Island	Nature Reserve	WA	
Gull Rock	National Park	WA	
Hassell	National Park	WA	
Kojaneerup South	Nature Reserve	WA	
Lake Pleasant View	Nature Reserve	WA	
Lake Powell	Nature Reserve	WA	
Mailalup	Nature Reserve	WA	
Marbelup	Nature Reserve	WA	
Mettler Lake	Nature Reserve	WA	
Michaelmas Island	Nature Reserve	WA	
Mill Brook	Nature Reserve	WA	
Mistaken Island	Nature Reserve	WA	

Protected Area Name	Reserve Type	State
Mount Lindesay	National Park	WA
Mount Manypeaks	Nature Reserve	WA
Mount Mason	Nature Reserve	WA
Napier	Nature Reserve	WA
North Sister	Nature Reserve	WA
NTWA Bushland covenant (0005)	Conservation Covenant	WA
NTWA Bushland covenant (0010)	Conservation Covenant	WA
NTWA Bushland covenant (0137)	Conservation Covenant	WA
Pallinup	Nature Reserve	WA
Phillips Brook	Nature Reserve	WA
Seal Island (WA32199)	Nature Reserve	WA
Shelter Island	Nature Reserve	WA
Sleeman Creek	Nature Reserve	WA
South Sister	Nature Reserve	WA
South Stirling	Nature Reserve	WA
Stirling Range	National Park	WA
Takenup Road	Nature Reserve	WA
Tennessee North	Nature Reserve	WA
Tinkelelup	Nature Reserve	WA
Torndirrup	National Park	WA
Two Peoples Bay	Nature Reserve	WA
Unnamed WA01998	Nature Reserve	WA
Unnamed WA23088	Conservation Park	WA
Unnamed WA23850	Nature Reserve	WA
Unnamed WA23923	Nature Reserve	WA
Unnamed WA25705	Nature Reserve	WA
Unnamed WA30791	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA32478	5(1)(h) Reserve	WA
Unnamed WA33308	5(1)(h) Reserve	WA
Unnamed WA44685	5(1)(h) Reserve	WA
Unnamed WA44690	5(1)(h) Reserve	WA
Unnamed WA50574	5(1)(h) Reserve	WA
Voyagers Park	5(1)(h) Reserve	WA
Waychinicup	National Park	WA
West Cape Howe	National Park	WA
West Mount Mason	Nature Reserve	WA
White Lake	Nature Reserve	WA

Regional Forest Agreements
[Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State
South West WA RFA	Western Australia

Nationally Important Wetlands
[Resource Information]

Wetland Name	State
Lake Pleasant View System	WA
Moates Lake System	WA
Oyster Harbour	WA

EPBC Act Referrals
[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Albany Heritage Park Link Trail, WA	2019/8480		Post-Approval
Bayonet Head Residential Development, Albany, WA	2015/7624		Completed
Eradication of the European House Borer, Perth metropolitan area, WA	2009/5027		Completed
Sydney Street Subdivision	2023/09530		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Werillup Pipeline	2025/10121		Referral Decision
Controlled action			
Albany Heritage Park Trail Network Concept Plan	2017/7943	Controlled Action	Completed
Albany Port Authority dredging project	2006/2540	Controlled Action	Post-Approval
Albany Ring Road Stages 2 and 3B, WA	2020/8769	Controlled Action	Post-Approval
Clearing vegetation, Lot 102 Mindijup Road for an extractive industry, NE Albany, WA	2014/7262	Controlled Action	Completed
Emu Point Residential Area Project	2010/5479	Controlled Action	Completed
Plantagenet Location 1181, Cape Riche	2001/158	Controlled Action	Completed
Silica Sand Mine, Mindijup, WA	2012/6472	Controlled Action	Post-Approval
Southdown Magnetite Mine	2006/2544	Controlled Action	Completed
Southdown Magnetite Project	2011/6053	Controlled Action	Post-Approval
Not controlled action			
4wd coastal track stabilisation & rehabilitation, Bettys Beach Reserve, WA	2013/7087	Not Controlled Action	Completed
9 lot 40.4407 ha rural residential subdivision development 1181 Sandalwood Rd, Wellstead	2007/3451	Not Controlled Action	Completed
Albany Motorsport Park, 20kms Northwest Albany, WA	2021/8944	Not Controlled Action	Completed
Albany Port Maintenance Dredging, Albany, WA	2014/7246	Not Controlled Action	Completed
Anzac Centre Development, Albany, WA	2012/6571	Not Controlled Action	Completed
Anzac Interpretive Centre Development, Albany, WA	2013/6903	Not Controlled Action	Completed
Development of Grasmere Wind Farm	2008/4368	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Engineered Strand Lumber Plant	2007/3421	Not Controlled Action	Completed
Firebreak Creation, Kalgan, WA	2020/8681	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Mindijup Silica Sand Mining Project WA	2011/6098	Not Controlled Action	Completed
Mount Barker to Albany Water Supply Pipeline	2013/6720	Not Controlled Action	Completed
Prescribed burn of Cells 5, 6 & 8 of Crown Land Reserve 35381, Napier, WA	2013/6798	Not Controlled Action	Completed
Protected Harbour Development	2006/3091	Not Controlled Action	Completed
Scuttling of the HMAS Perth	2001/171	Not Controlled Action	Completed
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700	Not Controlled Action	Completed
South Coast Highway Cheynes East Intersection upgrade and realignment, WA	2016/7777	Not Controlled Action	Completed
South Coast Highway Upgrade (33.5-35 SLK), Manypeaks, WA	2012/6535	Not Controlled Action	Completed
South Coast Highway Widening 8.2-14.16 SLK	2017/8009	Not Controlled Action	Completed
Sth Coast Hwy Road Widening, Albany, WA	2018/8279	Not Controlled Action	Completed
Sth Coast Hwy upgrade (SLK 39.9 - 44.5) Cheynes Section West, WA	2013/6933	Not Controlled Action	Completed
Not controlled action (particular manner)			
Bremer Basin 2D Marine Seismic Survey, WA	2009/5013	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Manner)			
Referral decision			
Albany Port Maintenance Dredging	2010/5527	Referral Decision	Completed
Biologically Important Areas			
Scientific Name		Behaviour	Presence
Seabirds			
Ardena carneipes			
Flesh-footed Shearwater [82404]		Foraging (in high numbers)	Known to occur
Eudyptula minor			
Little Penguin [1085]		Foraging (provisioning young)	Known to occur
Hydroprogne caspia			
Caspian Tern [808]		Foraging (provisioning young)	Known to occur
Larus pacificus			
Pacific Gull [811]		Foraging (in high numbers)	Known to occur
Onychoprion anaethetus			
Bridled Tern [82845]		Foraging (in high numbers)	Known to occur
Puffinus assimilis tunneyi			
Little Shearwater [59363]		Foraging (in high numbers)	Known to occur
Sternula nereis			
Fairy Tern [82949]		Foraging (in high numbers)	Known to occur
Thalassarche chlororhynchos bassi			
Indian Yellow-nosed Albatross [85249]		Foraging (in high numbers)	Known to occur
Seals			
Neophoca cinerea			
Australian Sea Lion [22]		Foraging (male)	Likely to occur

Scientific Name	Behaviour	Presence
Neophoca cinerea Australian Sea Lion [22]	Foraging (male and female)	Likely to occur
Sharks		
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur
Whales		
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and 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

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

Where little information is available for a 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 detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

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](#)
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- [-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.

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APPENDIX J

Data Sets Provided for Biodiversity Analysis

DATA SETS AVAILABLE FOR ANALYSIS IN ALBANY LOCAL BIODIVERSITY STRATEGY

Output Name	Description	GIS Analysis
ARVS_LPS2_Enviro_Cons_exDBCA_extent	ARVS vegetation units in all other (than DBCA conservation estate) Crown reserves with conservation zoning	Any areas that were zoned 'Environmental Conservation' or 'ENVIRONMENTAL CONSERVATION' in LPS2 were exported to their own layer. The ARVS vegetation units were clipped to the 2020 Native Vegetation Extent (DPIRD-005). The ARVS vegetation units were then clipped to the Environmental Conservation zoned areas. Those areas that were DBCA-managed land were then clipped out. The resulting layer is called 'ARVS_LPS2_Enviro_Cons_exDBCA_extent'
ARVS_Veg_Units_Purpose_Current_Extent	ARVS vegetation units with reserve purpose and LPS2 zone	ARVS vegetation units joined to the LGATE-227 Reserves layer and the LPS2 Zones and Reserves layer. Clipped to the Native Vegetation Extent (DPIRD-005)
ARVS_Vegetation_units_DBCA_current_extent	ARVS vegetation in DBCA conservation estate	ARVS vegetation clipped to Native Vegetation Extent (DPIRD-005). Then clipped to DBCA Legislated Lands and Waters (DBCA-011). Resulting layer is called 'ARVS_Vegetation_units_DBCA_current_extent'
AVU_0_percent_protected_current_extent	AVUs with 0% in protected areas	AVUs with 0% in protected areas: 18, 19, 20, 27, 30, 32, 40, 41, 42, 54, 60, 61, 62, 63, 67. Those with these veg units in MapCodeA were exported then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_0_percent_protected_current_extent'
AVU_climate_refugial_coms_current_extent	ARVS units that contain climate refugial communities	AVUs containing climate refugial communities: 9. Those with these veg units in MapCodeA were exported to a layer called 'AVU_climate_refugial_coms'. This layer was then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_climate_refugial_coms_current_extent'.
AVU_coastal_veg_current_extent	ARVS units associated with coastal dunes	AVUs containing coastal dune vegetation: 2, 3, 5, 8. Those with these veg units in MapCodeA were exported to a layer called 'AVU_coastal_veg'. This layer was then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_coastal_veg_current_extent'
AVU_DBCA_ConsCovenants_Current_Extent	ARVS vegetation on properties with registered conservation covenants	ARVS Vegetation Units were clipped to the DBCA Conservation Covenant areas. This was then clipped to the Native Vegetation Extent (DPIRD-005). Resulting layer is called AVU_DBCA_ConsCovenants_Current_Extent
AVU_dieback_susceptible_current_extent	ARVS units that are susceptible to dieback	AVUs susceptible to dieback: 4, 11, 12, 13, 14, 15, 16, 17, 18, 21, 24, 30, 31, 32, 37, 38, 39, 40, 44, 45, 46, 47, 51. Those with these veg units in MapCodeA were exported then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_dieback_susceptible_current_extent'
AVU_estuarine_veg_current_extent	ARVS units associated with estuaries	AVUs containing estuarine vegetation: 60, 65, 66, 67. Those with these veg units in MapCodeA were exported to a layer called 'AVU_estuarine_veg'. This layer was then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_estuarine_veg_current_extent'
AVU_fire_sensitive_current_extent	ARVS units that are fire sensitive	AVUs that are sensitive to fire: 5, 10, 12, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 27, 30, 31, 32, 34, 37, 38, 39, 40, 46, 47, 48, 49, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 63, 64, 65. Those with these veg units in MapCodeA were exported then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_fire_sensitive_current_extent'
AVU_granite_outcrops_current_extent	ARVS units associated with granite outcrops	AVUs associated with granite outcrops: 24, 25, 26, 28. Those with these veg units in MapCodeA were exported to a layer called 'AVU_granite_outcrops'. This layer was then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_granite_outcrops_current_extent'
AVU_high_flora_rich_current_extent	AVUs with highest average flora species richness	AVUs with highest average flora species richness: 13, 14, 15, 22, 29, 31, 40. Those with these veg units in MapCodeA were exported to a layer called 'AVU_high_flora_rich'. This layer was then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_high_flora_rich_current_extent'
Output Name	Description	GIS Analysis
AVU_hydro_change_susceptible_current_extent	ARVS units that are susceptible to hydrological change	AVUs susceptible to hydrological change: 58, 64. Those with these veg units in MapCodeA were exported then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_hydro_change_susceptible_current_extent'
AVU_low_reg_connect_score_current_extent	AVUs with low regional connectivity score	ARVS2 V_6 layer clipped to 2020 Native Vegetation Extent (DPIRD-005)

AVU_lt_1500_rem_current_extent	ARVS veg units with total current extent less than 1500 ha	Clipped the ARVS veg units to the 2020 Native Vegetation Extent (DPIRD-005). Then calculated how many hectares of each veg unit remaining. AVUs with <1500 ha extent (2020 extent): 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67. Then exported only the above vegetation units to a layer called 'AVUs_lt_1500_rem_current_extent'
AVU_lt_5_occurrences_current_extent	ARVS units with 5 or less occurrences in the ARVS area	AVUs with 5 or less occurrences in ARVS area: 6, 16, 27, 43, 51, 60. Those with these veg units in MapCodeA were exported and then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_lt_5_occurrences_current_extent'
AVU_lt17_percent_protected_current_extent	AVUs with <17% in protected areas	AVUs with <17% in protected areas: 9, 10, 11, 12, 15, 18, 19, 20, 23, 24, 27, 30, 32, 33, 34, 35, 36, 40, 41, 42, 45, 46, 47, 48, 49, 50, 53, 54, 55, 56, 57, 59, 60, 61, 62, 63, 65, 66, 67. Those with these veg units in MapCodeA were exported then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_lt17_percent_protected_current_extent'
AVU_lt30_residual_cond_current_extent	Vegetation units with <30% of their extent in residual condition	Vegetation units with <30% of their extent in residual condition: 10, 41, 57. Those with these veg units in MapCodeA were exported then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_lt30_residual_cond_current_extent'
AVU_macro_corridor_current_extent	Native vegetation associated with South Coast Macro Corridors	Vegetation units that intersected with Strategic Zone A and B of the Macro-Corridor network were clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_macro_corridor_current_extent'
AVU_morethan_3avus_current_extent	Native vegetation patches with more than 3 AVUs	ARVS2_4_1 layer clipped to Native Vegetation Extent (DPIRD-005)
AVU_national_wetlands_current_extent	AVUs associated with Wetlands of National Significance	AVUs associated with Wetlands of National Significance: 35, 46, 47, 59, 64, 65, 66, 67. Those with these veg units in MapCodeA were exported to a layer called 'AVU_national_wetlands'. This layer was then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_national_wetlands_current_extent'
AVU_poten_restrict_current_extent	ARVS units potentially restricted to the ARVS area	AVUs potentially restricted to ARVS area: 12, 13, 14, 15, 16, 17, 18, 19, 23, 30, 32, 34, 37, 39, 44, 51, 56, 60. Those with these veg units in MapCodeA were exported to a layer called 'AVU_potentially_restricted'. This layer was then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_poten_restrict_current_extent'
AVU_priority_fauna_current_extent	AVUs with Priority fauna records	AVUs that intersect with the priority fauna buffer layer were exported to a layer. This layer was then clipped to the Native Vegetation Extent (DPIRD-005). Resulting layer is called 'AVU_priority_fauna_current_extent'
AVU_priority_flora_current_extent	AVUs with Priority flora records	AVUs that intersect with the priority flora buffer layer were exported to a layer. This layer was then clipped to the Native Vegetation Extent (DPIRD-005). Resulting layer is called 'AVU_priority_flora_current_extent'
AVU_single_occurrence_current_extent	ARVS units with a single occurrence	AVUs with single occurrence in ARVS area: 7, 19, 29, 42, 58, 61. Those with these veg units in MapCodeA were exported to a layer called 'AVU_single_occurrence'. This layer was then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_single_occurrence_current_extent'
AVU_single_occurrence_in_patch_current_extent	ARVS units with a single occurrence in a discrete patch of vegetation	AVU with a single occurrence in a discrete patch: 7. Those with these veg units in MapCodeA were exported then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_single_occurrence_in_patch_current_extent'
AVU_specially_protected_fauna_current_extent	AVUs with Specially protected fauna records	AVUs that intersect with the specially protected fauna buffer layer were exported to a layer. This layer was then clipped to the Native Vegetation Extent (DPIRD-005). Resulting layer is called 'AVU_specially_protected_fauna_current_extent'
AVU_TEC_PEC_current_extent	AVUs with TEC/PECs	AVUs that intersect with DBCA TEC/PEC buffer layer were clipped to the Native Vegetation Extent (DPIRD-005). Resulting layer is called 'AVU_TEC_PEC_current_extent'
AVU_threatened_fauna_current_extent	AVUs with Threatened fauna records	AVUs that intersect with the threatened fauna buffer layer were exported to a layer. This layer was then clipped to the Native Vegetation Extent (DPIRD-005). Resulting layer is called 'AVU_threatened_fauna_current_extent'
Output Name	Description	GIS Analysis
AVU_threatened_flora_current_extent	AVUs with Threatened flora records	AVUs that intersect with the threatened flora buffer layer were exported to a layer. This layer was then clipped to the Native Vegetation Extent (DPIRD-005). Resulting layer is called 'AVU_threatened_flora_current_extent'
AVU_waterways_current_extent	Native vegetation associated with waterways	Vegetation units that were within 20m of waterways (CoA Portal dataset) were clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_waterways_current_extent'
AVU_wetland_veg_current_extent	ARVS units associated with wetlands	AVUs containing wetland vegetation: 10, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 51, 52, 53 - 67. Those with these veg units in MapCodeA were exported to a layer called 'AVU_wetland_veg'. This layer was then clipped to the 2020 Native Vegetation Extent (DPIRD-005) and called 'AVU_wetland_veg_current_extent'

AVUs_It_400_rem_current_extent	ARVS veg units with total current extent less than 1% in ARVS area	Clipped the ARVS veg units to the 2020 Native Vegetation Extent (DPIRD-005). Then calculated how many hectares of each veg unit remaining. AVUs with <400 ha extent (2020 extent): 1, 2, 6, 7, 8, 11, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 32, 33, 34, 35, 36, 37, 38, 40, 41, 42, 43, 44, 45, 48, 50, 51, 52, 53, 54, 55, 56, 58, 60, 61, 62, 63, 64, 65, 66, 67. Then exported only the above vegetation units to a layer called 'AVUs_It_400_rem_current_extent'
BEARD_IBRA_LGA_postclearing_stats	Pre-European and current extent of Beard Vegetation associations with IBRA subregion boundaries	2020 Vegetation retention status in Local Government for Beard Associations by IBRA Sub-Regions (WALGA)
BEARD_IBRA_postclearing_stats	Priority Beard vegetation associations according to 10% and 30% thresholds in IBRA subregions	2020 Vegetation retention status for Beard Associations and by IBRA Regions (WALGA)
high_reg_connect_score_current_extent	Native vegetation patches with high regional connectivity score	Used the Native vegetation patches with high regional connectivity score data from the ARVS2 study (P6_2) and clipped to the 2020 Native Vegetation Extent (DPIRD-005)
low_frag_score_current_extent	Native vegetation patches with low fragmentation score	Used the Native vegetation patches with low fragmentation score data from the ARVS2 study (P5_7) and clipped to the 2020 Native Vegetation Extent (DPIRD-005)
Pre_Euro_DBCA_Convenants_exARVS_current_extent	Pre-European vegetation on properties with registered conservation covenants	Pre-European vegetation (DPIRD-006) was clipped to the DBCA Conservation Covenant areas. This was then clipped to the Native Vegetation Extent (DPIRD-005). The conservation covenant areas that have ARVS units over them were removed from this dataset. Resulting layer is called Pre_Euro_DBCA_Convenants_exARVS_current_extent
Pre_Euro_DBCA_Current_Extent_exARVS	Pre-European vegetation in DBCA conservation estate	Pre-european vegetation (DPIRD-006) clipped to Native Vegetation Extent (DPIRD-005). Then clipped to DBCA Legislated Lands and Waters (DBCA-011). Then the area that overlapped with the ARVS vegetation units was clipped out so that only those areas not captured by the ARVS areas within the City of Albany remain. Resulting layer is called 'Pre_Euro_DBCA_Current_Extent_exARVS'
Pre_Euro_Enviro_Cons_exDBCA_exARVS_extent	Pre-European vegetation in all other (than DBCA conservation estate) Crown reserves with conservation zoning	Any areas that were zoned 'Environmental Conservation' or 'ENVIRONMENTAL CONSERVATION' in LPS2 were exported to their own layer. Pre-European Vegetation (DPIRD-006) was clipped to the 2020 Native Vegetation Extent (DPIRD-005). The Pre-European Vegetation was then clipped to the Environmental Conservation zoned areas. Those areas that were DBCA-managed land were then clipped out. The areas that were covered by ARVS mapping was also clipped out. The resulting layer is called 'Pre_Euro_Enviro_Cons_exDBCA_exARVS_extent'
Priority_Fauna_Buffer	Priority fauna records	DBCA fauna records. Only those with a WA_Status of P1, P2, P3, P4 were included in this dataset. A 50m buffer was created around each fauna point. Resulting layer is called 'Priority_Fauna_Buffer'
Priority_Flora_Buffer	Priority flora records	DBCA TPFL & WAHerb records. Only those with a ConsStatus of 1, 2, 3, or 4 were included in this dataset. A 50m buffer was created around each flora point. Resulting layer is called 'Priority_Flora_Buffer'
scs_wetlands_evaluation_urban_current_extent	South Coast Significant Wetlands, Evaluation Wetlands Albany Urban, and Evaluation Wetlands	Used the South Coast Significant Wetlands, Evaluation Wetlands Albany Urban, and Evaluation Wetlands data from the ARVS2 study (P5_1) and clipped to the 2020 Native Vegetation Extent (DPIRD-005)
Shorebird_bird_sites	Shorebird Areas and Significant Birding Sites	Used the Shorebird Areas and Significant Birding Sites data from the ARVS2 study (P3_6) and added the Lake Saide polygon from the South Coast Significant Wetlands (DBCA-018) dataset
Output Name	Description	GIS Analysis
Specially_Protected_Fauna_Buffer	Specially protected fauna records	DBCA fauna records. Only those with a WA_Status of CD, CD & MI, EX, MI, MI& P4, OS were included in this dataset. A 50m buffer was created around each fauna point. Resulting layer is called 'Specially_Protected_Fauna_Buffer'
Threatened_Fauna_Buffer	Threatened fauna records	DBCA fauna records. Only those with a WA_Status of VU, EN, CR or EN or P4 were included in this dataset. A 50m buffer was created around each fauna point. Resulting layer is called 'Threatened_Fauna_Buffer'
Threatened_Flora_Buffer	Threatened flora records	DBCA TPFL & WAHerb records. Only those with a ConsStatus of T were included in this dataset. A 50m buffer was created around each flora point. Resulting layer is called 'Threatened_Flora_Buffer'
veg_pred_good_cond_current_extent	Native vegetation in predominantly good condition	Used the Native vegetation in predominantly good condition data from the ARVS2 study (P5_8) and clipped to the 2020 Native Vegetation Extent (DPIRD-005)

APPENDIX K

ARVS Vegetation Units – Priority Areas

ARVS2 PRIORITY AREAS BASED ON ALBANY VEGETATION UNITS (AVU)

This priority list includes:

1. AVUs potentially restricted to the study area
2. AVUs with 0% of current extent protected
3. AVUs with <1500ha
4. Priority Ecological Communities
5. AVUs potentially threatened due to existing land use provisions
6. AVUs potentially threatened by climate change and threatening processes

MAP ID	REASONS FOR SELECTION	LAND USE ZONING/RESERVE PURPOSE	ACHIEVEMENTS AND RECOMMENDATIONS
ARVS2_LNA1 Youngs Siding, Kronkup, Bornholm and Lowlands	<u>Main focus:</u> - Includes several AVUs dependent on conservation efforts on private lands: AVU 1, 9, 10, 33, 41, 47, 50, 56, 57. <u>Other conservation values:</u> - Other priority AVUs: 11, 33, 36. - Protection of riparian vegetation. - Protection of Priority 2 & 4 flora. - Threatened fauna and Priority Ecological community (AVU56). - Includes remnant vegetation with highest count of potential fauna habitat (14-15). - Strengthening connectivity. - Tennessee North Nature Reserve (TNNR). - Part of coastal macro-corridor. - High Connectivity reach and Regional Connectivity values (patches are part of a large network, contributing to landscape connectivity).	- R16136 Class A Nature Reserve (DBCA). Tennessee North Nature Reserve – Conservation Purpose. - DBCA Timber Reserve (Class C). - R42854 Parklands and Recreation, CoA. - R12012 Parklands and Recreation, CoA. - Rural zone, Public Purposes, No zone.	- DBCA to change purpose of Timber Reserve to Conservation Reserve (Class C, no reserve number) – 18ha AVU9, 1.4ha AVU10 and 0.5ha AVU11. - City of Albany has designated Reserves R42854 (Purpose: Parklands and Recreation) to ‘Environmental Conservation’ under LPS2 to improve protection local status of AVU 46 and AVU 49 and R12012 (Purpose: Parklands and Recreation) and to improve protection status of AVU 9 (3.9ha). - Manage threats in these reserves to maintain values. - Seek opportunities to increase protection of vegetation on private lands adjoining the local reserves and to maximise connectivity within the coastal macro corridor. - Maintain ecological linkages between the TNNR, the Timber Reserve and through retention/ management on private lands.
ARVS_LNA2, Youngs Siding	<u>Main focus:</u> - Includes 40% of AVU 54 (0% protected) which occurs in mosaic with AVUs 12, 53, 57 and 11. <u>Other conservation values:</u> - Protection of Priority 4 flora, Priority 4 fauna and Priority ecological community. - Identified as priority area for strengthening landscape connectivity.	- Major highways. - Rural zoning.	- As most of the remaining vegetation is within a Major Road Reserve, future extension of South Coast Hwy and other connecting roads should be designed in a way to minimise impacts on this remaining vegetation, in particular AVU54. Consider using the yellow ‘Significant flora’ roadside markers to designate highest value areas to minimise impacts of potential future roadside maintenance. - Provide assistance to landowners to retain a mosaic including AVU54 on Rural zoned lands adjoining the Major Road reserve.
ARVS_LNA3,	<u>Main focus:</u>	Rural zone, Public. Purposes,	Explore opportunities to provide protection of vegetation on

MAP ID	REASONS FOR SELECTION	LAND USE ZONING/RESERVE PURPOSE	ACHIEVEMENTS AND RECOMMENDATIONS
Torbay	- A large patch of vegetation in good condition (residual) contains several priority AVUs: 12, 41, 50, 54 and 57. - One of few examples of AVU57 in good condition as >70% of its mapped extent is considered modified. <u>Other conservation values:</u> - Priority ecological community. - Threatened and Priority 4 fauna. - Protection of riparian vegetation. - High regional connectivity values and low fragmentation.	No zone.	rural-zoned lands via Conservation Covenants or grant funding. - Manage weeds and other threats within the Water Corporation Drain reserve R24566. - To improve connectivity in this part of the study area, restoration works should be supported on private properties between the large remnant patch in ARVS_LNA3 and the Conservation Reserve 1998 (DBCA managed).
ARVS_LNA4, Torbay, Kronkup	<u>Main focus:</u> - Includes the largest concentration of AVU46 (17% of mapped area) and poorly protected AVU56. <u>Other conservation values:</u> - Riparian vegetation. - Protection of Priority 2, 3 & 4 flora, Threatened and Priority 4 fauna, Priority ecological community. - Part of coastal macro corridor (Strategic Zone A).	- Rural zone. - No zone around Railway Rd.	- As most of the remaining vegetation adjoins Railway Road, future extensions should be designed to minimise impacts on the remaining vegetation. - Improve the long-term viability of AVU46; restoration of vegetation between remaining patches should be supported. - Note that ARVS_LNA4 contains fragmented vegetation. Biodiversity values would be enhanced through protection from stock and weed management and including other areas to improve connectivity.
ARVS_LNA5, Torbay	<u>Main focus:</u> - Includes poorly protected AVUs: 9, 10, 11, 33, 50. <u>Other conservation values:</u> - Protection of Priority 4 flora. Threatened and Priority 4 fauna. - Part of coastal macro corridor (Strategic Zone A).	- Environmental Conservation, Civic and Cultural, Rural, No zone. - R12599 Recreation, CoA. - R26888 Recreation, CoA.	Some areas reserved under LPS2 for Environmental Conservation.
ARVS_LNA6, Torbay	<u>Main focus:</u> - Poorly protected AVUs: 9, 10 and 23 in good condition. <u>Other conservation values:</u> - Includes records of Priority 1, 2 and 4 flora. - Threatened and Priority 3, 4 and 5 fauna. - Includes remnant vegetation with very high count of potential fauna habitat (12-13). - Part of coastal macro corridor (Strategic Zone A).	Rural.	Provide support for native vegetation protection, restoration and management on private lands.
ARVS_LNA7, Torbay and Kronkup	<u>Main focus:</u> Poorly protected AVUs: 9, 34 (PEC), 41, 50, 56 (PEC), 57, 65. <u>Other conservation values:</u>	- R24514 – Camping and Recreation, CoA. - R24548 – Camping and Recreation, CoA.	R24514 & R 24548 – Camping and Recreation (include the only example of AVU41 on reserved land), R42256 – Recreation and Drainage. These areas are designated Environmental Conservation under LPS2.

MAP ID	REASONS FOR SELECTION	LAND USE ZONING/RESERVE PURPOSE	ACHIEVEMENTS AND RECOMMENDATIONS
	- Priority 4 flora, Priority 4 fauna, Priority ecological communities. - Part of coastal macro corridor (Strategic Zone A).	- R25556 – Drain, Water Corporation. - R42256 – Recreation and Drain, CoA. - Environmental Conservation, Rural, Public Purposes, No zone (along roads).	Provide support to private landholders to manage biodiversity assets on private lands, providing buffers to protected areas.
ARVS_LNA8, Elleker	<u>Main focus:</u> - Poorly protected AVUs: 1, 9, 34 (PEC), 35, 57, 59 and 65. 36.5% of mapped extent of AVU35. occurs within ARVS_LNA8, all in good condition. AVU10 - <30% remaining & >70% considered modified, poorly protected. <u>Other conservation values:</u> - Priority 2 and 3 flora. - Threatened and Priority 4 fauna. - Priority ecological community. - Part of coastal macro corridor (Strategic Zone A).	- R20367 – Common for Use of Settlers, CoA reserve. - R42256 – Recreation and Drainage, Water Corporation. - Environmental Conservation, Rural, Public Purposes, No zone (along roads).	- R20367 and R42256 - These areas are designated Environmental Conservation under LPS2. - Reserve land shown as Environmental Conservation (adjoining R20367) and include Conservation purpose. - Provide support to manage biodiversity values on privately owned land, explore opportunities to provide protection via Conservation Covenants.
ARVS_LNA9, Marbelup, Drome	<u>Main focus:</u> - Potentially restricted AVUs: 12, 13, 14 (PEC), 39. <u>Other conservation values:</u> - Records of Priority 1-4 flora. - Several Threatened, Priority 3, 4, 5 fauna recorded within 5km radius. - Priority ecological communities. - Includes remnant vegetation with very high count of potential fauna habitat (10-11). - Adjoins National Park/Conservation Reserve. - Large remnant patches in good condition, examples of various catenas. - Part of Marbellup Link (Strategic Zone A macro corridor).	- R24000 Timber, firewood reserve, CoA. - R24661 – Camping and recreation, CoA. - Rural, Important Regional Roads, Public Purposes, No zone.	- Reserves R24000 and R24661 - These areas are designated Environmental Conservation under LPS2. - Provide support to manage biodiversity values on privately owned land, explore opportunities to provide protection via Conservation Covenants.
ARVS2_LNA10, Torndirrup and Little Grove	<u>Main focus:</u> The only locality in the study area with AVU60, a PEC. All patches of AVU60 are within about 1km radius of each other in ARVS2_LNA10. <u>Other conservation values:</u>	- R25551 Recreation, CoA. - R22747 Fire Station, CoA. - R22735 Waterway, Water Corporation. - Residential, Environmental	- R25551 CoA for Recreation - designated Environmental Conservation under LPS2. - R37867 CoA Recreation reserve includes 0.9ha, an additional 1ha is on adjoining lands reserved for Environmental Conservation and with No Zone in LPS2. Consider adding the

MAP ID	REASONS FOR SELECTION	LAND USE ZONING/RESERVE PURPOSE	ACHIEVEMENTS AND RECOMMENDATIONS
	- Records of Priority 2-4 flora, several Threatened and Priority 5 fauna recorded within 5km radius, Priority ecological communities. - Area within 'Confirmed' roosting site buffer for Carnaby's black cockatoos - AVU with 0% protected, and most approved for residential development (Little Grove Structure Plan) or zoned Residential, No Zone or reserved as Important Regional Road in the Local Planning Scheme (LPS). - Part of Strategic Zone A macro corridor.	Conservation, No zone, Public Purposes.	area reserved in the Scheme and those within lands marked as No Zone to R37867, and extend the purpose of the larger reserve to include conservation. - Around 1ha is spread over the southern portion of R22735, Water Corporation reserve for Water purposes, R24747 CoA reserve for Fire Station and land to the south of R22735 that is reserved for Environmental Conservation in LPS2. Create a new reserve south of R22735 and provide for adequate management of AVU60 across all adjoining reserved areas. - An additional 1ha AVU60 occurs within the northern extent of R22735 and R24747 and adjoining lands with no zoning or reserved for Important regional roads. - Provide for adequate management of AVU60 across all adjoining reserved areas and retain AVU60 within adjoining lands when designing future land developments.
ARVS2_LNA11, Big Grove	<u>Main focus:</u> - Poorly protected climatic refugia AVU 9 & AVU24 (restricted to granite outcrops). <u>Other conservation values:</u> - Includes Priority flora records within the site, records of Threatened, Priority 2-4 flora. - Several Threatened and Priority 4 and 5 fauna recorded within 5km radius. - Adjoins Torndirrup National Park and the foreshore. - Includes remnant vegetation with very high count of potential fauna habitat (10-13). - Part of Strategic Zone A macro corridor.	Rural and Environmental Conservation.	- Seek to consolidate the foreshore reserve to provide for the protection of the foreshore areas, including AVU9 and AVU24. - Consider expanding the proposed Regional Open Space (as per the Local Planning Strategy) to increase the portion of AVU24 in the future reserve. Set the vesting purpose to include conservation. - When considering future development within 'Future Residential' areas as identified in the Local Planning Strategy, consider retaining AVU9 in a large viable POS area strategically located to act as a stepping stone between the foreshore areas and the National Park.
ARVS2_LNA12, Vancouver Peninsula	<u>Main focus:</u> - Poorly protected AVU 23 (one of the very few good opportunities to protect), 24, 28, 45 (examples elsewhere on private land are degraded) and also an opportunity to improve the protection levels of AVU 4, 10 and 11. <u>Other conservation values:</u> - Records of Threatened, Priority 1-4 flora. - Threatened and Priority 4 and 5 fauna, and PEC recorded within 5km radius.	- Environmental Conservation, No zone (road). - R25295 –Recreation Reserve, CoA.	Designated Environmental Conservation under LPS2.

MAP ID	REASONS FOR SELECTION	LAND USE ZONING/RESERVE PURPOSE	ACHIEVEMENTS AND RECOMMENDATIONS
	- Area within 'Confirmed' roosting site buffer for Carnaby's black cockatoos. - Coastal, wetland and foreshore areas. - Part of Strategic Zone A macro corridor.		
ARVS_LNA13, Emu Point and Collingwood Heights	<u>Main focus:</u> - AVUs 14 (PEC), 56 (PEC) & 59 (poorly protected). <u>Other conservation values:</u> - Adjoins Conservation reserve R6862. - Records of Threatened, Priority 1, 3,4 flora, several Threatened and Priority 4 & 5 fauna, and PEC recorded within 5km radius. - Area within 'Confirmed' roosting site buffer for Carnaby's black cockatoos. - Part of Strategic Zone A macro corridor.	- R15875 – Recreation Reserve, CoA. - Tourist Residential, Residential, Future Urban, Rural, Public Use, Environmental Conservation, No zone.	- Designated Environmental Conservation under LPS2. - Provide support to manage biodiversity values on privately owned land, explore opportunities to provide protection via Conservation Covenants. - Ensure retention and protection of AVU56 (PEC) on land adjoining R15875 and reserved for Public Use in the LPS.
ARVS2_LNA14, Yakamia	<u>Main focus:</u> - Potentially restricted AVUs 12, & considered to have <30% remaining 13, 14 (PEC) and poorly protected AVU59. <u>Other conservation values:</u> - Vegetation in very good condition, with examples of various catenas. - Records of Threatened, Priority 1-4 flora, several Threatened and Priority 4 & 5 fauna, and PEC recorded within 5km radius. - Includes vegetation potentially providing feeding habitat and within a buffer of a 'Confirmed' roosting site for the Carnaby's black cockatoo. - Most vegetation types provide habitat to 6-9 fauna species (considered in this study). - Wetlands mapped. - Part of Strategic Zone B macro corridor.	Future Urban, Yakamia Creek, Rural.	- The ARVS has highlighted the possible presence of threatened flora in vegetation units 13, 14, 46 and 52. - The vegetation in the proposed Yakamia structure plan area should be assessed for its suitability as habitat for threatened fauna. Proposals that may impact the habitat for species listed under the EPBC Act (e.g. Black Cockatoos and Western Ringtail Possums). - The Yakamia structure plan aims to retain consolidated areas of native vegetation that contain a diversity of vegetation types (upland and wetland) in Excellent and Very Good condition and maintain connectivity.
ARVS2_LNA15, Lange, Walmsley and Bayonet Head	<u>Main focus:</u> - Potentially restricted AVUs 12, considered to have <30% remaining 13, 14 (PEC). <u>Other conservation values:</u> - Threatened and P5 fauna. - PEC.	R27179 – Tertiary Education Centre, Minister for Education; R23074 – Cemetery, Department of Regional Development; R50166 – Public recreation	- Within reserves R329, R27179, R23074, R50166, R31174 and R31175 - Designated Environmental Conservation under LPS2. - Provide support to manage biodiversity values on privately owned land, explore opportunities to provide protection via Conservation Covenants. - In future subdivisions, retain vegetation within POS to form a

MAP ID	REASONS FOR SELECTION	LAND USE ZONING/RESERVE PURPOSE	ACHIEVEMENTS AND RECOMMENDATIONS
	- Threatened, Priority 1-4 flora, several Threatened and Priority 4 and 5 fauna, and PEC recorded within 5km radius - Includes vegetation potentially providing feeding habitat and within a buffer of a 'Confirmed' roosting site for the Carnaby's black cockatoo. - Part of Strategic Zone A & B macro corridor.	(Subject to 152), CoA. - R31174 & R31175 Church and children, Department of Regional Development. - R329 Recreation, CoA. - Rural, Residential, Public Purposes, Environmental Conservation - Urban Development	stepping stone within the ecological linkage.
ARVS_LNA16, Collingwood Park and Seppings	<u>Main focus:</u> - AVUs14 (PEC), poorly protected AVUs 50, 59 and 65. <u>Other conservation values:</u> - Records of Threatened, P1-4 flora recorded within 5km radius, P5 fauna within selected area, Threatened, P1-4 fauna within 5km radius. - Includes vegetation potentially providing feeding habitat and within a buffer of a 'Confirmed' roosting site for the Carnaby's black cockatoo. - Part of Strategic Zone A & B macro corridor.	- R32341 Recreation reserve, CoA. - Environmental Conservation, Rural.	- R32341 - Designated Environmental Conservation under LPS2. - Retain and manage for conservation priority areas within lands reserved for Environmental Conservation to protect wetlands, creek lines, and maintain connectivity. - Provide support to manage biodiversity values on privately owned land, explore opportunities to provide protection via Conservation Covenants.
ARVS_LNA17, King River, Kalgan, Lower King	<u>Main focus:</u> - Potentially restricted, considered to have <30% remaining AVUs 13, 14 (PEC), 15 (PEC), 49. <u>Other conservation values:</u> - AVUs 65-67, estuarine vegetation. - Records of Threatened and P4 flora, P5 fauna, Threatened, P3 & 4 flora and Threatened, P4&5 fauna within 5 km radius. - Includes vegetation potentially providing feeding habitat for Carnaby's black cockatoo. - Wetlands. - Part of Strategic Zone A & B macro corridor (link between Bakers Junction Conservation Reserve (DBCA) and Oyster Harbour.	- R34934 – Parklands, CoA. - R18779 – Government Requirement, CoA. - R28686 – Recreation, CoA. - R30469 – Conservation fauna & flora, DBCA. - Environmental Conservation, Private Clubs and Institutions, Public Purposes, Special Rural, Rural, Residential.	- R34934, R28686 - Designated Environmental Conservation under LPS2. - Review management of R18779 through the lease agreement to minimise potential impacts on vegetation. Designate Environmental Conservation under LPS2. - Provide support to manage biodiversity values on privately owned land, explore opportunities to provide protection via Conservation Covenants. (on Special Rural lands to retain AVUs 65-67).
ARVS_LNA18, Kalgan	<u>Main focus:</u> Potentially restricted, with <30% remaining AVU 12, 13 & 39, 14 (PEC), the only other opportunity to conserve AVU43 in the study area.	- R15949 Sand and Gravel, CoA - Environmental Conservation, Rural	- R15949 - Designated Environmental Conservation under LPS2. - Provide support to manage biodiversity values on privately owned land adjoining the reserve.

MAP ID	REASONS FOR SELECTION	LAND USE ZONING/RESERVE PURPOSE	ACHIEVEMENTS AND RECOMMENDATIONS
	<u>Other conservation values:</u> - Records of Threatened and P4 flora. - Threatened, P4 and P5 fauna within 5 km radius. - Includes vegetation potentially providing feeding habitat for Carnaby's black cockatoo. - Wetlands. - Part of Strategic Zone A & C macro corridors.		
ARVS2_LNA19, Nanarup	<u>Main focus:</u> - AVU14 (PEC), poorly protected and with <30% remaining AVU47 and AVU57, which is also poorly protected and have >70% considered modified or transformed. <u>Other conservation values:</u> - Records of Threatened and P2-4 flora. - Threatened and P4 fauna within 5 km radius. - Includes vegetation potentially providing feeding habitat for Carnaby's black cockatoo. - Wetlands. - Part of Strategic Zone A macro corridors.	- R19539 – Conservation Reserve, CoA. - Rural, Environmental Conservation.	Provide support to manage biodiversity values on privately owned land adjoining the conservation reserve R19539.
ARVS2_LNA20, Manypeaks, Kalgan	<u>Main focus:</u> - AVU10, 11, 12, 13, 14 (PEC), 15, 20, 38, 39, 63. - AVUs that only occur in TA20: 18, 19, 27, 30, 32, 40, 61. <u>Other conservation values:</u> - Very high diversity of flora and fauna habitat. - Records of Threatened, P3-4 flora. - Threatened and P5 fauna. - PECs within the selected area. - Further Threatened, P2 - 4 flora, Threatened, P4&5 fauna and PECs within 5km radius. - Includes vegetation potentially providing feeding habitat for Carnaby's black cockatoo. - Important bird area. - Wetlands. - Part of Strategic Zone A & C macro corridors.	- R13802 Water supply, Catchment, Water Corporation - R2031 – Parkland, Recreation, CoA.	- R2031 - Designated Environmental Conservation under LPS2. - Advocate for Minister for Environment to include purpose of 'Environmental Conservation' to secure protection of eight AVUs within the study area, and significantly improve the protection status of many other conservation priority AVUs.
ARVS2_LNA21, Manypeaks	<u>Main focus:</u> - Poorly protected AVU 9, 10, 12, 57. - The only other opportunity to protect AVU20. <u>Other conservation values:</u>	Rural	Provide support to manage biodiversity values on privately owned land, explore opportunities to provide protection via Conservation Covenants.

MAP ID	REASONS FOR SELECTION	LAND USE ZONING/RESERVE PURPOSE	ACHIEVEMENTS AND RECOMMENDATIONS
	- Records of Threatened and P3 and 4 flora. - Threatened & P4&5 fauna within 5 km radius. - PECs. - Includes vegetation potentially providing feeding habitat for Carnaby's black cockatoo. - Riparian vegetation. - Part of Strategic Zone A & C macro corridors.		
ARVS2_LNA22, Cheynes	<u>Main focus:</u> - AVU13, with <30% remaining AVU10 and AVU57, which is also poorly protected and have >70% considered modified or transformed. <u>Other conservation values:</u> - Records of Threatened and P3 and 4 flora. - Threatened and Priority 4 and 5 fauna within 5 km radius. - PECs. - Includes vegetation potentially providing feeding habitat for Carnaby's black cockatoo. - Riparian vegetation. - Part of Strategic Zone A macro corridors.	Rural.	Provide support to manage biodiversity values on privately owned land, explore opportunities to provide protection via Conservation Covenants.
ARVS2_LNA23, Mount Melville	<u>Main focus:</u> AVUs 10, 23, 24, 25, 28.	- R2681 Parks, Telecommunications, CoA. - R26204, Animal Welfare, DPLH - Environmental Conservation	Area designated Environmental Conservation under LPS2.
ARVS2_LNA24, Rushy Point, Little Grove	<u>Main focus:</u> AVU66 (PEC) and 67 (PEC), 44 (PEC).	- R35754 Recreation, CoA. - Environmental Conservation, Residential Development, Residential.	Reserve and foreshore designated Environmental Conservation under LPS2.

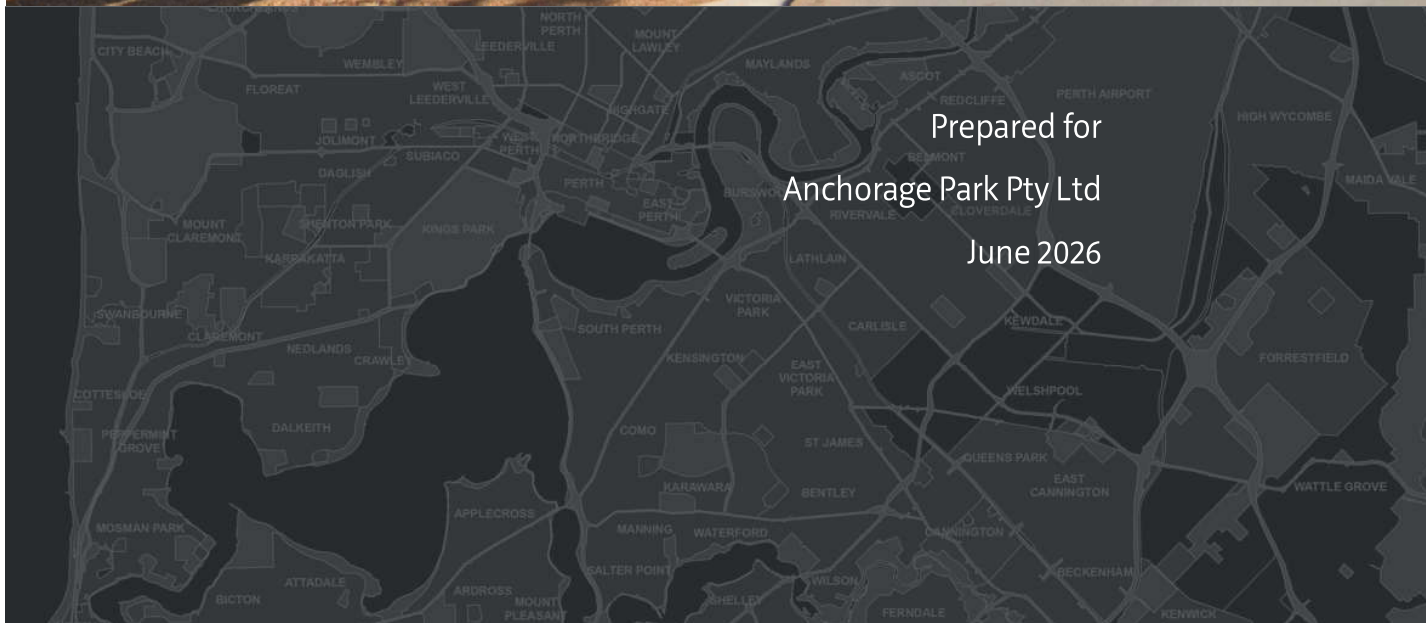
Scheme Amendment Report

Lower King tourism precinct

Lot 503 (47) Cumberland Road and Lot 504 (41) The Esplanade,
Lower King

PLANNING SOLUTIONS
URBAN & REGIONAL PLANNING

PS



Prepared for
Anchorage Park Pty Ltd
June 2026

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Appendix 1: Certificates of Title

Appendix 2: Coastal Hazard Risk Management Report

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1 PRELIMINARY

1.1 Introduction

Planning Solutions acts on behalf of Anchorage Park Pty Ltd, the registered proprietor of Lot 503 (47) Cumberland Road, Lower King (**Lot 503**).

This report has been prepared in support of a request to formally amend the *City of Albany Local Planning Scheme No. 2 (Scheme)*, as it applies to Lot 503 and the adjacent Lot 504 (41) The Esplanade, Lower King (**Lot 504**) - together the **subject site** - for the purpose of expanding the A4 additional use to cover the southern portion of Lot 503 (47) Cumberland, Lower King shown on **Figure 3**, and modifying the types of additional uses to include other uses associated with tourism activities.

This report will discuss various details pertinent to the proposal, including:

- Site details.
- Explanation of the Scheme Amendment request.
- Justification in support of the Scheme Amendment with consideration given to applicable statutory and strategic planning instruments.

1.2 Process for amending the Scheme

Section 75 of the *Planning and Development Act 2005* provides that a local government may amend a local planning scheme by an amendment proposed by all or any of the owners of any land in the scheme area, adopted, with or without modification, by the local government, approved by the Minister for Planning and published in the Government Gazette.

The process to be followed in amending the Scheme is set out in Part 5, Division 3 and Division 4 of the *Planning and Development Act 2005* and in Part 5 of the *Planning and Development (Local Planning Schemes) Regulations 2015 (LPS Regulations)*.

This Scheme amendment is classified a 'standard amendment' under Part 5 of the LPS Regulations meeting parts (e) and (f) of the definition at r.34:

- (e) *an amendment that would have minimal impact on land in the scheme area that is not the subject of the amendment;*
- (f) *an amendment that does not result in any significant environmental, social, economic or governance impacts on land in the scheme area;*

With respect to part (e), this amendment alters land use permissibility; it doesn't in itself propose development and therefore has no impact on adjoining land. The compatibility of the development to nearby land and amenity matters will be dealt with in the ordinary manner as part of subsequent development applications, as it would for any application for any of the other non-residential land uses currently permissible in the Residential zone, with the assessment and determination guided by the *City of Albany Local Planning Policy 2.1 Non-Residential Development in the Residential Zone*.

This Scheme Amendment has been prepared in accordance with all relevant standards.

2 SITE DETAILS

2.1 Land description

Refer to **Table 1** below for the lot details and a description of the subject site.

Table 1: Lot details

Legal description	Street address	Volume / Folio	Registered proprietor	Area (m²)
Lot 503 on Plan 18059	47 Cumberland Avenue, Lower King	1914/947	Anchorage Park Pty Ltd	11,574
Lot 504 on Plan 18060	41 The Esplanade, Lower King	1945/153	Terry Roy Jackson	9,242

There are several easements listed on the titles for the provision of drainage, water and sewerage infrastructure. Relevant to this scheme amendment, they include:

- Sewer easement, which runs mid-block between The Esplanade and Cumberland Road;
- Drainage easement along the northern boundary of Lot 503 between Windemere Road and The Esplanade.

Refer **Appendix 1** for copies of the certificates of title.

2.2 Context and Land use

The subject site is located in the suburb of Lower King and falls within the municipal boundaries of the City of Albany (**City**). It is approximately 9.4km north-east of the Albany City centre, with frontage to The Esplanade, overlooking the Miaritch/Oyster Harbour estuary.

Refer to **Figure 1** for a location plan, depicting the subject site in its regional context.



Figure 1: Regional context

The subject site is located directly west of Oyster Harbour, separated by The Esplanade and a narrow foreshore reserve. A boat ramp with finger jetty, and a private jetty are located adjacent to The Esplanade, 150m north of the intersection with Elizabeth Street, directly opposite Lot 503. The boat ramp has 14 trailer bays and 15 car parking bays.

The roads servicing the subject site are all sealed, kerbed and drained, with the exception of the portion of The Esplanade adjacent Lot 504 which is unkerbed. Overhead power, reticulated water and sewerage are available to the site.

Apart from a few scattered trees, the subject site is cleared of vegetation and was filled over 15 years ago when the marina was dredged and some of the single residential lots created. The subject site is located adjacent to single residential dwellings on the south, north with additional undeveloped residential sites to the west.

Refer **Figure 2**, local context.

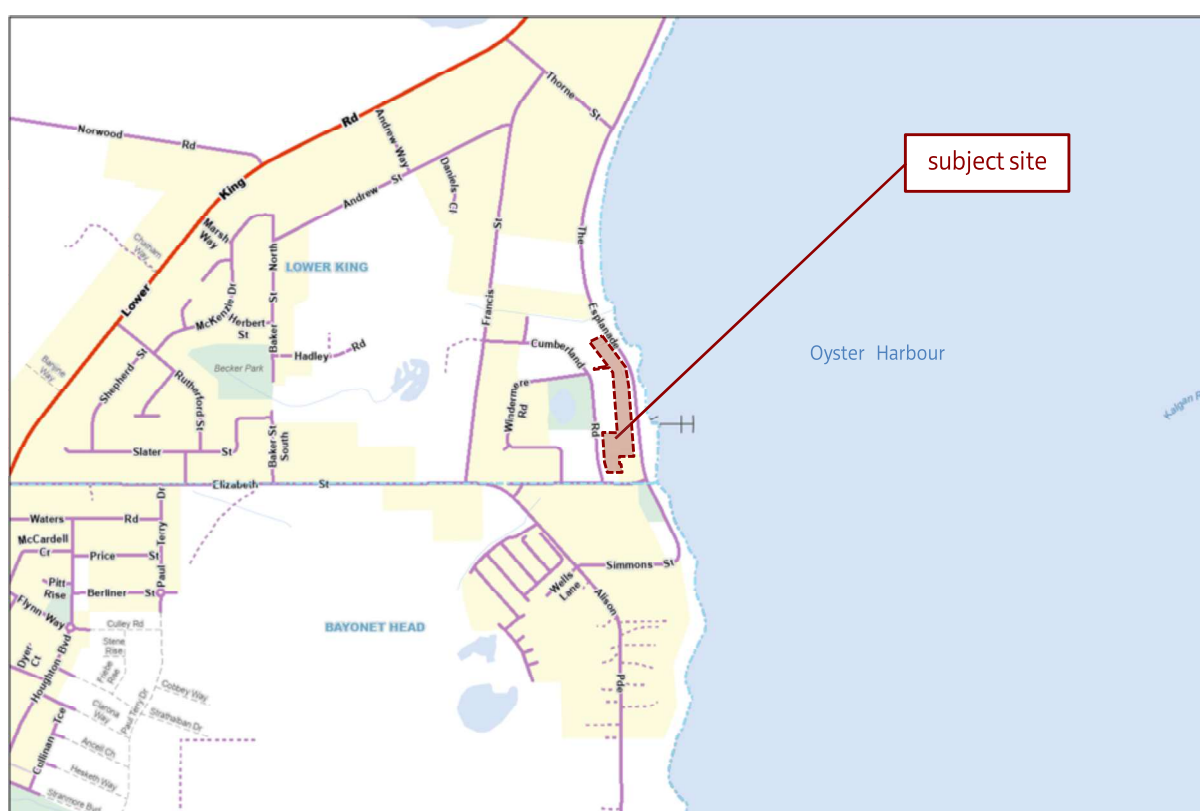


Figure 2: Local context

2.3 Background

2.3.1 Development of the locality

The locality around the subject site began to be developed in the 1970s. Around this time the Oyster Harbour Caravan Park was developed on Alison Parade which provided tourist accommodation. This caravan park was closed c.2010 and converted into a lifestyle village for permanent residents.

In December 1980 the City of Albany's former *Town Planning Scheme No. 3 (TPS3)* was amended by modifying the pre-existing zoning of Motel, Rural and Residential. A portion of Lot 504 retained its 'Motel' zoning. The amendment also facilitated development of the adjacent residential estate and by 1988 various roads including Elizabeth Street, Windermere Road, Cumberland Road, and The Esplanade had been constructed providing access for new housing within the residential estate to for the subject site. A private jetty was built in Oyster Harbour adjacent the subject site around the same time.

2.3.2 Tourist Residential proposal

In 2007, the owners of Lots 503 and 504 lodged a formal request for an amendment to TPS3 to rezone the subject site and other lots adjoining Cumberland Road from 'Residential' and 'Motel' to 'Tourist Residential', with an applicable density code of 'R60'. The intent of the proposal was to cater for the current and future growth of Albany and provide additional holiday accommodation in the optimal portion of the subject site. However, due to the progression of the proposed (as it then was) Scheme, the application to amend TPS3 was withdrawn.

In April 2014 TPS3 was replaced by the *City of Albany Local Planning Scheme No.1 (LPS1)*. LPS1 did not carry over the 'Motel' zone from TPS3. Instead, the land that was subject to the 'Motel' zone under TPS3 was zoned as 'Residential' with additional use provisions permitting hotel and motel land uses on the land. These additional uses were subject to various conditions relating to specific design and development outcomes.

2.3.3 Proposal to expand and modify the hotel/motel additional use

In June 2022 Planning Solutions on behalf of the owner of Lot 503 and with the support of the owner of Lot 504 lodged a formal request for an amendment to LPS1 to move the hotel/motel additional use from Lot 504 to Lot 503, add new additional uses complementary to the hotel and motel uses, and update the additional use conditions to reflect contemporary requirements for good design. The City responded that it was progressing a new local planning scheme to replace LPS1 and had placed a moratorium on new scheme amendments. Consequently the scheme amendment was not progressed.

The draft new scheme – *City of Albany Local Planning Scheme No.2 (Scheme)* – was advertised for public comment in September 2022. Planning Solutions, on behalf of the owners of Lot 503 and 504, lodged submissions requesting the Scheme be modified to incorporate the proposals included within the scheme amendment request, being to move the Additional Use 4 (A4) of hotel/motel/restaurant from Lot 504 to Lot 503. The proposal was presented to Council in February 2023. In it, the City's officers dismissed the submission providing the following response:

The subject land and including the access to the site (The Esplanade) may-be subject to coastal processes (sea-level-rise). A Coastal Hazard Risk Management Adaptation Plan should be developed prior to considering use of the land.

The State Planning Policy 2.6 provides a balanced approach to competing needs and desires in a way that takes into account the values of the coastal zone. The policy ensures that current and future generations of Western Australians can benefit from opportunities presented by the values and resources of the Western Australian coast.

The Scheme was gazetted on 27 February 2024.

3 PROPOSAL

3.1 Proposed Scheme amendment

Pursuant to section 75 of the *Planning and Development Act 2005*, it is proposed to amend the Scheme map and text as follows:

1. Extend the A4 Additional Use to cover the southern portion of Lot 503 (47) Cumberland Road as shown on **Figure 3**.
2. If Omnibus Amendment No.1 is yet to be approved and published in the *Government Gazette*, replace the text in row of Schedule 2 (Table 9), as follows:

No.	Description of Land	Additional Use	Conditions
A4	Southern portion of Lot 503 (47) Cumberland Road, Lower King.	Art Gallery (D) Exhibition Centre (D) Hotel (A) Motel (A) Reception Centre (D) Restaurant/Café (A) Small bar (A) Shop (I) Tavern (A) Tourist Development (A)	(1) Restaurant/Café to be located on the ground floor. (2) Prior to development and prior to making a recommendation on subdivision, a local development plan is to be submitted and approved. The plan is to require development incorporate design elements that: (a) compliment the architectural and historic character of the locality; (b) minimises building bulk; (c) maximises solar access; (d) maintains vistas for other buildings and the public within the locality; (e) complies with Table 3, Category 'B' of the R-Codes; (f) provides opportunities for outdoor active movement amongst natural vegetation; (g) addresses coastal hazard risk mitigation and adaptation approaches. (3) The Shop use is restricted to a maximum of 300m² net lettable area.

3. If Omnibus Amendment No.1 has been approved and published in the *Government Gazette*, replace the text in row of Schedule 2 (Table 9), as follows:

No.	Description of Land	Additional Use	Conditions
A4	Southern portion of Lot 503 (47) Cumberland Road, Lower King.	Art Gallery (D) Exhibition Centre (D) Hotel (A) Reception Centre (D) Restaurant/Café (A) Small Bar (A) Shop (I) Tavern (A)	(1) Restaurant/Café to be located on the ground floor. (2) Prior to development and prior to making a recommendation on subdivision, a local development plan is to be submitted and approved. The plan is to require development incorporate design elements that: (a) compliment the architectural and historic character of the locality; (b) minimises building bulk; (c) maximises solar access; (d) maintains vistas for other buildings and the public within the locality; (e) complies with Table 3, Category 'B' of the R-Codes;

No.	Description of Land	Additional Use	Conditions
			(f) addresses coastal hazard risk mitigation and adaptation approaches. (3) The Shop use is restricted to a maximum of 300m² net lettable area.

3.2 Explanation and rationale for Scheme amendment

3.2.1 Need for tourism facilities

The pre-Covid growth in local tourism numbers¹ and ongoing private and public investment in the region points to a future in which Albany becomes one of the state's primary tourism destinations.

The existing Scheme provisions for A4 permit the development of a hotel/ motel/ restaurant on Lot 504. The current location of A4 does not take advantage of the proximity of Oyster Harbour and in particular the coastal infrastructure directly opposite Lot 503. This has resulted in a lack of development of the A4 site to date. This was reflected in the 2008 review of TPS3 which identified that the Motel zone on Lot 504 generally suffered *"from poor site allocation for future tourism developments"*² and that it had *"failed to deliver any new moderate or large scale tourism accommodation developments"*. This remains true today.

The intent of this Scheme amendment is to move the A4 to the southern portion of Lot 503 (47) Cumberland Road, Lower King. This will ensure additional uses, including hotel/restaurant/ café can be located in a better location, where maximum advantage can be taken of the magnificent views and proximity to coastal foreshore and infrastructure.

As identified during preliminary discussions, the City advised that indicative chalet/tourism development across Lot 503 (47) Cumberland Road and part of Lot 504 (41) The Esplanade, Lower King, will soon be permissible under the existing zoning, subject to coastal considerations. Accordingly, that portion has been excluded from the amendment.

3.2.2 Indicative future development

Subject to the land being adequately drained, the subject site is suitable for development as the site is capable of being fully serviced with power, water, telecommunications and reticulated sewerage.

Moving the additional uses (A4) to the southern portion of Lot 503 (47) Cumberland Road, Lower King will allow for more future development with the ability for more tourism-related uses. An example for a future development application that could be made with the extension of the additional uses (A4) across the subject site is a family-friendly tavern with restaurant and bistro dining on southern portion of the subject site with Harbour views and convenient access to the adjacent boating facilities, and chalet-style holiday accommodation along The Esplanade frontage. A small shop selling convenience goods could be included complementary and incidental to the bistro and chalets.

As identified above, the City advised that indicative chalet/tourism development across Lot 503 (47) Cumberland Road and part of Lot 504 (41) The Esplanade, Lower King, will soon be permissible under the existing zoning, subject to coastal considerations. Accordingly, that portion has been excluded from the amendment.

¹ [Albany tourism breaking records and enticing visitors](#), 22 August 2019, Mark McGowan (Media Statement)

² *Draft City of Albany Tourism Accommodation Strategy*, July 2008, City of Albany and Pracsys

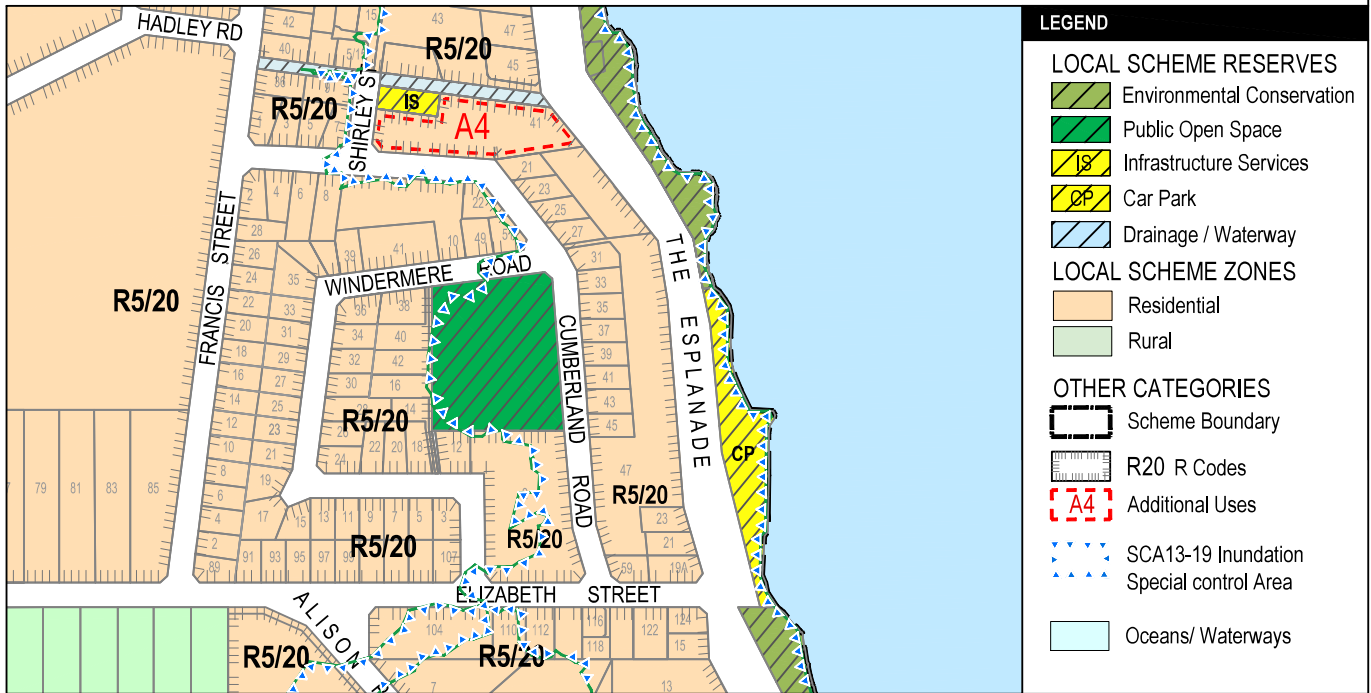
The Scheme amendment includes an amended Additional Use A4 on the southern portion of Lot 503 (47) Cumberland Road, Lower King to allow the local government to have discretionary for small scale retailing to be developed on the site in advance of chalet/ cottage units and other forms of short-term rental accommodation. The intention is to create these uses that, together with the boat facilities, form the keystone of a tourism node. This in turn will improve the demand - and by extension favourable market conditions - to develop short-term rental accommodation facilities on the balance of the land.

Another example of future development includes a child care premises. This is a use already capable of approval on the subject site under the Residential zoning, but is a use appropriately co-located with other non-residential land uses. A child care premises can be developed in a residential zone and the subject site provides a sufficient area of land for a child care premises and tavern with convenience shops.

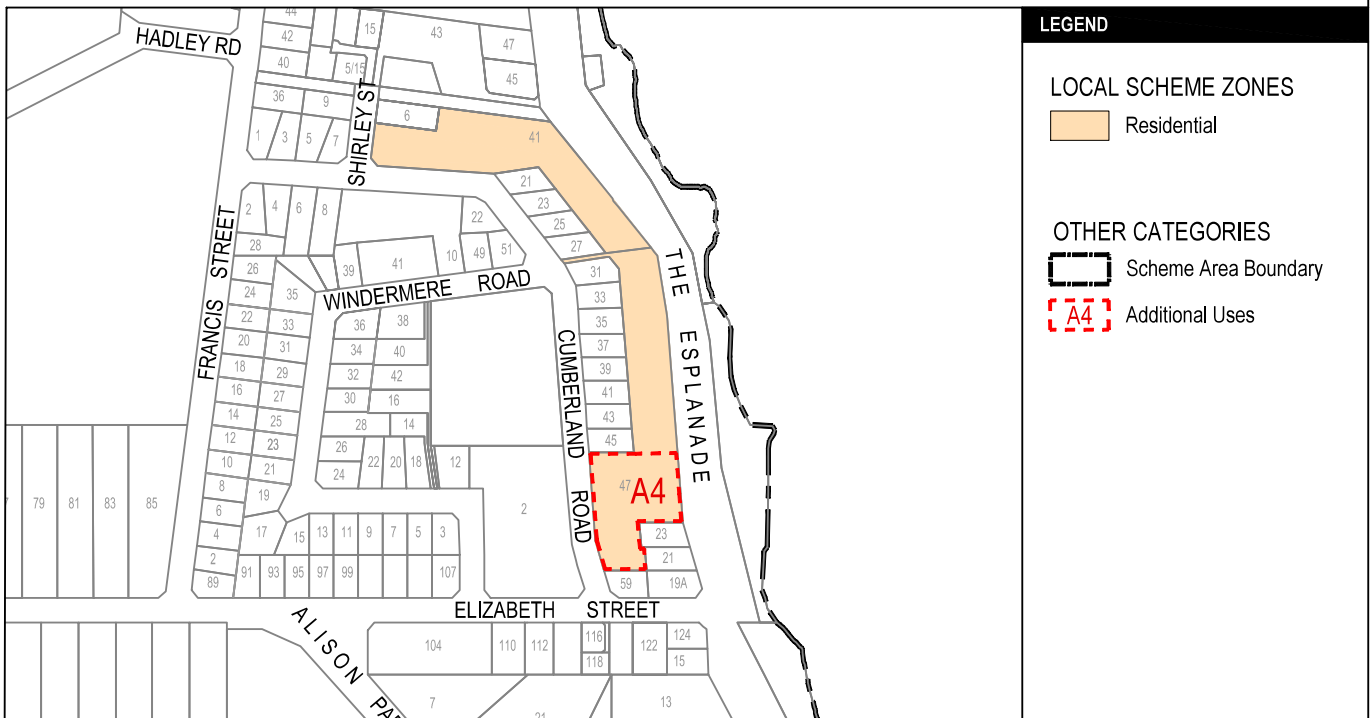
It is intended a local development plan is prepared to coordinate and guide development, and this is reflected in the modified A4 conditions.

Figure 3: Amended zoning map

AMENDMENT TO CITY OF ALBANY LOCAL PLANNING SCHEME NO.2



EXISTING SCHEME MAP



PROPOSED SCHEME MAP

4 STRATEGIC PLANNING FRAMEWORK

4.1 Lower Great Southern Planning Strategy 2016

A Lower Great Southern Strategy was endorsed by the WAPC in 2016. The Strategy continues to promote the consolidation of existing settlements, consistent with the State Planning Strategy 2050, and to maximise opportunities for the development and growth of a sustainable tourism industry. Specifically, the Strategy promotes the following action:

- *Utilise innovative zonings in local planning schemes to stimulate commercial and economic growth in villages identified for expansion.*

The subject site is located within an existing settlement area and the proposed scheme amendment is intended to facilitate opportunities for investment in commercial and tourism activities that will support the growth of the tourism industry in the region.

The proposed scheme amendment is consistent with the overarching objectives of the Strategy.

The Lower Great Southern Strategy includes a section specific on tourism:

The future of tourism in the region relies on sustainable development and promotion of iconic experiences, development of tourism infrastructure and product that meets visitors' needs and the management of competing land uses to ensure that the tourism appeal of the region is safeguarded.

The Lower Great Southern is likely to see continuing development along the coast as well as specific nodes inland in areas that can offer experiences with nature, wine and food, art and craft and culture. Existing small scale tourism enterprises in towns, villages and regional areas are important collectively from an economic and community perspective.

Incremental subdivision of high value tourism sites for residential development, particularly along the coast, has historically occurred to the detriment of tourism values and is not generally supported. Local planning strategies should identify strategic tourism sites that are linked to iconic experiences and attractions and zone them solely for tourism development to ensure the continued use of that site for tourism pursuits. A limited amount of residential land use may be acceptable at some tourism sites. This should be assessed through local planning strategies and be in accordance with guidance provided by WAPC policy, in particular SPP 3 Urban Growth and Settlement and Planning Bulletin 83 Planning for Tourism.

Tourism-specific actions of the Lower Great Southern Strategy include:

- *Update tourism components of local planning strategies as necessary to respond to changing needs of the tourism sector and take advantage of emerging markets*
- *Zone identified strategic tourism sites in endorsed local planning strategies solely for tourism development in local planning schemes, to protect them for that purpose*

On the first of the above actions, refer consideration of the local planning strategy (section 4.2 below).

On the second action, the proposal is to zone the subject site for Tourism, consistent with the action.

4.2 City of Albany Local Planning Strategy (2019)

The City of Albany's *Local Planning Strategy (LPS)* was endorsed by the WAPC in 2019. The LPS is intended to guide settlement growth and land use planning for the next 10-15 years. The overarching strategic objectives applicable to this Scheme amendment are as follows:

- *Contain urban development and rural living within the existing supply of land zoned and planned for settlement growth.*
- *Promote urban consolidation by making better use of existing zoned land and infrastructure through urban renewal and infill residential and rural living development.*
- *Facilitate the diversification of the City's competitive advantages in agriculture and tourism.*
- *Protect the City's pristine natural and coastal environments and other landscape qualities.*
- *Meet the service infrastructure requirements for settlement growth.*

The subject site is located within the Lower King area, designated by the LPS as 'Urban'—reflecting that it forms part of the existing supply of land zoned and planned for settlement growth. The LPS identifies the subject site as being located within Statistical Area 2, which has accommodated 74% of Albany's population growth over the last 10 years and is likely to continue to accommodate substantial growth in future.

In regard to tourism, the LPS provides the following:

The Great Southern currently has a comprehensive range of high-value tourism assets, including the region's natural beauty; diverse attractions and accommodation types; reasonable accessibility via road and air; world-class walking and off-road mountain bike trails; a growing outdoor recreation industry; a growing diversity of agricultural, horticultural and viticultural produce (food tourism); major public sector investment (Albany Entertainment Centre and Waterfront, National Anzac Centre, the Gap and Natural Bridge viewing platform); and strong Indigenous, military and settlement history.

Some issues faced by the tourism sector are low population density to support major events, a lack of four star hotel accommodation and under-investment in tourism products. Remoteness also remains a key barrier, particularly the perceived high cost for transport and the significant travel time required to reach the destination.

The City is currently guided by the Tourist Accommodation Planning Strategy (2010) and Local Planning Policies, including Significant Tourist Accommodation Sites. The Strategy was prepared in accordance with WAPC Planning Bulletin 83 – Planning for Tourism. However, there is a need to review and broaden the scope thereof to a Tourism Planning Strategy to, amongst others, provide strategic direction in relation to existing and potential future tourist sites.

Land that is currently zoned 'Tourist Residential', 'Hotel/ Motel', and 'Caravan and Camping' is designated as 'Existing Tourism Accommodation Sites' in Figure 2.

Notwithstanding the final paragraph above, the A4 site is not designated an existing tourism accommodation site in Figure 2 of the LPS. Its omission is not explained, but being hotel/motel site over several decades it is reasonable to assume it should have been so identified and its absence is an oversight.

LPS actions for tourism include the following:

2. *Support the outcomes of the Tourism Planning Strategy through appropriate Local Planning Scheme provisions and Local Planning Policies.*

3. During the review of the Local Planning Scheme the following matters need to be addressed:

- determine an appropriate zone for land designated 'Existing Tourism Accommodation Sites' in Figure 2, consistent with the Model Scheme Text and Tourism Planning Guidelines
- 4. The City will not support rezoning of any land to the Tourism zone, until such time as the Tourism Planning Strategy is finalised.

As mentioned above, this proposal has been progressed on the basis A4 is an existing tourism accommodation site (it being zoned explicitly for hotel/ motel/ restaurant uses) and consequently Action 4 is not applicable.

The LPS does not explicitly address proposals to expand tourism accommodation sites or to modify their provisions. This is not unexpected – the LPS provides high-level strategic oversight leaving detail to the Scheme and local planning policies.

Prior to submitting this Scheme amendment enquiries were made with the City's officers on progress of the Tourism Planning Strategy in Action 4 above. It was advised the local planning policy framework provided sufficient guidance for the establishment of tourist accommodation and facilities in the City and consequently a tourism planning strategy was deemed not necessary.

4.3 Other strategic plans and documents

4.3.1 Planning Bulletin 83/2013 Planning for Tourism

The WAPC's Planning Bulletin 83/2013 Planning for Tourism (**PB 83/2013**) sets out the policy position of the WAPC to guide decision making for subdivision, development, and scheme amendment proposals for tourism purposes. One of its objectives is to:

- Provide for flexibility in the design and assessment of tourism and mixed use development.

PB 83/2013 includes general location criteria to determine the tourism value of tourism sites. These criteria are considered in **Table 2** below.

Table 2: Assessment against locational criteria of PB 83/2013

Locational criteria	Assessment
Accessibility <i>The site has adequate existing or proposed transport links (such as major road or airport access).</i>	The subject site is readily accessible from Lower King Road via Elizabeth Street or Thorne Street. The LPS identifies Greatrex Road as a 'key link road' between Lower King Road and Chester Pass Road to be upgraded and extended. This will greatly improve east-west connectivity between the subject site and Albany Highway.
Uniqueness <i>The site contains, or is in the vicinity of, an attraction or prominent and/or unique landmark of local, regional or State significance.</i>	The Albany region is an attractive tourism destination. Lower King is situated mid-way between the Albany city centre and the Gull Rock National Park. Lower King Road leads to Two Peoples Bay Nature Reserve and Nanarup Beach to the east.
Setting <i>The setting of the site has an aspect and outlook that supports recreational tourism activities and/or the creation of a tourism character and ambience (e.g. immediately adjacent to a beach).</i>	The subject site overlooks the picturesque Oyster Harbour, with unobstructed views (the current A4 site is setback from the foreshore without direct street access).

Locational criteria	Assessment
Tourism activities and amenities <i>The site provides, has easy access to, or is capable of development of supporting activities and amenities such as tours, fishing, historic sites, walk trails, environmental interpretation, cafes, restaurants, shops and the like.</i>	The site's location directly opposite a jetty lends it as being capable of hosting or supporting activities such as boating or fishing tours.
Supply of land <i>The site has an element of scarcity in that it may be the only opportunity, or one of a limited number of opportunities, to achieve a significant tourism development in an area.</i>	The Scheme amendment seeks to expand an existing approved tourism site to allow the main facilities to be located in a more appropriate location. The subject site is the only site directly opposite the jetty.
Suitability in a land use context <i>The site is located in a land use context that will not limit the extent of activities available to guests due to amenity impacts on adjoining residents or where the adjoining uses potentially detract from the tourism character of the site (e.g. located within a residential area).</i>	The proposed tourism site is in ownership of the original developers of Anchorage Park estate. The owners remain in dialogue with the estate's residential community and continue to hold many of the lots in the estate. Therefore impacts on future residential can be appropriately managed. Development will incorporate good design principles, which mitigates the impact on existing residential properties.
Capability <i>The site has the capacity to be developed for tourism purposes and accommodate the associated services in a manner that does not detract from the natural attributes of the site or result in environmental degradation. Examples include: clearing for bushfire protection, sewerage capacity, water supply and rubbish disposal.</i>	The site has been prepared in readiness for development and is appropriately serviced.
Size <i>The size of the site should be adequate to accommodate a sustainable tourism facility with respect to its design, operation and function, and its site specific and wider impacts and consideration of future growth/expansion. This will require a site to be able to be developed without compromising the sustainable use of natural and cultural resources or existing social structures. Development of the site should also contribute to the delivery of diversified and balanced tourism opportunities.</i>	The core of the site opposite the boating facilities has an area over 7,500m² which is approximately double the area required to develop a tavern, or a sufficient size for a tourism node uses with complementary uses. The balance of the site can be developed with chalet-style units or other forms of short-term rental accommodation.
Function <i>The use of the site meets a particular accommodation, market need and/or ensures a range of tourism accommodation within the locality. Examples are: beachfront caravan parks, school holiday camps and Crown tourism leases.</i>	The site is well suited for tourists who desire direct foreshore access, co-location with restaurant and other supporting facilities, and direct access to jetty and boat ramp facilities.

The Scheme amendment addresses PB 83/2017 and warrants support accordingly.

5 STATUTORY PLANNING FRAMEWORK

5.1 City of Albany Local Planning Scheme No. 2

The Scheme, at clause 7(a), includes the **deemed provisions** contained in Schedule 2 of the LPS Regulations.

5.1.1 Scheme aims

The aims of the Scheme are set out at clause 9. Relevant to this proposal are the following aims:

- (d) *Define by zoning and reservation of land use and the types of development permitted on land to assist in guiding decisions of investors, public authorities, residents and business people.*

Approval of this Scheme amendment will provide certainty to land owners and investors in the development of the land and provide a suitable legislative framework for the consideration of a development application for uses consistent with the residential zone with additional uses (A4) listed.

- (g) *Promote a hierarchy of commercial activity within a framework which consolidates central area functions, promotes strong neighbourhood centres and rehabilitates and revitalises existing premises.*

With the addition of A4 uses listed in the residential zone this application proposes a hub that incorporates uses such as taverns and convenience shops. There are presently no facilities of this nature in the locality, the nearest activity centre being approximately 1.1km to the north. Approval to this Scheme amendment will provide certainty on land uses associated with tourism, including provisions for small-scale retail not competing with activity centres in the Albany region.

- (j) *Set aside adequate land to accommodate the employment and industrial needs of residents within the Scheme area.*

This Scheme amendment proposes land uses that will provide employment opportunities for local people.

5.1.2 Zoning

The subject site is presently zoned 'Residential' under the Scheme map with an applicable density code of R5/20. Under this Scheme amendment the Residential zoning will remain.

The following overlays apply to some portions of the land:

- Special Control Area 16 – Oyster Harbour Inundation Area (**SCA 16**) applies to Lots 503 and 504 and the eastern portion of Lot 507.
- Additional use A4 applies to the northern portion of Lot 504, (refer to **Figure 3**).

5.1.3 Additional uses

Clause 19 of the Scheme allows for uses to be set out in Schedule 2 which are in addition to the classes of uses permissible in the zone, and conditions applying to those uses. Additional uses are in addition to the uses capable of approval in that zone.

The proposed A4 uses will operate in addition to the uses permitted in the Residential zone. A condition is included to limit the size of a shop to 300m² reflecting the small-scale of retailing anticipated for the tourism node.

As identified throughout this Scheme Amendment, the City advised that indicative chalet/tourism development across Lot 503 (47) Cumberland Road and part of Lot 504 (41) The Esplanade, Lower King, will soon be permissible under the existing zoning, subject to coastal considerations. Accordingly, that portion has been excluded from the amendment.

5.1.4 Special Control Area 16 – Oyster Harbour Inundation Area

The SCA 16 seeks to impose design criteria to development, as a means to limit potential flood damage. Per Schedule 8 (Table 18) of the Scheme the following additional provisions apply to SCA 16:

- (1) *Development*
 - (a) *All land use and works within the special control area requires development approval.*
 - (b) *Development is to be designed to be capable of removal.*
 - (c) *All habitable buildings and associated driveway are to be constructed with a minimum finished floor level height of 3.02m AHD in accordance with Local Planning Policy - Development in Flood prone Areas**
 - (2) *Development Approval*
 - (a) *A notification, pursuant to Section 70A of the Transfer of Land Act 1893 is to be placed on the certificate of title of the proposed development lot advising of the existence of a hazard. The notification is to state as follows:*

*"This lot is located in an area likely to be subject to coastal erosion and/or inundation over the next 100 years from the date this notification is registered and may be subject to conditions of development approval which require removal and/or rehabilitation to pre- development conditions."**
 - (b) *Where possible, development to be located outside of inundation area.*
 - (c) *In circumstances where the entirety of a lot is within the inundation area, the use of fill is to be avoided. Fill has the potential to impact on water flows or other properties during a flood event.*
 - (d) *Where a lot is identified to be permanently inundated within the 100-year planning timeframe as identified in an endorsed CHRMAP or equivalent mapping, development approval shall be time limited. At the point approval lapses:*
 - (i) *The development shall be removed; and*
 - (ii) *The land shall be rehabilitated to its pre-development condition, to the specifications of the local government, at the landowners cost.*
- OR
- (e) *Any development approval granted in respect of the Condition 2(d) shall cease to have effect and:*
 - (i) *The development shall be removed; and*
 - (ii) *The land shall be rehabilitated to its pre-development condition, to the specifications of the local government, at the landowner's cost where:*

- (1) *A public road is no longer available or able to provide legal access to the property, or access is no longer available from the public road to the development, and/or*
- (2) *Water, sewerage, or electricity to the lot is no longer available as they have been removed/decommissioned by the relevant authority due to coastal hazards.*

Advice:

1. *In relation to Condition 2(d), there is no limit to the number of extensions that the City may grant, allowing the development to remain until such time condition 2(e) occurs at which time the development will be required to be removed.*

*Note: Refer **section 5.1.6** proposed changes

In respect of the additional provisions:

- The requirement for development to be designed to be capable of removal is noted and can be complied with.
- The minimum finished floor and driveway level of 3.02m AHD is noted and can be complied with.
- The requirement for a section 70A notification is noted and can be complied with.
- The requirement to avoid development in the inundation area and limitation of importation of fill is noted. In regard to limiting fill, development of zoned land can include pole housing, avoiding the need for fill while allowing development to achieve the minimum floor level required by SCA16, but it could not be the intention of the author to prohibit all development on the land for the following reasons:
 - Firstly, the land is zoned for Residential under the Scheme notwithstanding SCA 16, indicating an expressed intention for development of the land. If the authors of the Scheme had intended the developability of the land be reviewed, the impacted land could and should have been zoned for a different purpose.
 - Secondly, the SCA 16 provisions contain a range of provisions indicating an intention for development including design for removal, minimum floor levels, notifications on title, and temporary approval periods. An interpretation of SCA 16 that sterilises land for development would be wholly inconsistent with the balance of the SCA 16 provisions which provide development controls specifically pertaining to development on land subject of inundation.
- The provisions for temporary approvals are noted, as is the 'advice' that temporary approvals can be extended any number of times.

No change or departure from the SCA 16 additional provisions are proposed by this Scheme amendment.

It is noted in the minutes of the 26 November 2024 Council meeting that the minimum AHD for SCA 16 may be amended in the future, pending progression of a CHRMAP and risk Identification report and the adjacent Special Control Area 15 is proposed to have its AHD changed from 3.02m to 2.5m.

5.1.5 Scheme development standards

The Scheme contains various development standards applicable to various types of developments. They include:

- Building design provisions addressing matters such as energy efficient design, building height to address visual amenity, and colour of buildings and water tanks.

- Chalet/cabin floor areas (maximum 110m² excluding verandahs carports and storage areas).
- Landscaping provisions.
- Loading/unloading and service area provisions.
- Parking requirements.
- Public art contributions for developments with a value of more than \$1.5 million.
- Provisions stipulating the maximum duration of stay for short stay accommodation by any person to a maximum 3 months in a 12-month period.
- Requirements for incorporating water sensitive urban design principles.

The Scheme requirements are applied to all developments at the development approval stage.

5.1.6 Local development plan

Part 6 of the Deemed Provisions contains provisions for the preparation and approval of a local development plan, being a plan setting out specific and detailed guidance for a future development including one or more of the following:

- (a) *site and development standards that are to apply to the development;*
- (b) *specifying exemptions from the requirement to obtain development approval for development in the area to which the plan relates.*

The Scheme Amendment proposes the A4 additional uses are subject to a local development plan prior to development or subdivision, and will address matters currently included as conditions stipulating design considerations for the A4 uses, and will additionally include addressing coastal hazard risk mitigation and adaptation measures (for example, establishing vehicle access in areas not subject to erosion).

Notwithstanding, where a coordinated and wholistic development application is made for the A4 area responding to all matters that the local development plan would have addressed, the City can elect not to require a local development plan under clause 56(2) of the Deemed Provisions and approve the development application.

5.1.7 Omnibus Amendment No.1

On 26 November 2024 the Council resolved to adopt Scheme Amendment No.1 (Omnibus) which proposes a series of changes to the Scheme text. In respect of the Residential Zone the following changes are proposed:

- Delete the following uses:
 - Bed and Breakfast
 - Holiday Accommodation
 - Holiday House
 - Motel
 - Serviced Apartment
 - Tourist Development
- Add the following new land uses:
 - Hosted Short-Term Rental Accommodation ('P')
 - Tourist and Visitor Accommodation ('A')

- Unhosted Short-Term Rental Accommodation ('A')
- Add new clause 26(1)(b) confirming that within the area coded R5/R20, the local government may approve development to the density and standards of the higher applicable code, subject to all development on the land being connected to reticulated sewerage.

Amendment No.1 proposes the following changes to the A4 conditions:

- Under Additional Use column delete 'Motel (D)'; and
- Under Conditions column:
 - Delete 'and Motel are to'; and
 - Replace with 'development is'; and
 - Delete subclause (f) and update (e) accordingly.

Amendment No.1 also alters the SCA16 provisions by removing reference to now-repealed Local Planning Policy (*Development in Flood Prone Areas*) and in subclause 2 (a) replaces "which require" with "which may require."

The Amendment No. 1 does not impact the proposed scheme amendment.

This proposed Scheme Amendment to modify the A4 additional use incorporates the modifications proposed by Amendment No.1 by proposing two versions of A4 – one prior to the Amendment No.1 alterations, and the other post-approval of Amendment No.1 as currently proposed.

5.2 Model provisions

The model provisions at Schedule 1 of the *Planning and Development (Local Planning Schemes) Regulations 2015* are to be incorporated into the Scheme unless the Minister otherwise approves. This Scheme amendment is consistent with the model provisions.

5.3 State Planning Policies

5.3.1 State Planning Policy 2.6 Coastal Planning

State Planning Policy 2.6 Coastal Planning (SPP 2.6) provides guidance for decision-making within the coastal zone, including managing development and land use change and the enhancement of coastal values. Its objectives are to:

1. ensure that development and the location of coastal facilities takes into account coastal processes, landform stability, coastal hazards, climate change and biophysical criteria;
2. ensure the identification of appropriate areas for the sustainable use of the coast for housing, tourism, recreation, ocean access, maritime industry, commercial and other activities;
3. provide for public coastal foreshore reserves and access to them on the coast; and
4. protect, conserve and enhance coastal zone values, particularly in areas of landscape, biodiversity and ecosystem integrity, indigenous and cultural significance.

Proponents are required to include sufficient detail with applications indicating consideration and compliance with SPP 2.6. Clause 5.5(i) of SPP 2.6 elaborates:

Adequate coastal hazard risk management and adaptation planning should be undertaken by the responsible management authority and/or proponent where existing or proposed development or landholders are in an area at risk of being affected by coastal hazards over the planning timeframe. Coastal hazard risk management and adaptation planning should include as a minimum, a process that establishes the context, vulnerability assessment, risk identification, analysis, evaluation, adaptation, funding arrangements, maintenance, monitoring and review, and communicate and consult.

The subject site has been subject to coastal hazard risk management and adaptation planning. A Coastal Hazard Risk Management report (**CHRM report**) was prepared by Seashore Engineering in May 2021 in support of a proposed residential subdivision of the subject site and the nearby Lot 505 (10) Cumberland Road and Lot 506 (41) Windermere Road. The CHRM report:

- assessed coastal hazards for the site in accordance with SPP 2.6 in the context of identifying lots potentially subject to inundation or coastal processes over the next 100 years to inform future lot owners, and potential coastal adaptation measures during subdivision, and
- provided an assessment of risks, mitigation and adaptation for the proposed infill development and adjacent foreshore reserve in the context of SPP 2.6 adaptation hierarchy and Coastal Hazard Risk Management and Adaptation (CHRMAP) guidelines, in the context of the management of the existing foreshore and road reserve between the proposed subdivision and the shoreline of Oyster Harbour.

Recommendations are provided for minimum lot levels to mitigate the risk of future coastal inundation, and to inform prospective purchases of longer term coastal hazards. The mitigation of risks associated with coastal processes requires consideration of ongoing foreshore management of the adjacent foreshore and road reserves by the City of Albany.

Refer **Appendix 2** for the CHRM report.

In discussions with the City and DPLH it was confirmed the CHRM report, combined with the existing SCA16 scheme provisions is sufficient to address the coastal hazard measures of SPP 2.6. The City intends to prepare a CHRMAP for the whole of the Oyster Harbour area in the near future which will further address development on the subject.

In the context of this Scheme amendment, the following is proposed:

1. Buildings on the subject site should generally be located outside the 100 year coastal processes line as depicted in the CHRM report. Refer **Figure 4** below.
2. Development on the portion of the subject site within the 100 year coastal processes line should be temporary or transitional in nature and permanent works shall be designed to be removed from the land if impacted by coastal processes. Temporary development should be mounted on posts so as not to require the filling of land.
3. A notification is to be included on the title of the subject site advising the recommendations of the CHRM report apply to development on the site.

These matters can be addressed in a local development plan prepared for the A4 additional uses, and included as conditions of development approval.

Clause 5.5(iii) of SPP 2.6 provides a hierarchy of responses to coastal hazard risk management and adaptation planning:

Where risk assessments identify a level of risk that is unacceptable to the affected community or proposed development, adaptation measures need to be prepared to reduce those risks down to acceptable or tolerable levels. Adaptation measures should be sought from the following coastal hazard risk management and adaptation planning hierarchy on a sequential and preferential basis:

- (1) **Avoid** the presence of new development within an area identified to be affected by coastal hazards. Determination of the likely consequences of coastal hazards should be done in consideration of local conditions and in accordance with the guidelines provided in Schedule One.
- (2) **Planned or Managed Retreat** or the relocation or removal of assets within an area identified as likely to be subject to intolerable risk of damage from coastal hazards over the planning time frame.
- (3) If sufficient justification can be provided for not avoiding development of land that is at risk from coastal hazards then **Accommodation** adaptation measures should be provided that suitably address the identified risks. Such measures would involve design and/or management strategies that render the risks from the identified coastal hazards acceptable.

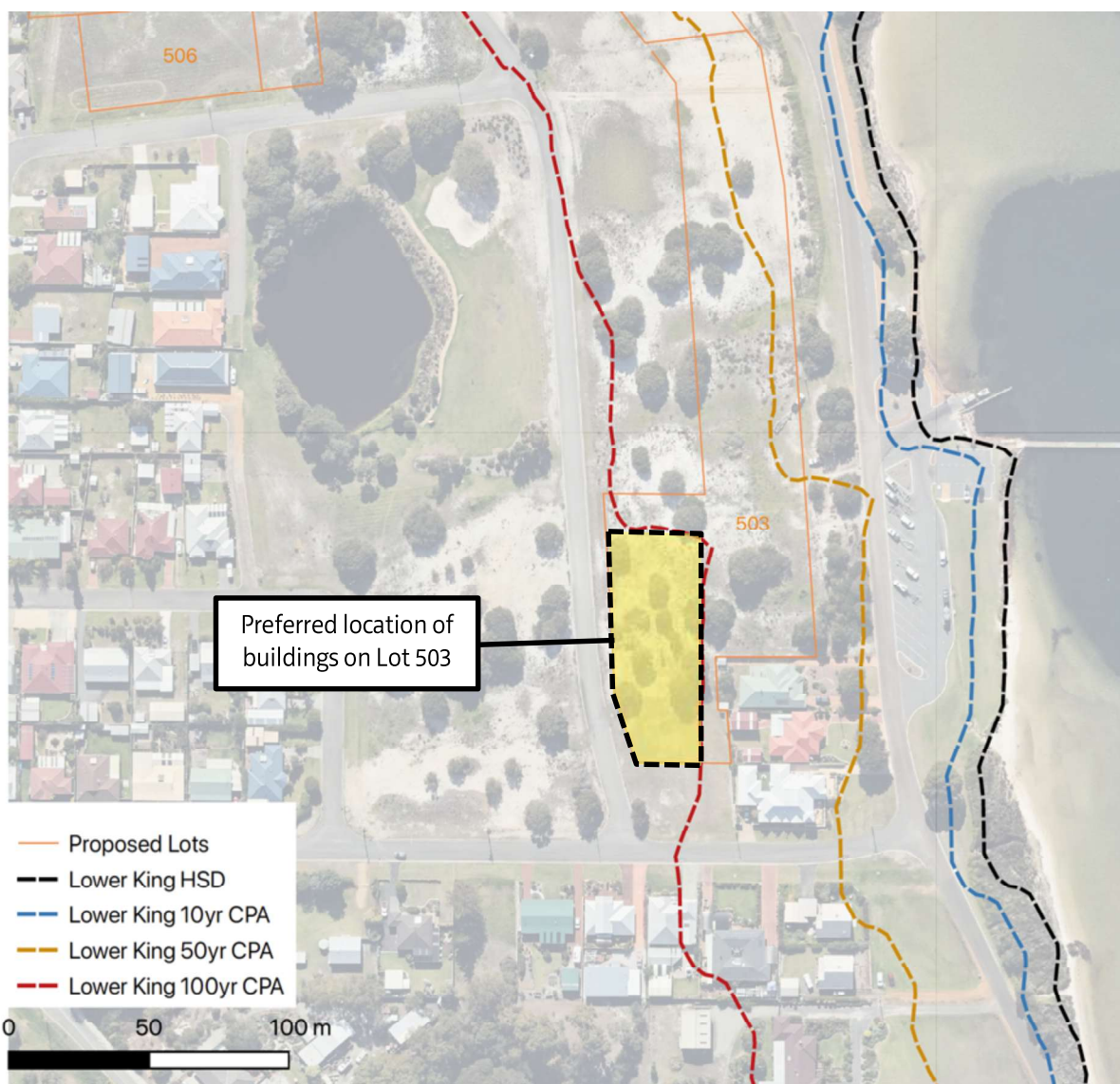


Figure 4: Preferred location for buildings on Lot 503 (baseplan source - Figure 4.12 of the CHRM report)

- (4) *Where sufficient justification can be provided for not avoiding the use or development of land that is at risk from coastal hazards and accommodation measures alone cannot adequately address the risks from coastal hazards, then coastal **Protection** works may be proposed for areas where there is a need to preserve the foreshore reserve, public access and public safety, property and infrastructure that is not expendable.*

The recommendations of the CHRM report are consistent with the above hierarchy. The proposal:

1. Avoids development within the 100 year coastal processes line, per **Figure 4** above.
2. Provides for managed retreat for any transitional or temporary development on Lot 503 within the 100 year coastal processes line.
3. Does not rely on accommodating development or foreshore protection.

Clause 5.2(i) of SPP 2.6 encourages development to be concentrated in and around existing settlements with established infrastructure and services. Clause 5.2(iii) also provides:

Ensure that when identifying areas suitable for development, consideration is given to strategic sites for coastal access and commercial development that is demonstrably dependent on a foreshore location including ports, boat harbours and regional boat ramps.

As previously described, the subject site is located in proximity to a boat ramp and the proposed Scheme amendment provides an opportunity to integrate tourism activities with existing recreational facilities to create a low-key tourist attractor without expanding the current approved envelope for development, as set by the extent of Residential-zoned land.

The addition of the additional uses in A4 in many instances removes the risk from homeowners and places it with commercial enterprise which is better equipped for planning for avoidance and managed retreat. This is to say nothing of the existing infrastructure in the foreshore adjacent Lot 503 and likelihood of there being protection works undertaken for the boat launching facility and private jetty.

This Scheme amendment therefore satisfies the objectives of SPP 2.6 in relation to responding to coastal processes in the planning timeframe and it warrants approval accordingly.

5.3.2 State Planning Policy 3 Urban Growth and Settlement

State Planning Policy 3 Urban Growth and Settlement (**SPP 3**) sets out the principles and considerations which apply to planning for urban growth and settlements in Western Australia. Its introduction and background section states:

There is continued pressure for development in coastal locations particularly for tourism projects, holiday homes and for people seeking a lifestyle change from city living. Often proposals for such development are deficient in employment and other services, and are also heavily car dependent. Coastal development needs to be carefully planned to ensure beaches, dunes, estuaries and coastal wetlands are protected, the risk of storm damage and shoreline erosion is carefully managed and urban development is located where it is feasible to provide essential infrastructure, employment, services and public transport. The Commission's Statement of Planning Policy No. 2.6 State Coastal Planning Policy sets out the principles for coastal planning and management and encourages concentration of urban development in and around existing settlements particularly those with established infrastructure and services.

Refer section 5.3.1 for consideration of SPP 2.6.

5.3.3 State Planning Policy 3.7 Planning in Bushfire Prone Areas

State Planning Policy 3.7 Planning in Bushfire Prone Areas (**SPP 3.7**) provides the foundation for land use planning to address bushfire risk management in Western Australia. It is to be used to inform and guide decision-makers, referral agencies and landowners/ proponents to help achieve acceptable bushfire protection outcomes. It applies to strategic planning proposals including scheme amendments.

The southern and northern portions of the subject site are within designated bushfire prone areas. Refer **Figure 5**.

Bio Diverse Solutions has prepared a Bushfire Management plan (BMP) to support the scheme amendment. Refer to **Appendix 3** the BMP which highlights environmental considerations, bushfire assessment results, identification of bushfire hazard, assessment against the bushfire protection criteria of SPP3.7, and implementation actions.

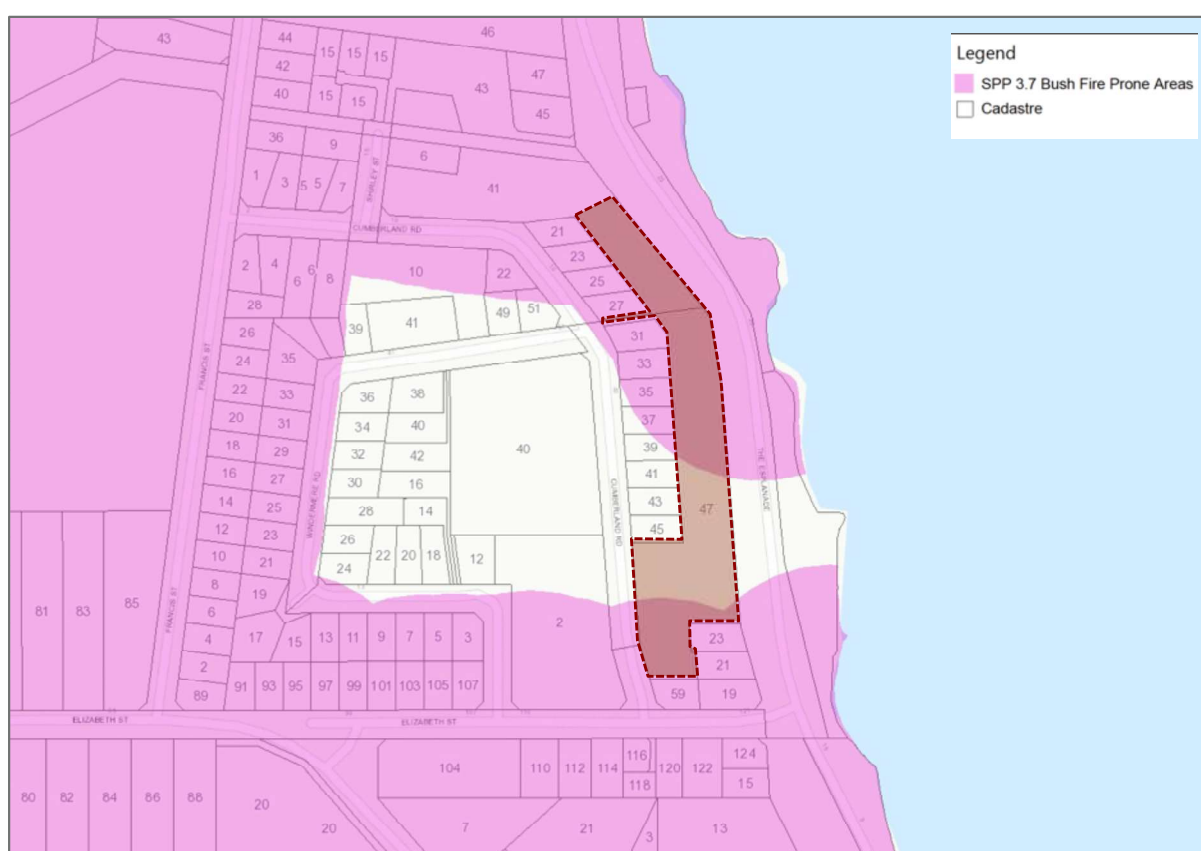


Figure 5: SPP3.7 Planning in Bushfire Prone Areas mapping

5.4 Local planning policies

5.4.1 Local Planning Policy 2.1 Non-Residential Development in the Residential Zone

The City's Local Planning Policy 2.1 Non-Residential Development in the Residential Zone (**LPP 2.1**) applies to all non-residential land use and development applications and will therefore apply to non-residential development in the residential zone.

The objectives of LPP 2.1 are to ensure that non-residential development is compatible with the existing scale and character of the surrounding area and to ensure potential undue impacts on residential amenity are appropriately managed. It provides a means for good development outcomes on the subject site being responsive to adjacent residential properties.

5.5 Other considerations

5.5.1 Aboriginal heritage

Aboriginal heritage sites have previously been identified in the locality. The sites were recorded during the Department of Indigenous Affairs Aboriginal Heritage Survey and are shown in **Figure 6** below.

In November 2021, the Department of Planning Lands and Heritage advised it had concluded one of the sites (ID 22555) met section 5 of the *Aboriginal Heritage Act 1972*, and it if the Aboriginal Cultural Material Committee also agreed the site would be added to the Register of Places and Objects.

None of the identified sites fall within the subject site.

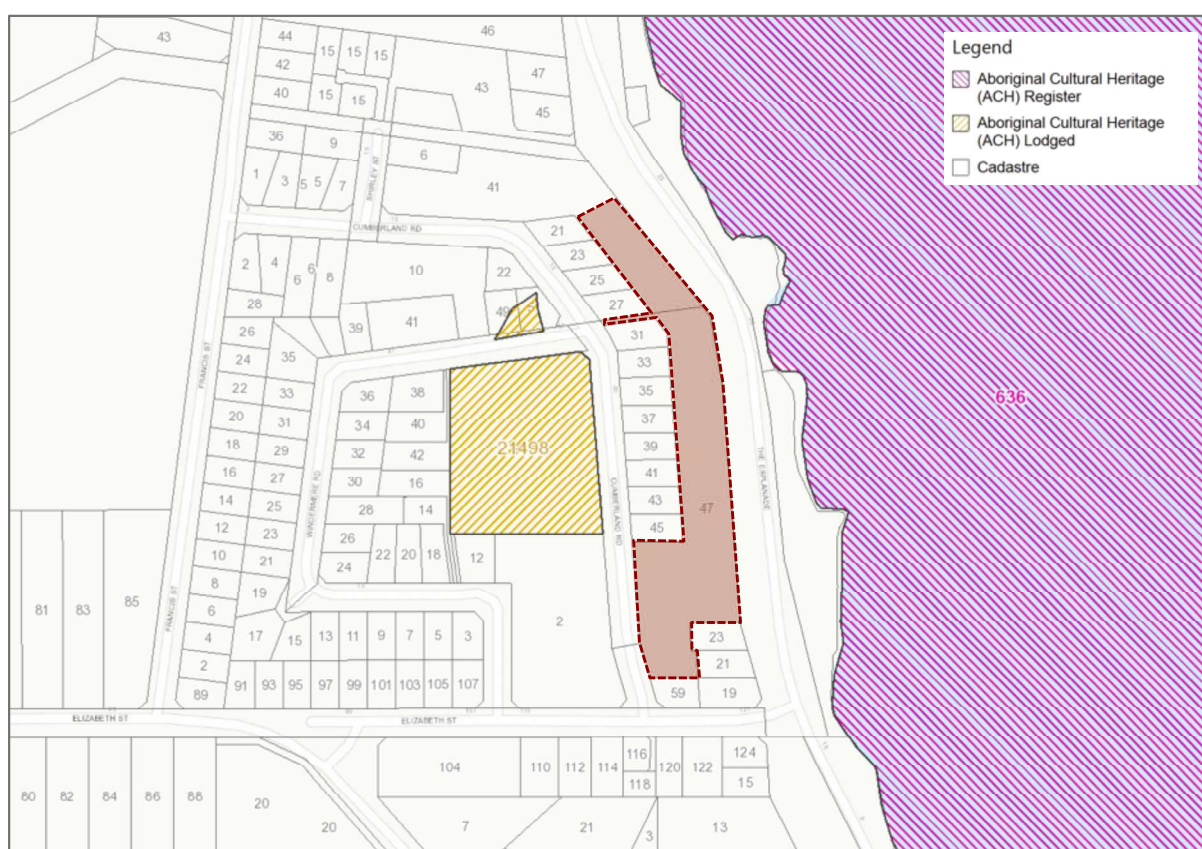


Figure 6: Location of subject site and aboriginal heritage sites

6 CONCLUSION

The subject site is appropriately located in an area of Lower King that is well connected to services and immediately adjacent to Oyster Harbour. In summary, the proposal to extend the 'A4' additional uses over the southern portion of Lot 503 (47) Cumberland Road, Lower King is justified for the following reasons:

1. The subject site forms part of the regional centre of Albany which is experiencing strong growth and demand for quality tourist accommodation and facilities.
2. The proposed amendment is consistent with the objectives of the planning framework and the overarching strategic objectives of the state and local government.
3. The northern portion of Lot 504 has long been identified as a suitable location for tourist facilities. The Scheme amendment simply moves the location of the development and allows for greater land use flexibility in the delivery of tourist facilities in an appropriate location.
4. As identified throughout this Scheme Amendment, the City advised that indicative chalet/tourism development across Lot 503 (47) Cumberland Road and part of Lot 504 (41) The Esplanade, Lower King, will soon be permissible under the existing zoning, subject to coastal considerations. Accordingly, that portion has been excluded from the amendment.
5. The subject site has clear location advantages including views of Oyster Harbour and proximity to the foreshore and existing public boat ramp and private jetty (marina) with the potential to create/be a key tourist attractor.
6. The amendment will facilitate investment in a currently under-developed portion of the Lower King area and enhance the amenity of the surrounding area.

The proposal also suitably responds to matters pertaining to risk from coastal processes and bushfire, as demonstrated by the technical reporting included with this proposal.

The Scheme amendment therefore warrants supported by the City and WAPC and approval of the Minister for Planning.

Appendix 1: Certificates of Title

Appendix 2: Coastal Hazard Risk Management Report

Appendix 3: Bushfire Management Plan



REGISTER NUMBER 503/P18059	
DUPLICATE EDITION N/A	DATE DUPLICATE ISSUED N/A

RECORD OF CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME **1914** FOLIO **947**

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BG Roberts
REGISTRAR OF TITLES



LAND DESCRIPTION:

LOT 503 ON PLAN 18059

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ANCHORAGE PARK PTY LTD OF 321 SELBY STREET, OSBORNE PARK

(A E715763) REGISTERED 3/10/1991

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR DRAINAGE PURPOSES TO LOCAL AUTHORITY - SEE SKETCH ON VOL 1914 FOL 947 - AS CREATED ON PLAN 17604
2. *EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR WATER, SEWERAGE OR DRAINAGE PURPOSES TO WATER AUTHORITY OF WA SEE SKETCH ON VOL 1914 FOL 947 - AS CREATED ON PLAN 17604
3. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR DRAINAGE PURPOSES TO LOCAL AUTHORITY - SEE SKETCH ON VOL 1914 FOL 947 - AS CREATED ON PLAN 17605
4. *EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR WATER, SEWERAGE OR DRAINAGE PURPOSES TO WATER AUTHORITY OF WA SEE SKETCH ON VOL 1914 FOL 947 - AS CREATED ON PLAN 17605

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 1914-947 (503/P18059)
PREVIOUS TITLE: 1914-928
PROPERTY STREET ADDRESS: 47 CUMBERLAND RD, LOWER KING.
LOCAL GOVERNMENT AUTHORITY: CITY OF ALBANY

END OF PAGE 1 - CONTINUED OVER

RECORD OF CERTIFICATE OF TITLE

REGISTER NUMBER: 503/P18059

VOLUME/FOLIO: 1914-947

PAGE 2

NOTE 1: J734298 CORRECTION MADE ON ORIGINAL CERTIFICATE OF TITLE - BUT NOT SHOWN ON
CURRENT EDITION OF THE DUPLICATE

WESTERN



AUSTRALIA

REGISTER NUMBER 504/P18060	
DUPLICATE EDITION N/A	DATE DUPLICATE ISSUED N/A

RECORD OF CERTIFICATE OF TITLE UNDER THE TRANSFER OF LAND ACT 1893

VOLUME
1945

FOLIO
153

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BG Roberts
REGISTRAR OF TITLES



LAND DESCRIPTION:

LOT 504 ON PLAN 18060

REGISTERED PROPRIETOR: (FIRST SCHEDULE)

TERRY ROY JACKSON OF 20 SUDBURY WAY, CITY BEACH

(A F024600) REGISTERED 18/1/1993

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS: (SECOND SCHEDULE)

1. THE LAND THE SUBJECT OF THIS CERTIFICATE OF TITLE EXCLUDES ALL PORTIONS OF THE LOT DESCRIBED ABOVE EXCEPT THAT PORTION SHOWN IN THE SKETCH OF THE SUPERSEDED PAPER VERSION OF THIS TITLE. VOL 1945 FOL 153.
2. EASEMENT BURDEN CREATED UNDER SECTION 27A OF T. P. & D. ACT - SEE PLAN 17604. AS TO PORTION ONLY SEE SKETCH ON VOL 1945 FOL 153.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 1945-153 (504/P18060)
PREVIOUS TITLE: 1914-954
PROPERTY STREET ADDRESS: 41 THE ESPLANADE, LOWER KING.
LOCAL GOVERNMENT AUTHORITY: CITY OF ALBANY

LOTS 503 - 506 WINDERMERE AND CUMBERLAND ROADS, LOWER KING, ALBANY.

COASTAL HAZARD RISK MANAGEMENT



For Harley Dykstra

May 2021

Final Report

SE116-01-R01 Rev 0



Executive Summary

The locality of Lower King is on the western shoreline of Oyster Harbour in the City of Albany, Western Australia. The proposed development site in this established residential area is Lots 503-506 Windermere and Cumberland Roads, Lower King.

This site has a coastal frontage of 400m and is setback in the order of 30m from the shoreline. The shoreline includes a narrow, low lying vegetated foreshore and sandy beach with drain outlets to the north, and a narrow beach backed by a rock revetment protecting a local boating facility and parking areas to the south. There is a road reserve for The Esplanade between the development site and the shore.

As part of the planning for the proposed subdivision of Lots 503-506 Windermere and Cumberland Roads in Lower King, Albany, Harley Dykstra have commissioned Seashore Engineering to conduct an assessment of Coastal Hazards for the site and potential Risk Management and Adaptation Planning measures, in the context of the State Coastal Planning Policy (SPP2.6).

The site is located between existing residential lots to the south (Elizabeth Street) and north (The Esplanade/Shirley Street) and is assumed to be Infill Development. There is a 2.2km length of developed shoreline along the western side of Oyster Harbour, either side of the site, with an established residential development in the localities of Lower King and Bayonet Head. These areas have similar exposure to coastal hazards and are likely to require a similar approach to risk management and adaptation planning as the proposed site.

The site was inspected in November 2020 and the coastal setting has been assessed based on regional geology, coastal geomorphology, indigenous heritage, foreshore development and coastal processes.

Allowances for coastal processes have been assessed over the 10, 50 and 100 year planning timeframes for the site. Coastal inundation has been assessed over the 100-year planning period, with consideration of extreme events and future sea level rise as per SPP2.6. However, existing City of Albany policies for development in flood prone areas require further consideration.

Recommendations are provided for minimum lot levels to mitigate the risk of future coastal inundation, and to inform prospective purchases of longer term coastal hazards. The mitigation of risks associated with coastal processes requires consideration of ongoing foreshore management of the adjacent foreshore and road reserves by the City of Albany.

The proponent should consult further with the City of Albany regarding foreshore management. Foreshore management should maintain the recreational amenity and environmental values of the public foreshore reserve and protect local government assets. This would in turn mitigate the potential longer term impact of coastal hazards on the development.



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Limitations of this Report

This report and the work undertaken for its preparation, is presented for the use of the client. The report may not contain sufficient or appropriate information to meet the purpose of other potential users. Shore Coastal does not accept any responsibility for the use of the information in the report by other parties.

Rev	Issues Description	By	Review	Date
A	Draft	HD & SB	SB	12/02/2021
B	Final Draft	HD & SB	SB	07/04/2021
0	Final Report	HD & SB	SB	06/05/2021

1. Introduction

1.1. Background

The locality of Lower King is on the western shoreline of Oyster Harbour in the City of Albany, Western Australia. The proposed development site in this established residential area is Lots 503-506 Windermere and Cumberland Roads, Lower King. This site has a coastal frontage of 400m and is setback in the order of 30m from the shoreline. The shoreline includes a narrow, low lying vegetated foreshore and sandy beach with drain outlets to the north, and a beach backed by a rock revetment protecting a local boating facility and parking areas to the south. There is a road reserve for The Esplanade between the development site and the shore. (Figure 1.3).

As part of the planning for the proposed subdivision of Lots 503-506 Windermere and Cumberland Roads in Lower King, Albany, Harley Dykstra have commissioned Seashore Engineering to conduct an assessment of Coastal Hazards for the site and potential Risk Management and Adaptation Planning measures, in the context of the State Coastal Planning Policy (SPP2.6). This engagement was on the assumption that the proposed subdivision site is considered Infill Development.

The State Planning Policy (SPP) 2.6 applies to the coast throughout Western Australia, including the shoreline of Oyster Harbour which is identified as 'tidal reaches of inland waters'.



Figure 1.1 Site Location



1.2. Infill Development

The site is located between existing residential lots to the south (Elizabeth Street) and north (The Esplanade/Shirley Street). SPP2.6 defines infill development as 'sites between existing developments' (Section 7).

The 2012 State Coastal Planning Guidelines have recently been updated, however the description of infill development has not changed (1). The Guidelines note:

"A coastal proposal will only be considered as infill development if the subject site is between existing lots and adjacent to approved development. Figure 1.1 provides an example of an infill development site."

Infill development does not apply to coastal land adjacent to existing development on only one side (such as at the edge of a town site or zone or development front along the coast) or where there is a reasonable distance between the lots to negate the benefit of shared coastal hazard risk management and adaptation planning."

The site is located between existing residential lots and developments in the localities of Lower King and Bayonet Head in the City of Albany (cross ref). There is a 2.2km length of shoreline along Oyster Harbour, either side of the site, with established residential development. These areas have similar exposure to coastal hazards and are likely to require similar approach to risk management and adaptation planning as the proposed site. The development of the site would provide additional rateable lots and revenue to assist the local government with coastal management of the adjacent foreshore that is currently required independently to protect the coastal road and Lower King boating facility from coastal hazards.

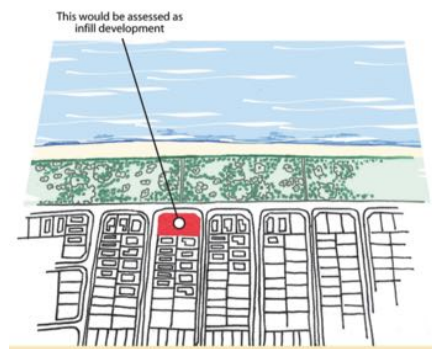


Figure 1.2 Site Location Infill Development (left) and Development Adjacent to Proposed Subdivision (right)

Under the State Planning Policy, the following is recommend for infill development;

1. New development should be located on the *least vulnerable portion* of the development site.
2. Where development is likely to be subject to coastal hazards over the planning timeframe, coastal hazard risk management and adaptation planning measures should be implemented to reduce the risk from coastal hazards over the full planning time frame to an acceptable level.



1.3. Scope of Works

The scope of works for this Coastal Hazard Risk Management assessment for the proposed subdivision of Lots 503-506 Windermere and Cumberland Roads in Lower King, Albany was the following:

- Inspection of the site and adjacent foreshore areas.
- Source and review relevant metocean data, aerial imagery and coastline movement data.
- Assess coastal hazards for the site in accordance with the State Coastal Planning Policy 2013, in the context of identifying lots potentially subject to inundation or coastal processes over the next 100 years to inform future lot owners, and potential coastal adaptation measures during subdivision.
- Assessment of risks, mitigation and adaptation for the proposed infill development and adjacent foreshore reserve in the context of SPP2.6 adaptation hierarchy and Coastal Hazard Risk Management and Adaptation (CHRMAP) guidelines. This is in the context of the management of the existing foreshore and road reserve between the proposed subdivision and the shoreline of Oyster Harbour.

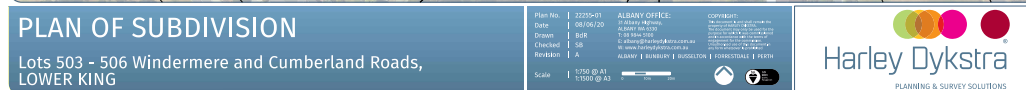


Figure 1.3 Plan of Subdivision (Harley Dykstra)



2. Coastal Setting

2.1. Regional Geology

The *South Coast* region is a combination of the prominent granite and gneiss outcrops of the ancient Yilgarn Craton, together with younger siltstones of the Bremer Basin. The coast faces into the prevailing high southwest waves and winds with higher energy beaches and extensive coastal dunes (2).

The geology of the Albany region is outlined in Figure 2.1 below. The locality of the Lower King is within Oyster Harbour, where two distinct geologic units are evident around the shoreline:

- Granite from the Nornalup Complex along the western and eastern Oyster Harbour (Pgp), immediately north of the site.
- Quartz Sands, fixed dunes, Bassendean sands, along the south western section of the western shoreline (Qhs).

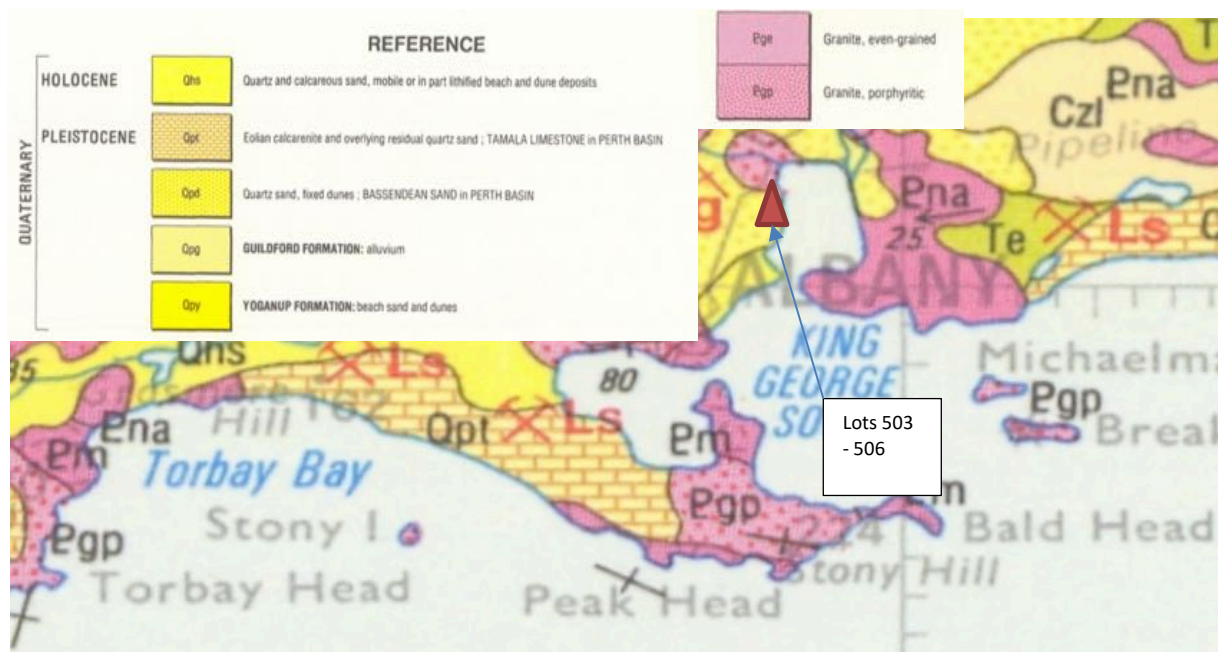


Figure 2.1 Geology of the Albany Region (3)

2.2. Coastal Geomorphology

King George Sound is an 8 km wide, east-facing embayment bordered by Herald Point to the north and the Flinders Peninsula, terminating at Bald Head to the south. The sound has two major tributaries, Oyster Harbour in the north and Princess Royal Harbour in the west, with the city of Albany located along its north-western shores. The City is located on the protected shores of King George Sound, with the main anchorage inside the almost landlocked tributary Princess Royal Harbour (2).

Oyster Harbor is a large a deep lagoon of approximately 16km² in area, reaching 10m depth at its deepest point. The sand dune peninsula of Emu Point forms the western shoreline of the mouth. North of the mouth, a wide swampy area where Lake Seppings and Yakamia Creek valleys drain to the harbour (3). This extends north to a low, steep slope capped with laterite rock, before connecting to a swampy the western shoreline at the mouth of the King

River. The major landforms of the western shoreline of Oyster harbour in the vicinity of the site are described as low lying estuarine fill, and marginal shoals (Figure 2.2).

The sediments of Oyster Harbour are typically medium-course to fine grained, silty sand derived from the rocks of the catchments, together with broken marine shells (3). Shell beds with oyster, cockle and other mollusc shells extends for over 1km from the King River mouth which suggest conditions were more marine than present day (3).

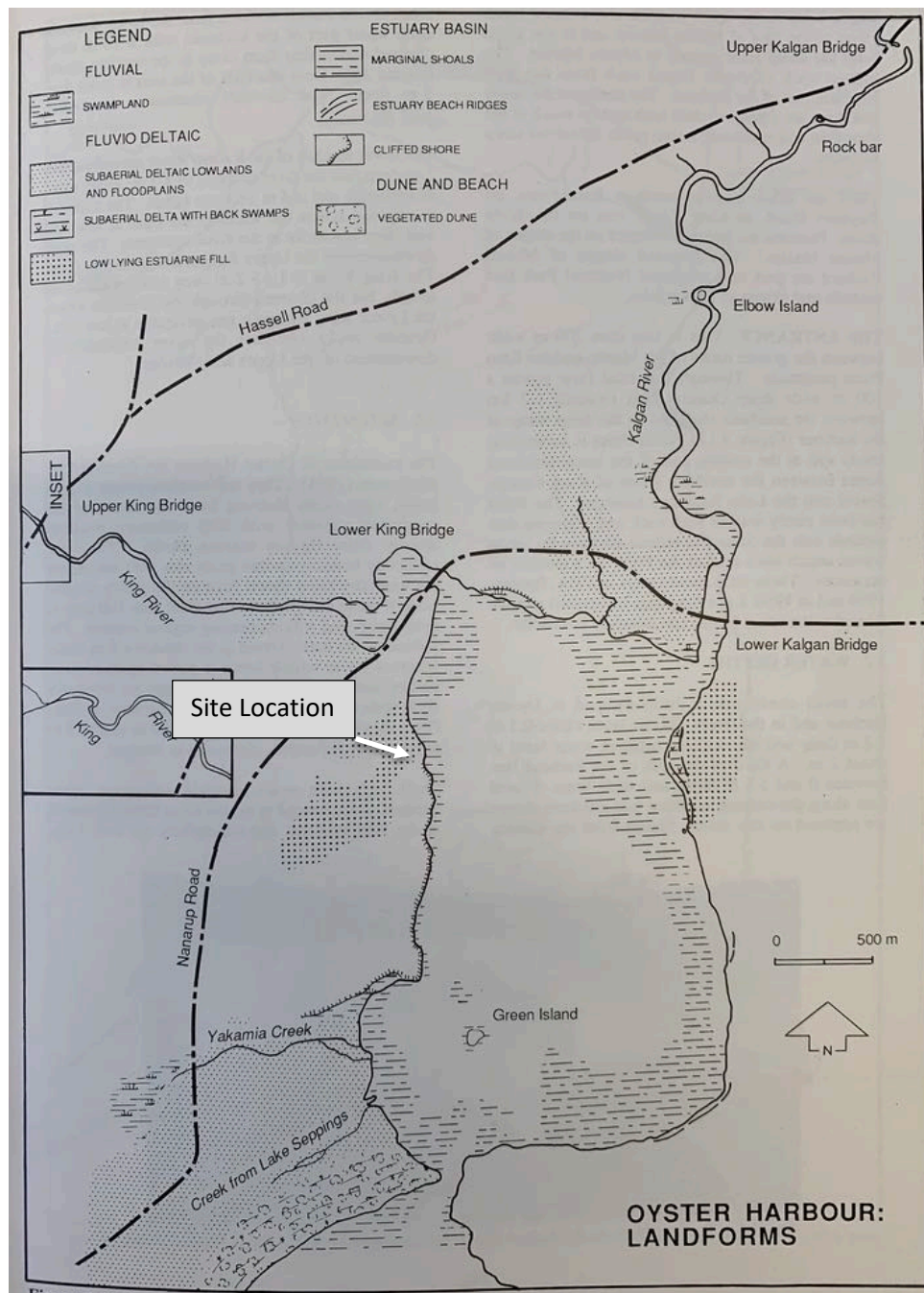


Figure 2.2 Oyster Harbour Landforms (3)



The locality of the Lower King subdivision is along the south western sandy shoreline of Oyster Harbour. The western shoreline of Oyster Harbour adjacent to the site is relatively low lying sand shoreline with a laterite rock revetment, boat ramp, local drains, nearshore flats, sandy beach, foredune, foredune swale and estuarine vegetation.

The beach within the intertidal region has a relatively straight planform and slopes at approximately 1:10, before flattening out towards a shallow wide intertidal sand bank at approximately -0m AHD that extends approximately 200 to 300m into Oyster Harbour, before a drop off terminates the sand bank into -4 to -7m AHD approximately 300m offshore. The topography slopes gently upward towards the back of Windermere road at ~3 to 4m AHD elevation.

2.3. Indigenous Heritage

The proposed development site sits adjacent to a Registered Aboriginal Site 636 Oyster Harbours, as mapped by the Department of Aboriginal Affairs (DAA). Oyster Harbour is described as a site of significance type Mythological.

The development is also adjacent to Registered 'Other' Heritage Places, the Windermere St Camp and Archaeological site. The site is described as significance for 'type' Artefacts / Scatter, Historical, Camp, Hunting Place, Ochre.

2.4. Foreshore Development

Table 2.1 below summaries key developments to the site as derived from available historic aerial imagery.

Table 2.1 Summary of Key Developments to site

Year	Development
1961	First aerial imagery available. No development evident.
1961-1977	First roads along foreshore (Esplanade Road). Appears unsealed.
1977-1988	- Dredging of basin for boating facility. Assumed placement of fill on land. - Construction of Jetty in Boat Harbour. - Rock Revetment in 'Central Section' constructed. - Rock Revetment in section immediately south of Boat Harbour Jetty - Small groyne immediately North of Boat Harbour Jetty. - Windermere and Cumberland Roads constructed. - The Esplanade sealed.
1988-1996	What appears to be a small groyne adjacent to Boat Ramp is removed.
2001-2007	Boat Ramp constructed adjacent to existing Jetty
2007-2010	Toilet block North of Boat Ramp
2017-2018	- Carpark behind Boat Ramp/Boat harbour is sealed. - Rock Revetment adjacent to Boat Ramp is extended to the North from the boat ramp to tie into the existing rock revetment in central section (c1988)
2018-2020	Construction of roundabout behind Boat Ramp

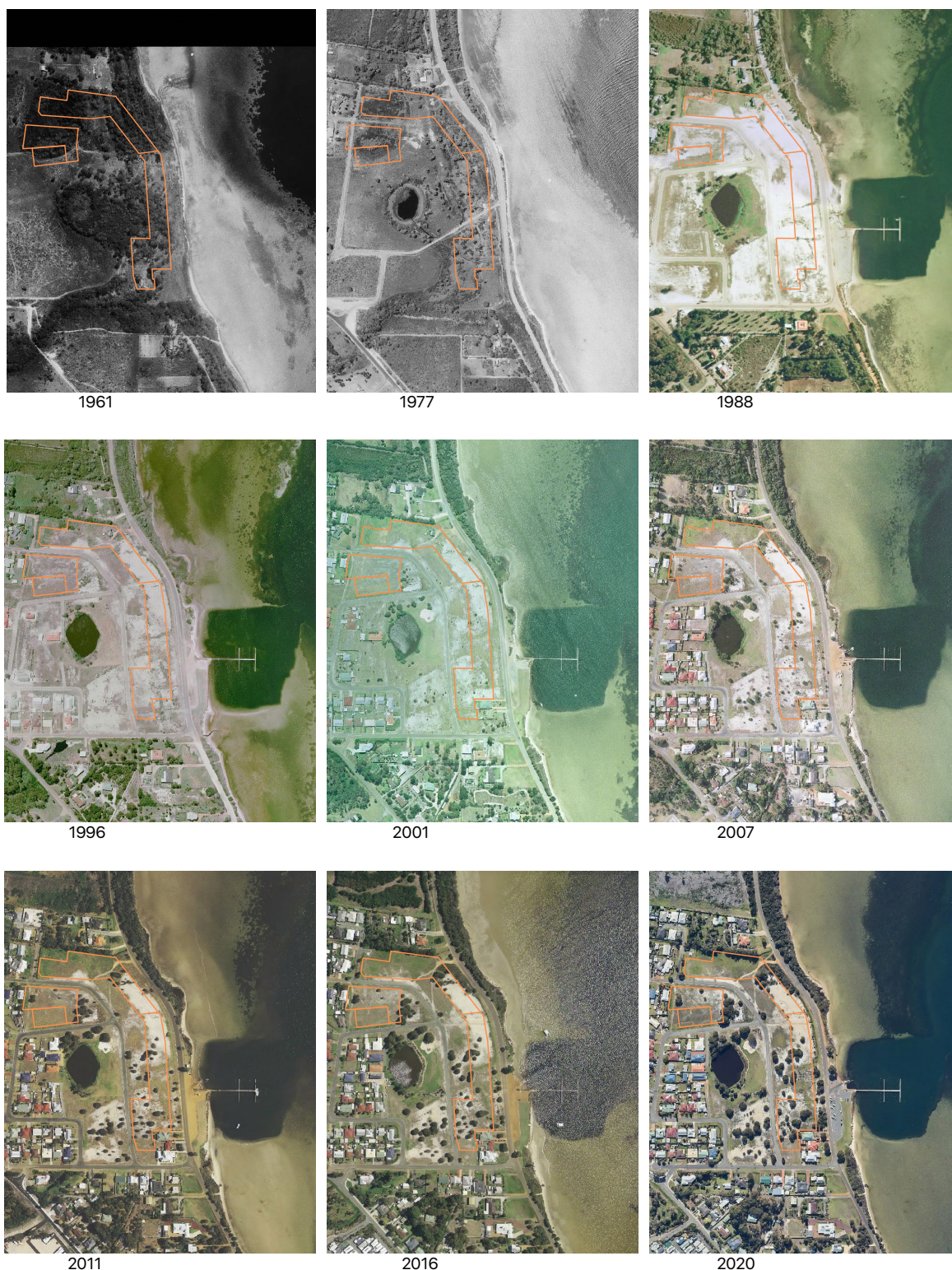


Figure 2.3 Historic Aerials with Proposed Lot Boundaries shown



2.5. Coastal Processes

2.5.1. Winds

A wind speed, direction and frequency analysis was undertaken for wind data from the nearest Bureau of Meteorology site (Albany Airport) previously by Seashore Engineering to undertake a wave assessment for Emu Point Boat Pens (4).

The results are presented in Figure 2.4, and demonstrate stronger winds from the south east to the south west are expected during summer (Dec-Mar), while strong north to north westerly events can occur in winter.

The site at Lower King is exposed to the north east to the south east octants. The wind records indicated the potential for moderate to strong (45-60km/hr) winds from the south easterly and east direction between December and March. More detail assessing the extreme winds that will result in the development of waves within Oyster Harbour is discussed in section 4.2.1.1.

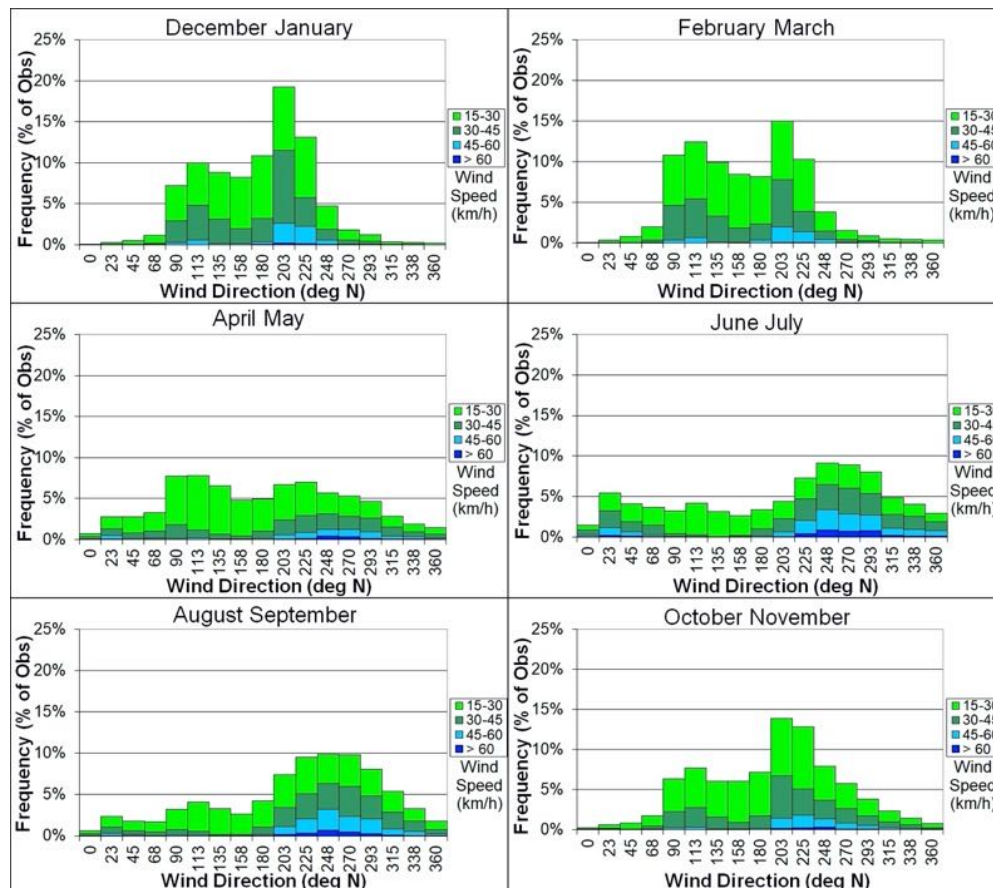


Figure 2.4 Albany Airport Wind Speed, Direction and Frequency Plots (1965 – 2018) (4).



2.5.2. Waves

Oyster Harbour is highly sheltered from the offshore wave conditions that approach the exposed sections of Albany's coastline. The dominant waves that affect the western side are generated locally within Oyster Harbour by winds with the narrow entrance at Emu Point limiting the penetration of outer swells. As a result, the wave climate at Lower King is a relatively low energy, fetch limited wave. Where beaches are evident, they are typically reflective beaches due to the low wave energy and microtidal climate.

There is no publicly wave data available wave data in Oyster Harbour. However, Seashore Engineering was engaged by the City in August to install wave loggers at the Emu Point Boat Harbour in 2017 as a part of the investigations into the design of recreational boat pens managed by the City at Emu Point Boat Harbour in Oyster Harbour, Albany.

The recorded waves had periods that were generally less than 3 seconds, and the largest recorded wave ($H_{max} = 0.35m$) was associated with boat wakes. There were a total of 4 events where the wave height exceeded 0.2m in the three month deployment (4).

For context, wave hindcasting was used to assess the wave developed during a fresh south easterly sea breeze (35km/hr, 20knots), blowing over the maximum exposed fetch of 4.6km from the south east. The maximum wave developed using wave hindcasting is 0.3m, with a period of 2 seconds.

Observed wave heights are expected to be lower under most tidal conditions than the hindcast predictions due to sheltering from the intertidal shoals adjacent to the facility. Whilst waves travel across the shoals at higher tides, attenuation is likely to occur during lower tides. Local changes to wind direction and strength (as compare to measured data form Albany Airport) associated with sheltering from adjacent landforms, in particular Mount Martin to the southeast of the harbour.

2.5.3. Tides

The coastal areas of Albany experience a maximum tidal range of 1.5m between LAT (Lowest Astronomic Tide) and HAT (Highest Astronomic Tide). The water level is influenced by non-tidal forcing that result from passing storms and other weather systems. A summary of the tidal levels at Albany is presented in Table 2.2.

Table 2.2 Tidal Planes for Albany (5).

	Tidal Planes ¹				
Water Level	LAT	MLLW	MSL	MHHW	HAT
Albany (m AHD)	-0.72	-0.31	0.0	0.33	0.67

¹ LAT: Lowest Astronomic Tide, MLLW: Mean Low Low Water, MSL: Mean Sea Level, MHHW: Mean High High Water, HAT: Highest Astronomic Tide, ARI: Average Return Interval.



2.5.4. River Flooding

Extreme water levels at the site may also be subject to the influence of the King and Kalgan Rivers. The publicly available Department of Water flood mapping website (6) shows the nearest 100 year flood line as ~4km upstream the King River, with the most recent flooding observed in 2005. The annual discharge from the King and Kalgan rivers is shown below.

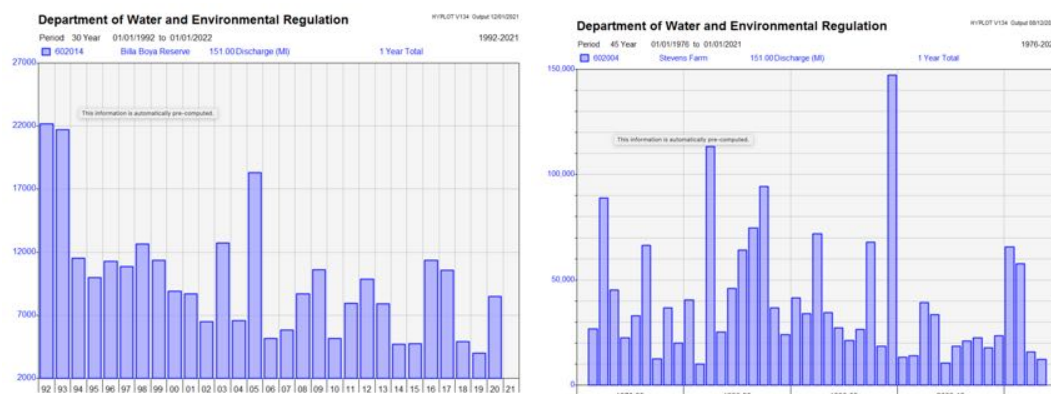


Figure 2.5 Total Annual Discharge plot for the King (Left) and Kalgan (right) rivers (7)



3. Site Inspection

Seashore Engineering inspected the site on 27th of November 2020, with a site report provided to Harley Dykstra (refer Attachment 3). The following was noted in terms of the assessment of coastal processes.

Site Overview

- The site is on the western shoreline of Oyster Harbour (adjacent to the Lower King Boating Facility).
- There is ~420m of east facing coastal frontage of the site, as measured from Elizabeth Street on the southern end to a drain adjacent to Lot 161 on the Northern end.
- The proposed lots appear to be on relatively flat, mostly cleared land, with no visible rock observed on the Lots.
- The Esplanade Road is located seaward of all proposed Lots.
- There are multiple drains adjacent to the site including one located at the seaward end of Elizabeth Street, and on the northern boundary of proposed Lot 504.
- There is a boat ramp and associated recreational boat launching facility with a dredged section of deeper water, jetty and rock revetment located along The Esplanade

Coastal Morphology

- Oyster Harbour is a coastal estuary with a southern rock controlled entrance to King George Sound at Emu Point.
- Oyster harbour has two major freshwater flow inputs; The King and Kalgan Rivers.
- The site is highly sheltered from the offshore wave conditions that approach the exposed sections of Albany's coastline. The site has exposure to fetch limited wind generated local waves from the north east, extending around to the south east.
- A rock revetment constructed with laterite/ironstone provides some protection to wind induced waves to The Esplanade and the Lower King Boat Ramp carpark for approximately 270m of the shoreline at the site.
- There are sandy nearshore flats for some distance offshore, with the exception of deeper water associated with a dredged basin at the Lower King Boat ramp.
- The shoreline is generally a sandy beach with medium/fine grain size but a relatively high shell content (PSD samples were collected to confirm grain size diameter for SBEACH modelling).
- The southern end of the beach transitions into foreshore vegetation towards Simmons Street.
- The northern end of the beach transitions into dense and woody foreshore vegetation that continues north of the site.
- With the exception of the laterite rock revetment, there is generally a low and relatively flat beach and foredune. Wrack was evident on the back face of the low foredune, with wash over expected to occur during high tidal levels with onshore winds.
- A low elevation foredune swale with rush or beach grass species was evident behind the foredune in places and is expected to be subject to inundation during higher tides. Water was evident above the surface of the foredune swale in places.



Figure 3.1 Summary of Key Features/photos from site Inspection

4. Coastal Hazard Assessment

A coastal hazard assessment has been undertaken for the site with consideration of coastal erosion and coastal inundation. Allowances for coastal processes have been assessed following guidance in the State Coastal Planning Policy (Schedule 1) for the 10, 50 and 100 year planning timeframes.

SPP 2.6 notes that on a sandy coast such as the Lower King, the allowance for erosion for the 100 year planning period should be measured from the Horizontal Setback Datum (HSD) and calculated as the sum of the factors: S1 (storm erosion); S2 (future shoreline change), S3 (coastal response to sea level rise) plus an allowance for uncertainty.

4.1. Horizontal Setback Datum (HSD)

The Horizontal Setback Datum is defined as the “active limit of the shoreline under storm activity”. The 100-year ARI water level for Albany has been defined as 1.1m AHD, representing the peak steady water level during a 100yr ARI erosion event (refer section 4.3). Based on available survey data and observations made during the site inspection, the HSD has been defined as the 1mAHD contour.

As the available survey from Harley Dykstra only extends to the alignment of The Esplanade Road, survey available from the Department of Water interpolated from a 5m grid has been used to locate the 1m contour. This has required an extension north 115m from the available survey.

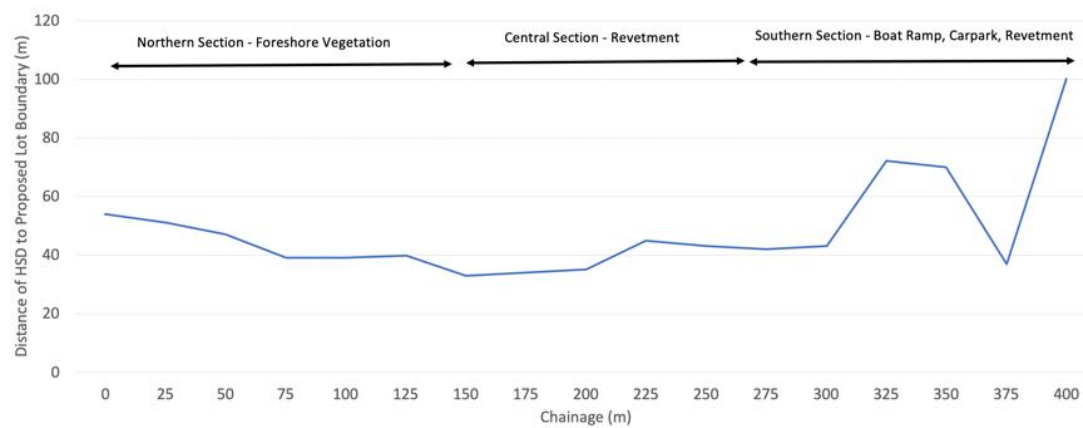


Figure 4.1 Distance of Lot Boundary to the present day Horizontal Setback Datum (HSD)



4.2. Allowance for Coastal Processes

4.2.1. CURRENT RISK OF STORM EROSION (S1)

SPP 2.6 recommends the use of a credible sediment transport model such as SBEACH to model maximum cross shore storm erosion. The model is typically run for three successive storm events and the distance should be the “recession from the HSD to the land extent of the storm erosion as calculated by the model” (8).

4.2.1.1. Definition of the Storm Event

SPP2.6 notes “storm events will vary for each location and should be reviewed on a case-by-case basis” (8). The storm event for this site has been defined as fetch limited wave coinciding with the 100yr ARI water level.

The Department of Transport’s recent technical report for design storm event selection for erosion hazard assessment has been considered (9). However, the storm event for the South Coast (Albany) is identified the 6th June 1997 ‘mid latitude depression’. However, this is a storm with a large southwest swell direction, strong west north-westerly winds, a ‘mean water level’ of 0.3mAHD and peak water level in the order of 0.7mAHD. This swell direction would not penetrate Oyster Harbour substantially, wind direction is largely offshore along the shoreline at the site(i.e. wave heights would be negligible), and peak water level is relatively low (in the order of Highest Astronomic Tide).

Wave hindcasting has been undertaken using the methods described in the Shore Protection Manual (10) for deep water propagation. The maximum exposed fetch is 4.6km from the SE; the largest distance from the site extending across Oyster Harbour (Figure 4.3).

4.2.1.2. Water Levels

An extremes water level analysis was completed using the available DoT tide gauge data at Albany from 1987 to 2019 (Figure 4.2).

The Department of Transport (DoT) undertook an extremes analysis on the water level data from Albany for the Augusta Boat Harbour project (5) based on data from 1986 to 2012. The extreme water level values from the Department of Transport (DoT) extremes analysis for Albany for the Augusta Boat Harbour project (5) only extends to the 100yr ARI event (1.08m AHD).

It is noted that the extreme values as derived from the Department of Transport water level analysis are slightly higher than the extreme values presented by Seashore in Figure 4.2. Where there is a difference, the more conservative value has been adopted for conservatism and rounded to the nearest 0.1m. Extreme values are presented in Table 4.1.

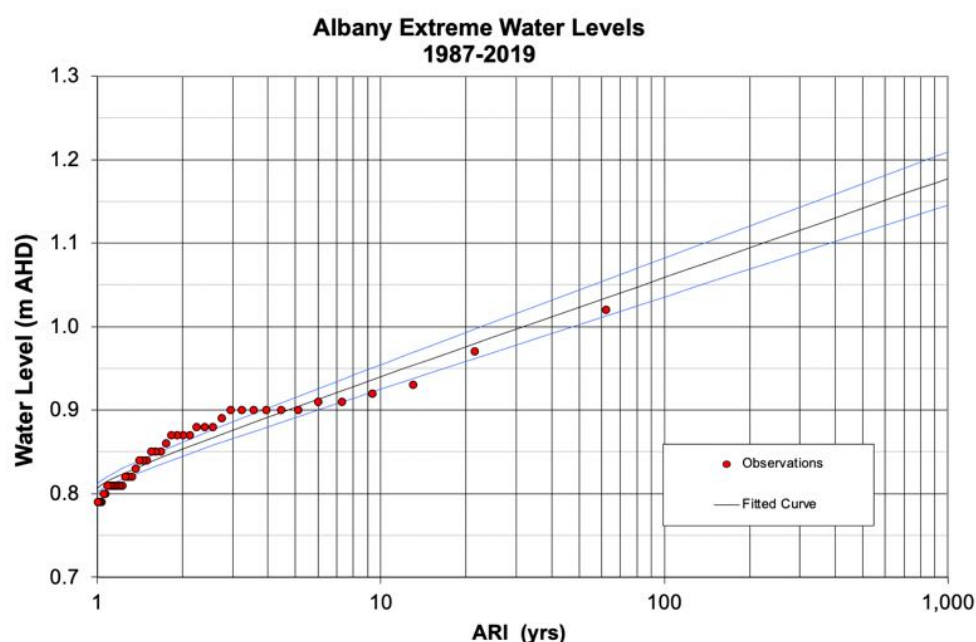


Figure 4.2 Albany Extreme Water levels (1987 – 2019).

Table 4.1 Extreme Water Level Event Analysis for Albany

	Extreme Water Levels			
Water Level (mAHD)	1yr ARI	10yr ARI	100yr ARI	500yr ARI
Albany (SE)	0.8	0.95	1.05	1.15
Albany (DoT)	0.87	1.02	1.08	NA
Adopted Extreme Water Level	0.9	1.0	1.1	1.2

4.2.1.3. Wave Hindcast

The wave height defined for the storm event have been assessed from wave hindcasting and available wave records within Oyster Harbour.

Wind records from the nearest available Bureau of Meteorology stations at Albany Airport, from 1965 to 2019, were used to assess the three hourly averaged wind speeds from a N to S direction (other quadrants have limited to zero fetch). The resulting maximum observed wind speed (three hourly average) is approximately 70km/h (4) from the both the North and South octants, (Table 4.2).

Table 4.2 Maximum Wind Speeds at Albany Airport for exposed quadrants (1965 to 2019) (km/h)

Direction	N	NE	E	SE	S
Maximum 3hrly Wind Speed (km/hr)	72.4	57.6	55.4	68.4	70.6

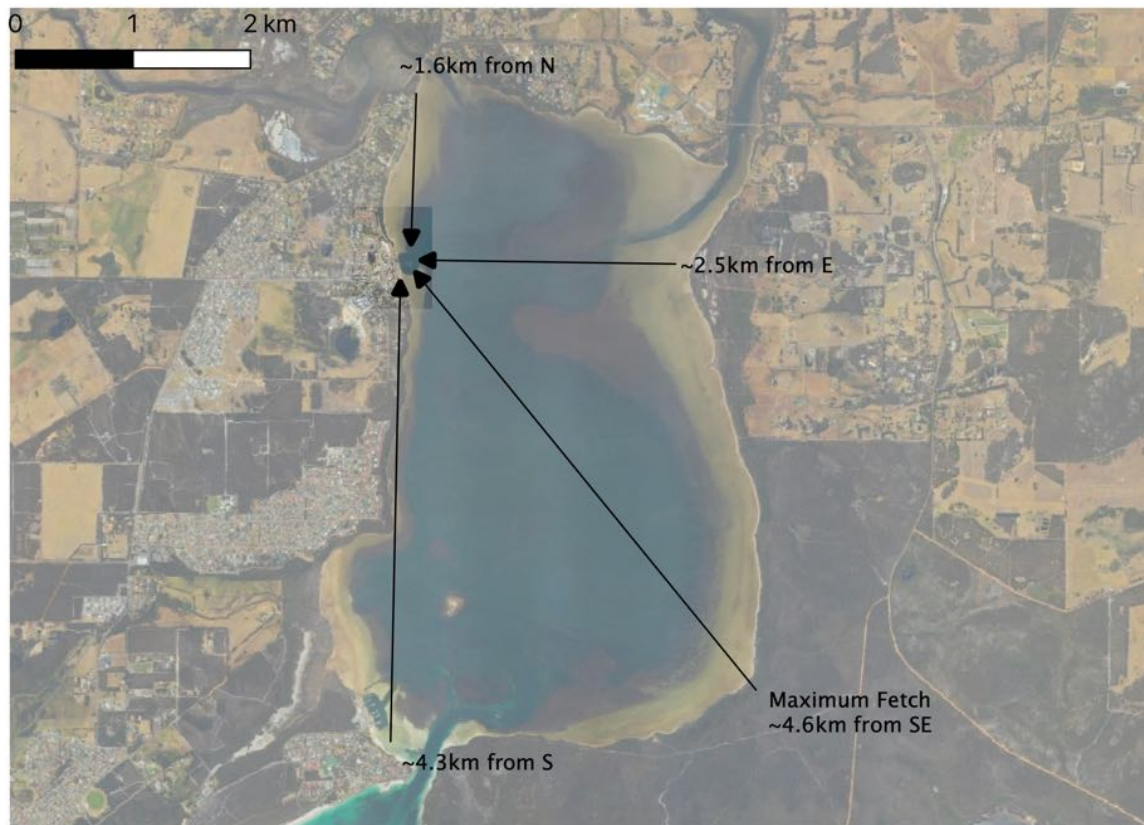


Figure 4.3 Maximum wind fetch at the site (Lower King)

It should be noted that more extreme winds have occurred from the sheltered directions (NW to SW). The most significant event occurred during Tropical Cyclone Alby in early April 1978, mean wind speeds of 90km/h were maintained for over two hours from the NW (11). However, these would be “offshore” at the site and would not result in any waves being generated at the site.

As a conservative approach, a fetch of 4.6km and maximum hourly averaged wind speed of 70km/h were adopted as the 100yr ARI extreme wind forcings. The resulting maximum developed (fetch limited) significant wave height is 0.73m H_s with a period of 2.6 seconds. Note that this provides a conservative estimate due to the assumptions that the peak wind is directly onshore to the site and has the maximum fetch of 4.6km, assumes deep water propagation, and assumes unlimited duration (>1hr to developed seas). The existing revetment at the site was not included in the model.

The design wave as determined using hindcasting (0.73m H_s) was compared to data from a wave logger located at Emu Point Boat Ramp in 2017 (12). The recoded waves periods were generally less than 3 seconds and the largest recorded waves ($H_{max} = 0.35m$) were associated with boat wakes. The wave height of 0.73m is considered a conservative estimate of the 100 year ARI wave event.



4.2.1.4. Cross Shore Erosion Modelling

A cross sectional beach profile was developed using 0.2m contour survey data provided by Harley Dysktra from 17/07/2006 for the land topography. The survey profiles were extended seaward to the opposite shoreline of Oyster Harbour using publicly available survey data on WA Marine Maps (dated 1980) (13).

Foreshore sediments have previously been sampled for Oyster Harbour, noting they are medium-coarse to fine grain silty sands derived from the rocks of the catchment together with 30% carbonate material mainly from broken shells, and are relatively coarse (0.40mm) along the western shore. Sediment samples were taken from the site during a site visit in November 2020. A grain size of 0.35mm was assessed using field techniques and used in the modelling of both profiles



Figure 4.4 SBEACH modelled profile at Lower King showing path across proposed Lots (left), and extension through Oyster Harbour (right)

The 100yr peak wind and wave criteria determined for the Lower King site in Albany were used to scale a 24-hour period of the strongest South Easterly winds event on record (25/2/1979) to achieve the 100yr conditions. The peak water level of 1.1mAHD was used throughout the event. Refer Attachment 1: SBEACH Modelling for a table showing the details of the design storm. The direction of the wind and waves was directly onshore to the beach at the site.

The effect of the 'storm event' was then simulated by running the storm for three successive times (72 hours total) on each profile to represent the 100 year and 50 year planning frames. To represent the 10 year planning timeframe, the storm was run once only (24 hours).

The HSD as defined in SPP2.6 has been taken as the 'peak steady water level under storm activity' of 1m AHD. Results are summarised in Figure 4.5 and Table 4.3.

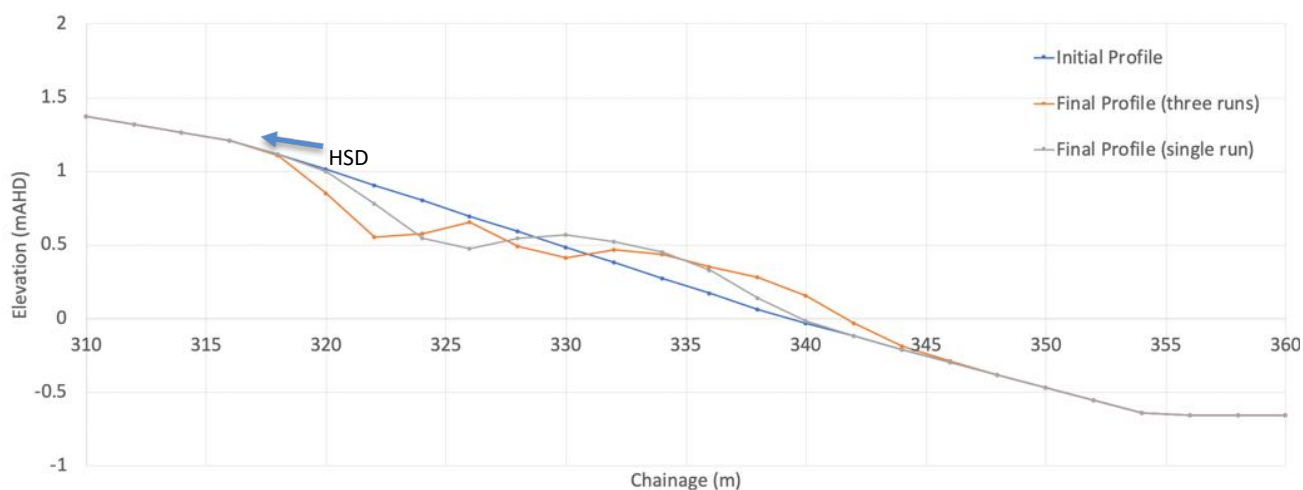


Figure 4.5 SBEACH results showing erosion for the model run of three times the design storm, and one run.

Table 4.3 Horizontal erosion results of storm erosion (Central Section)

Planning timeframe (years)	Description	Erosion at 0mAHD	Erosion at 1mAHD	Landward extent of erosion from HSD
50, 100	Three runs of storm	3.0	2.0	3.0
10	Single run of storms	2.5	0.5	1.0

The SPP2.6 notes that the value for the (S1) allowance should be the recession from the HSD to the land extent of the storm erosion as calculated by the model. The maximum recession from the HSD is lower than the maximum erosion observed at both profiles. For conservatism, the maximum cross-shore storm erosion for S1 has been adopted as the maximum horizontal erosion observed, giving a value **3.0 metres as the allowance for S1 for the 50 year and 100 year event, and 1.0m for the 10 year event**².

Whilst this assessment did not specifically consider longshore transport, and the SBEACH model does not have this capability, the storm erosion response for this foreshore is expected to be dominated by cross shore response to high water levels rather than alongshore transport.

² Storm erosion will be mitigated by existing revetments along the central and southern section of the sites.



4.2.2. ALLOWANCE FOR HISTORIC SHORELINE MOVEMENT TRENDS (S2)

As outlined in SPP2.6, the allowance for historic shoreline movement trends “should be based on the review of available shoreline records” (8). This is typically assessed with the use of historic aerial photography and/or vegetation lines to determine the historic position of the shoreline. The allowance for historic shoreline movement trends “should generally be calculated as 100 times the historic annual rate of erosion” (8).

Aerial photography from the years 1961, 1977, 1988, 1996, 2001, 2007, 2011, 2016 and 2020 were used to map vegetation lines at Lower King, Albany. These dates were selected based on available aerial photography from Landgate with suitable resolution for the assessment of the vegetation line. Shoreline changes since 1961 were measured at 25m intervals along the foreshore adjacent to the site, beginning approximately 100m north of the site and extending 200m south along the shore (Figure 4.8).

The historic aerial imagery demonstrates progressive shoreline at Lower King. In 1961 and 1977, the coastline is relatively unmodified and shows a small beach backed by low shrubs and vegetation along the extent of the site. Between 1977 and 1988, the boat ramp and jetties were constructed, along with the associated dredging of the sand bank to create a navigable access to the ramp/jetties (Figure 4.6). The imagery suggests the dredged material was placed on the adjacent land behind the boat ramp. this was confirmed from the site inspection which noted large amounts of shell fragments and marine sediments on the proposed lots.



Figure 4.6 Lots 503 to 506 Windermere showing the change from 1961 (left) to 1988 (right), with the construction of the boat ramp and associated dredging, with shells evident on site during inspection (lower).

There is a discrete section of ‘accretion’ along the existing boat ramp revetment where there has been up to 50m of shoreline advancement from 1961 to 2020 due the reclamation of the land behind the boat ramp revetment. Since 1988 (post boat ramp construction), the shoreline has remained stabilised by the rock revetment. Site inspection suggest the rock revetment extends from Chainage 150m to 400m (Figure 4.8).

On the northern extent of the site, the vegetation line has shown localised shoreline variability of up to 20m from 1961 to 2020 on either side of a low, swampy section of vegetation and low foredune swale (refer Chainage 50 – 150, Figure 4.8). Aerial imagery from 1961 suggest a creek or drain outlet previously meandered to the north for ~70m parallel to the shoreline before entering Oyster Harbour. In subsequent years from 1961 through 1988, the creek mouth has been shortened and no longer runs parallel to the shoreline to the north. Aerial imagery suggest this shortening is associated with the construction of The Esplanade Road that cuts through the path of the old outlet, and the construction of a formalised drainpipe outlet.

It appears as the drain was modified, the controlled outlet has caused a small and low barrier sand deposit to form around the drain exit, which has subsequently been colonised with vegetation (Figure 4.7, Figure 4.10).

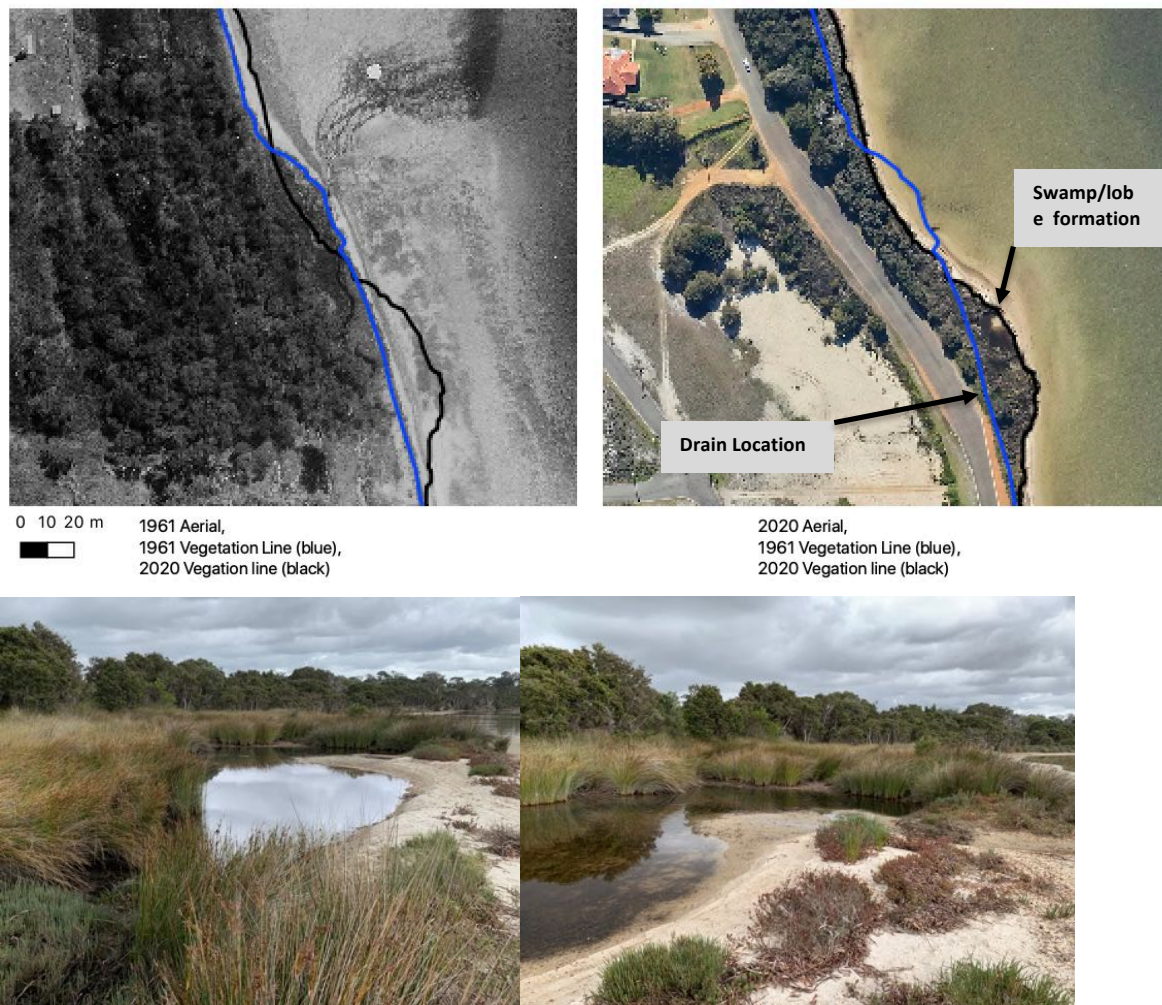


Figure 4.7 Localised erosion/accretion associated with swamp/low vegetation migration (Ch 0 to 150) (above), and site photos from November 2020 (below).

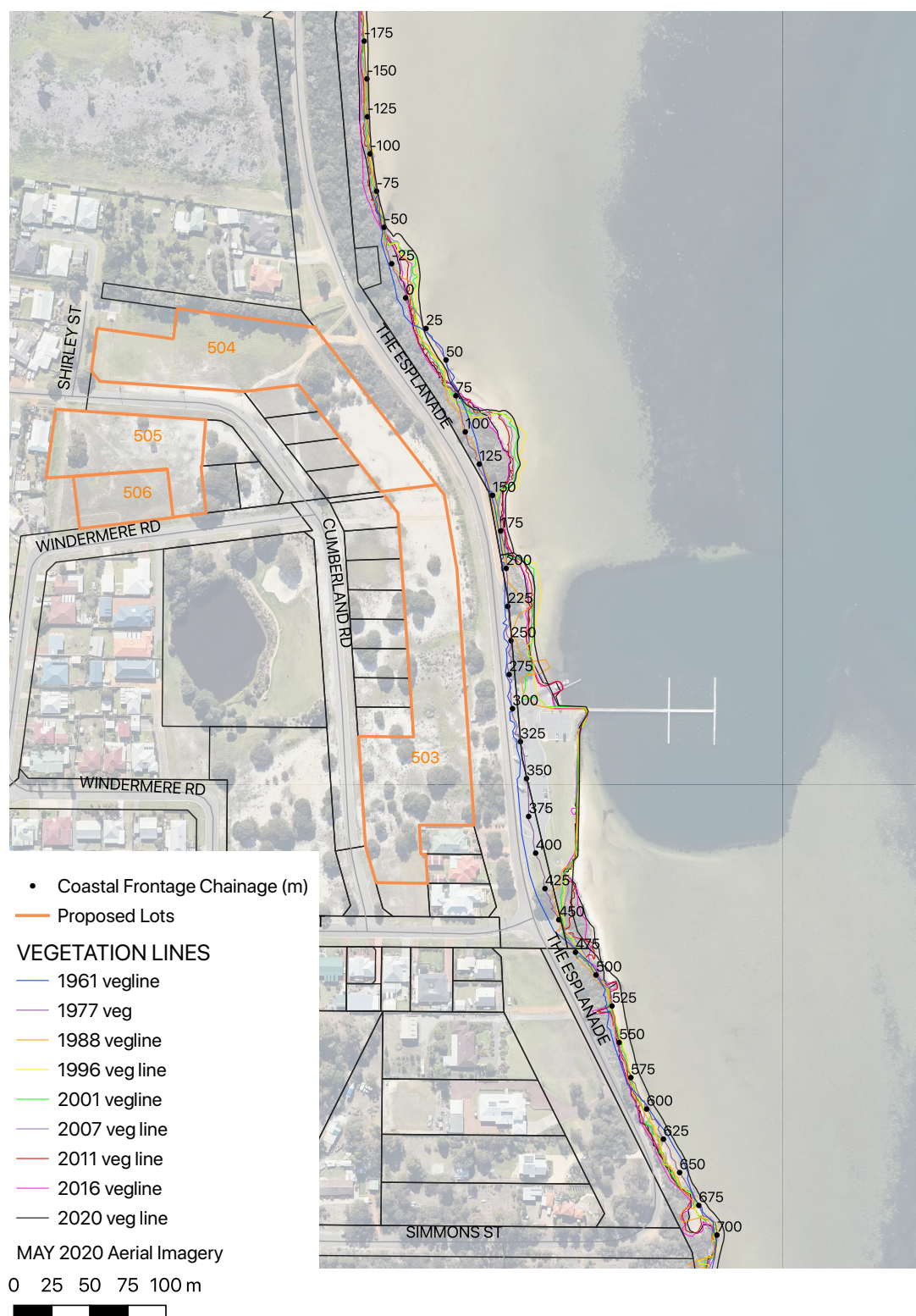


Figure 4.8 Vegetation Line Mapping, showing coastal chainages (m) where measurements were taken, along with proposed Lots.

Approximately 200m south of the southern extent of the site, the vegetation line has shown erosion since 1961 of up to 10m (Figure 4.9, Figure 4.10). It appears this erosion occurred between 1961 and 1996, and has since remained relatively stable.

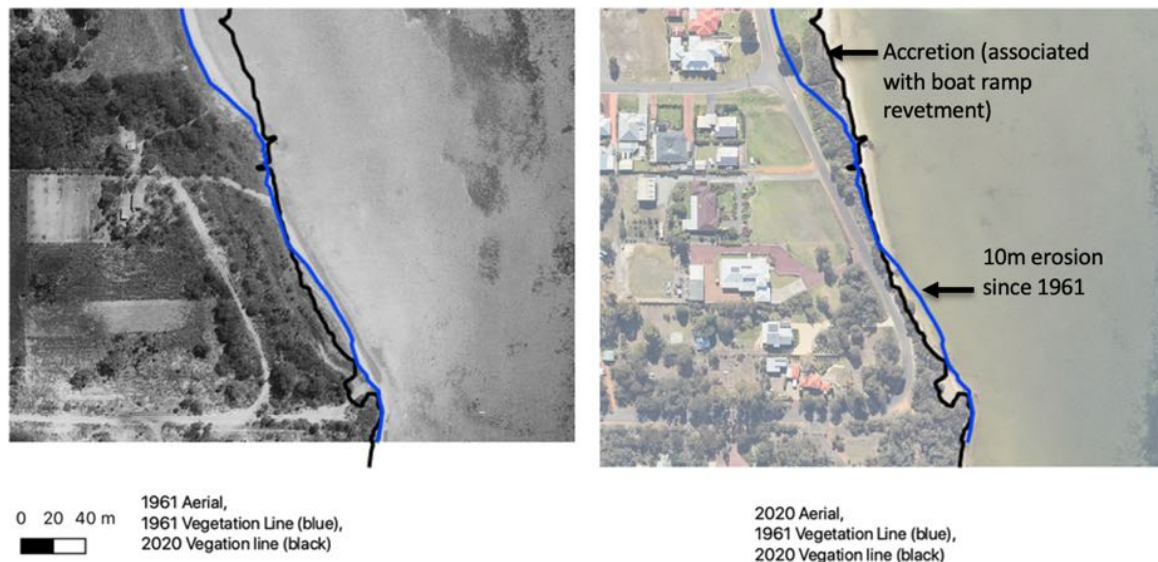


Figure 4.9 Localised erosion ~200m south of site extent (Ch 750 to 900)

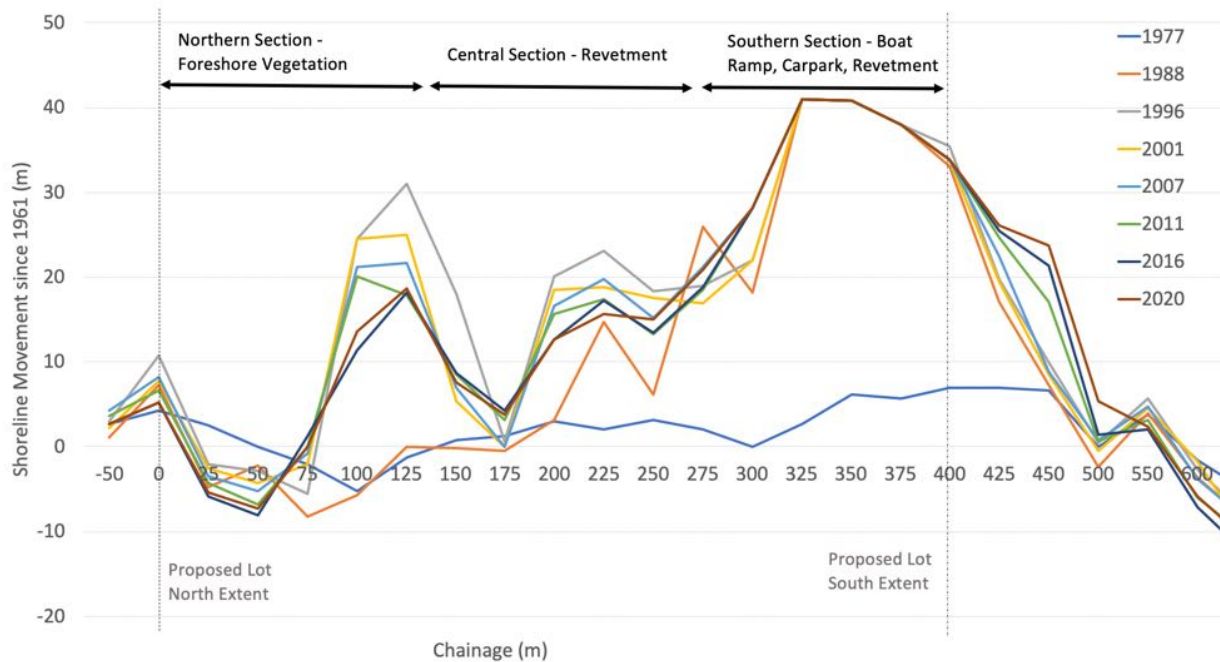


Figure 4.10 Shoreline Movement since 1961 at Lower King (1961 to 2020).



The vegetation lines of 1961, 1977, 1988, 1996, 2001, 2007, 2011, 2016 and 2020 were used to form a timeseries showing the shoreline at the site since 1961 (refer Attachment 2: Coastline Movement Time series). The site has generally been stabilised or showed accretion, with the exception of the local migration of depositional lobes associated with drain outlets. Shoreline erosion rates have been assessed separately for the southern, central and northern foreshores and are summarised in Table 4.5.

The maximum historic annual rate of erosion adjacent to the proposed development is for the northern section (-0.1m/yr), whilst the southern and central sections have been assessed as stable (0m/yr). The observed accretion of the Southern Section is based on reclamation from dredging rather than long term behaviour. However, the stability of the southern and central foreshores in the longer term requires future maintenance of rock revetments which is discussed further in Section 5.

This value has been adopted as the “historic rate of annual erosion” (as outlined in SPP2.6 (8)) at Lots 503-506 Windermere and Cumberland roads, Lower King, Albany. The resulting S2 allowance for the 100-year planning period at Lower King is 100 times the maximum average erosion rate, or **10 metres for the Northern Foreshore and 0 meters for the Southern and Central Foreshores.**

4.2.3. ALLOWANCE FOR SEA LEVEL RISE (S3)

SPP2.6 (8) outlines the allowance for sea level rise should be based on a vertical sea level rise of 0.9 metres over a 100-year planning timeframe to 2110. The allowance for erosion caused by future sea level rise on sandy coast should be calculated as 100 times the adopted sea level rise value of 0.9m over a 100-year timeframe, or **90 metres.**

For context, the maximum historic annual rate of erosion adjacent to the proposed development is -0.1m/yr , and the allowance of 90m of coastal retreat would allow for an order of magnitude acceleration on the observed rate of erosion along this foreshore (i.e. 1.0m/yr)

The nominal 90m allowance is based on a simple application the Bruun Rule (14), assumes a beach slope of 1V:100H, and infers that sea level rise will change shelf-shore sediment exchanges, resulting in a net transfer from the coast to the inner shelf (15). An alternative model, the Davidson Arnott model (16), infers that sea level rise will cause the coast to rise and roll landward over low-lying areas, and is more applicable to low energy coasts (15).

Response to both models is influenced by coastal geometry such as beach slope, as well the beach geology and composition, but in both cases, landward recession due to sea level rise is typically in the range of 25-100 m of coastal retreat per metre of sea level rise (15).

Whilst the response of the shoreline within Oyster Harbour to rising sea levels may be strongly influenced the rock revetment, vegetation and the variable shoreline and dune morphology, the Policy does not specifically allow a site-specific assessment of the potential localised response of the shoreline to rising sea levels.



4.2.4. SUMMARY

The SPP2.6 notes that for a sandy coast the planning allowance for coastal processes should be measured from the HSD and calculated as the sum of the factors: S1 Erosion; S2 Erosion; and S3 Erosion plus 0.2 metres per year allowance for uncertainty.

The total allowances for coastal processes over the 10, 50 and 100 year planning timeframe is summarised in Table 4.4.

Table 4.4 Planning allowances for coastal processes at Big Grove, Albany

10 Year	Scenario	Northern Section	Central Section	Southern Section
	S1	1	1	1
	S2	1	0	0
	S3	9	9	9
	Uncertainty	2	2	2
	Total	13	12	12
50 Year	Scenario	Northern Section	Central Section	Southern Section
	S1	3	3	3
	S2	5	0	0
	S3	40	40	40
	Uncertainty	10	10	10
	Total	58	53	53
100 Year	Scenario	Northern Section	Central Section	Southern Section
	S1	3	3	3
	S2	10	0	0
	S3	90	90	90
	Uncertainty	20	20	20
	Total	123	113	113

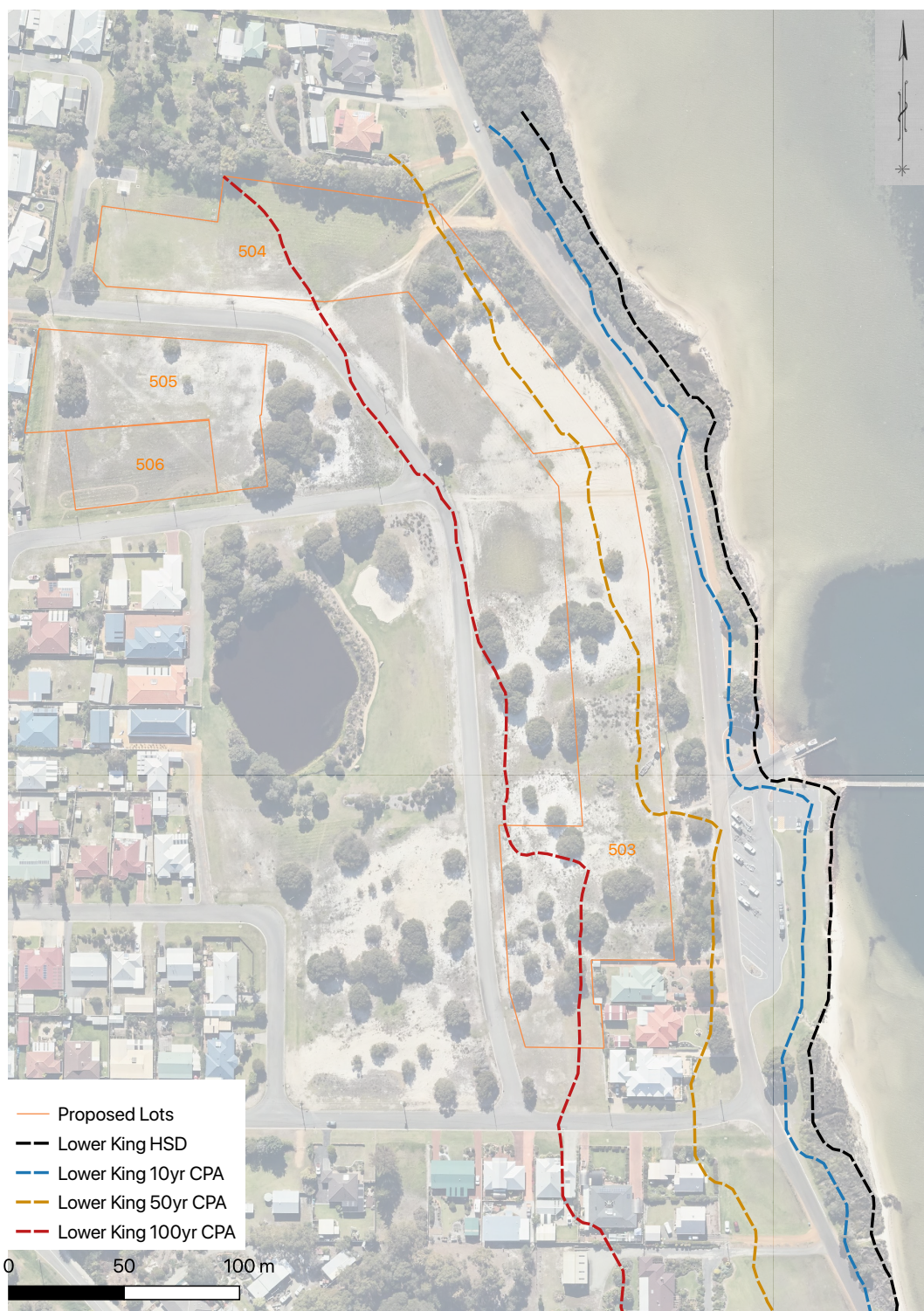


Figure 4.11 Allowance for Coastal Processes.



4.3. Allowance for Storm Surge Inundation

As outlined in SPP2.6 (8) the allowance for the current risk of inundation should be the maximum extent of storm inundation. This has been defined as the peak steady water level (PSWL) plus wave run-up based on the storm event for storm surge inundation. PSWL has been defined as the highest average elevation of the sea surface caused by the combined effect of storm surge, tide and wave setup during a storm event “based on ocean forces and coastal processes that have a 0.2 percent or one-in-five hundred probability of being equalled or exceeded in any given year over the planning time frame.”

The water level in Oyster Harbour fluctuates due to astronomic tides and meteorological forcings, and can be assumed to be very close to the Albany Tide Gauge located in Princess Royal Harbour (17). The extremes water level analysis completed using the available DoT tide gauge data at Albany from 1987 to 2019 (refer Section 4.2.1.2) suggest a 100yr ARI peak steady water level of 1.1m AHD.

Extrapolation of a 500yrARI event from the 30-year Albany tide gauge data set has a very high level of uncertainty, but is assumed to be in the order of 1.2m AHD. For context, the 2017 Royal Haskoning DHV Albany Coastal Vulnerability Study and Hazard Mapping (18) recommends a 500yr ARI peak steady water level of 1.15m AHD (with no run up or set up).

At the shoreline, the peak steady water level during storm conditions is also expected to include a component of elevated water levels due to the effects of wave set-up. Wave set-up on ocean exposed beaches is typically between 10 to 15% off the offshore wave height (18). The 100-year Hs (as defined using wave hindcasting) is 0.73m, so this would be expected to result in wave set-up in the order of 0.07m to 0.11m. An allowance of 0.1m has been included for wave set-up.

The peak steady water level (PSWL) plus wave run-up based on the storm event for storm surge inundation for different planning timeframes is summarised in Table 4.5.

Table 4.5 Peak Steady Water Level for Planning Timeframes

Component	Planning timeframe			
	2020	2030 (10 year)	2070 (50 year)	2120 (100 year)
500yr ARI peak water level (no wave setup, mAHD)	1.2	1.2	1.2	1.2
Allowance for wave set-up	0.1	0.1	0.1	0.1
Allowance for Sea Level Rise (SLR) (19)	0.0	0.1	0.4	0.9
Peak Steady Water Level (PSWL)	1.3	1.4	1.8	2.2

The **2.2mAHD contour** has been adopted for allowance for Storm Surge Inundation for the 100 year planning timeframe. This is shown in Figure 4.12, based on survey provide by Harley Dykstra. The allowance for storm inundation is generally seaward of the allowance for coastal processes, with the exception of the northern extent along the drain.



Figure 4.12 Allowance for Inundation and sea level rise (2.2mAHD) (s4), based on survey provided by Harley Dykstra (July 2006)



5. Coastal Hazard Mitigation and Adaptation Planning

Challenges of managing risks arising from coastal hazards include long timeframes associated with changing coastal environments and uncertainties that arise from complex climatic and coastal systems (20). The State Coastal Planning Policy aims to maintain future flexibility for risk management options and ensure coastal communities are resilient to the uncertainties of planning in coastal environments. This rationale has formed the basis of the “Avoid – Planned or Managed Retreat – Accommodate – Protect” adaptation hierarchy.

The proposed subdivision is an Infill Development in the established urban area of Lower King in the City of Albany, between adjacent residential developments. The mitigation of coastal hazards to the proposed subdivision requires consideration of both adaptation measures than can be undertaken by the developer within the lot boundary (e.g. filling to mitigate storm surge inundation, notice on titles) and other measures within the existing foreshore and road reserves managed by the City of Albany.

The foreshore adjacent to the development includes three distinct coastal sections:

- The *northern foreshore* (150m) which has a more natural appearance with more substantial vegetation and includes low-lying wetlands and a number of drain outlets.
- The *central foreshore* (110m) which includes a narrow beach and foreshore to the north backed by a rock revetment protecting public facilities and the foreshore road (The Esplanade).
- The *southern foreshore* (160m) which comprised a relatively wide sandy beach backed by a rock revetment protecting public grasses foreshore areas and the carpark and the boat launching facility (boat ramp, public jetty, large historic private jetty) for the Lower King Boating Facility.

5.1. Coastal Hazards

Coastal hazards to the proposed subdivision and the adjacent foreshore have been identified in Section 4 and are summarised as follows:

- Coastal inundation to 2.2mAHD over the 100year planning timeframe, associated with predicted sea level rise and extreme storm surge events.
- An allowance for coastal processes (coastal erosion) of 113m – 123m over the 100 year planning timeframe, that identify lots where future coastal hazards should be identified to prospective purchasers.
- Allowances for coastal processes over the 10 year (12m-13m) and 50 year (53m-58m) to guide risk based adaptation planning for assets in the City of Albany’s coastal reserve, maintenance of the public foreshore reserve and the protection of future residential lots from coastal erosion.



Figure 5.1 Southern Foreshore including view south to Bayonet Head (left), Lower King boating facility parking (central) and rock revetment (right).



Figure 5.2 Central Foreshore including boat ramp and jetty (left), rock revetment protecting path, toilet block, large tree and road (central) and buried rock revetment along road to north (right)



Figure 5.3 Northern Foreshore including sandy beach (left), wetlands (central) and vegetated foreshore woodland to north (right).



5.2. Risk Assessment

A risk assessment has been undertaken for the site and adjacent foreshore based on procedures outlined in the guidelines for Coastal Hazard Risk Management and Adaptation Planning. This is based on an assessment of the type and value of assets along the foreshore and their relative exposure to coastal hazards, using the risk matrix shown in Figure 5.5. This approach has been applied to CHRMAPs undertaken at a regional scale for the Shire of Augusta Margaret River and the Shire of Denmark. It is noted that regional scale CHRMAPs in the City of Albany are limited to the Middleton Beach foreshore.

The assessment considers the variable character and behaviour of the Southern, Central and Northern Foreshores adjacent to the development due to the variable character. The following is noted:

- The highest value assets in the foreshore reserve are in the Southern Foreshore and are associated with the Lower King Boating Facility, managed by the City of Albany. Whilst these assets are close to the shoreline, they are protected by a rock revetment or designed for marine exposure (boat ramp and jetty).
- The foreshore road (The Esplanade) has a higher exposure along the Central and Northern Foreshore. Whilst the road has very high strategic importance in terms of access to the foreshore and residential lots, the relatively cost of the asset is low. There is a rock revetment that protects the road along the Central foreshore however this does not extend to the Northern foreshore.
- The existing residential lots are the highest value asset category adjacent to the foreshore. Existing lots are further setback from the shoreline and have a low exposure to coastal processes, however new lots will be closer to the shoreline and have a medium exposure to coastal processes in the longer term.



Figure 5.4 Lower King Boating Facility



Lower King - Asset Cost

ID	Coastal Type	Coastal Node	Length of Coastal Node (m)	Description	1. Coastal Stairs and Platforms	2. Carparks	3. Buildings (large structures, toilets, changerooms etc)	4. Roads & Adjacent Paths	5. Coastal Walkways	6. Coastal Access Paths	7. Public Marine Structures (Boat Ramps / Jetties)	8. Private Residential Property	9. Landscaping and Playgrounds and Shelters	Subtotal
LK_1	Tidal reaches of inland waters	Southern Foreshore	160	Sandy beach backed by a rock revetment protecting public grasses foreshore areas and the carpark and the Lower King Boating Facility (boat ramp, public jetty, large historic private jetty).		\$ 351,900		\$ 85,000			\$ 500,000	\$ 1,680,000	\$ 25,000	\$ 2,636,900
LK_2	Tidal reaches of inland waters	Central Foreshore	110	Narrow beach and foreshore backed by a rock revetment protecting public facilities and the foreshore road (The Esplanade).			\$ 25,000	\$ 55,000				\$ 1,000,000		\$ 1,080,000
LK_3	Tidal reaches of inland waters	Northern Foreshore	150	Sandy beach and foreshore with more substantial vegetation and includes low-lying wetlands and a number of drain outlets.				\$ 75,000				\$ 800,000		\$ 875,000
			420											\$ 4,591,900

High Asset Cost (>\$500,000)
Moderate Asset Cost
Low Asset Cost (<=\$100,000)

Lower King - Asset Exposure to Coastal Processes

ID	Coastal Type	Coastal Node	Length of Coastal Node (m)	Description	1. Coastal Stairs and Platforms	2. Carparks	3. Buildings (large structures, toilets, changerooms etc)	4. Roads & Adjacent Paths	5. Coastal Walkways	6. Coastal Access Paths	7. Public Marine Structures (Boat Ramps / Jetties)	8. Private Residential Property	9. Landscaping and Playgrounds and Shelters
LK_1	Tidal reaches of inland waters	Southern Foreshore	160	Sandy beach backed by a rock revetment protecting public grasses foreshore areas and the carpark and the Lower King Boating Facility (boat ramp, public jetty, large historic private jetty).		M		M			H	M	H
LK_2	Tidal reaches of inland waters	Central Foreshore	110	Narrow beach and foreshore backed by a rock revetment protecting public facilities and the foreshore road (The Esplanade).			H	H				M	
LK_3	Tidal reaches of inland waters	Northern Foreshore	150	Sandy beach and foreshore with more substantial vegetation and includes low-lying wetlands and a number of drain outlets.				H				M	

High Coastal Exposure (within 10 year area)
Moderate Coastal Exposure (10-50 year area)
Low Coastal Exposure (50-100 year area)

Lower King - Asset Risk

ID	Coastal Type	Coastal Node	Length of Coastal Node (m)	Description	1. Coastal Stairs and Platforms	2. Carparks	3. Buildings (large structures, toilets, changerooms etc)	4. Roads & Adjacent Paths	5. Coastal Walkways	6. Coastal Access Paths	7. Public Marine Structures (Boat Ramps / Jetties)	8. Private Residential Property	9. Landscaping and Playgrounds and Shelters
LK_1	Tidal reaches of inland waters	Southern Foreshore	160	Sandy beach backed by a rock revetment protecting public grasses foreshore areas and the carpark and the Lower King Boating Facility (boat ramp, public jetty, large historic private jetty).		M		L			H	H	M
LK_2	Tidal reaches of inland waters	Central Foreshore	110	Narrow beach and foreshore backed by a rock revetment protecting public facilities and the foreshore road (The Esplanade).			M	M				H	
LK_3	Tidal reaches of inland waters	Northern Foreshore	150	Sandy beach and foreshore with more substantial vegetation and includes low-lying wetlands and a number of drain outlets.				M				H	

High Asset Risk
Moderate Asset Risk
Low Asset Risk

		Exposure to Coastal Processes (Likelihood)		
		High (within 10 yr. area)	Medium (10-50yr area)	Low (50-100yr area)
Asset Cost (Consequence)	High	Very High	High	Med
	Medium	High	Med	Low
	Low	Med	Low	Low

Figure 5.5 Lower King – Coastal Hazard Risk Assessment



5.3. Coastal Adaptation

5.3.1. Coastal Inundation

The primary coastal adaptation measure for the proposed subdivision is the adoption of minimum finished floor levels (FFLs) above the level of the future risk of coastal inundation (2.2mAHD). In this context:

- Five lots within Lot 504 would require fill to mitigate risk of coastal inundation.
- There are 6 lots within Lot 503 whereby either the building envelope would need to be located on the 'least vulnerable portion of the lot' (i.e. towards the back of the lot) or require localised fill.
- Remaining lots are currently above 2.2mAHD.

However, the City of Albany have a policy for Development in Flood Prone Areas to ensure development adjacent to water bodies and land prone to flooding is appropriately located and positioned at an established finished floor level to reduce the potential for property damage. In the case of land adjacent to Oyster Harbour the policy notes 'all habitable buildings to be constructed with a minimum finished floor level height as 3.02mAHD. This is effectively a 0.8m freeboard allowance above the allowance for storm surge inundation in SPP2.6.

5.3.2. Coastal Erosion

Mitigation of the risk of coastal erosion to the proposed lots requires, and assumes, ongoing management of the foreshore reserve by the City of Albany. This is likely to require a range of adaptation approaches including accommodation (marine structures), protection (maintenance of coastal revetments and foreshore reserves) and potentially managed retreat (relocation of low value assets).

The management of the foreshore would require consideration of the following:

Southern Foreshore

- Maintenance of the existing 150m rock revetment over the planning timeframe to protect the parking facility for the boating facility.
- Maintenance of marine assets (boat ramp/jetty) and public facilities.
- Monitoring of the adjacent sandy beach.

Central Foreshore

- Maintenance of the existing 110m rock revetment over the planning timeframe to project the Esplanade. Future upgrade of this structure may be required, noting that this approach does not preclude the future relocation (managed retreat) of The Esplanade (within the existing road reserve) at the 'pinchpoint' if required in the future based on agreed management triggers (refer Section 5.3).

Northern Foreshore

- Foreshore vegetation and habitat survey to provide a baseline for environmental monitoring.
- Water sensitive Urban Design to mitigate the impact of stormwater drainage from the proposed development on Oyster Harbour (water quality / sedimentation).
- Foreshore vegetation and beach monitoring.
- Foreshore management of the 'unprotected' coast (northern 150m of site). This may include weed management, drain management, foreshore sand nourishment and monitoring.

The State Coastal Planning Policy provides guidance on the coastal foreshore reserve (Section 5.9 SPP2.6 (8)).

The proponent should consult further with the City of Albany, who manage the foreshore reserve, regarding foreshore management. Foreshore management should maintain the recreational amenity and environmental values of the public foreshore reserve and protect local government assets. This will in turn mitigate the potential longer term impact of coastal hazards on the development.



Figure 5.6 Lower King Foreshore, to the north of the proposed Lots showing established vegetation



6. Recommendations

Seashore Engineering have completed an assessment of Coastal Hazards and Risk Management and Adaptation Planning for the proposed subdivision of Lots 503-506 Windermere and Cumberland Roads in Lower King, Albany.

The site is located between existing residential lots to the south (Elizabeth Street) and north (The Esplanade/Shirley Street) and is assumed to be Infill Development.

Allowances for coastal processes have been assessed over the 10, 50 and 100 year planning timeframes for the site. Coastal inundation has been assessed over the 100-year planning period, with consideration of extreme events and future sea level rise as per SPP2.6. However, existing City of Albany policies for development in flood prone areas require further consideration.

Recommendations are provided for minimum lot levels to mitigate the risk of future coastal inundation, and to inform prospective purchases of longer term coastal hazards.

The mitigation of risks associated with coastal processes requires consideration of future Foreshore Management for the adjacent foreshore and road reserves managed by the City of Albany.

The proponent should consult further with the City of Albany, who manage the foreshore reserve, regarding foreshore management. Foreshore management should maintain the recreational amenity and environmental values of the public foreshore reserve and protect local government assets. This would in turn mitigate the potential longer term impact of coastal hazards on the development.



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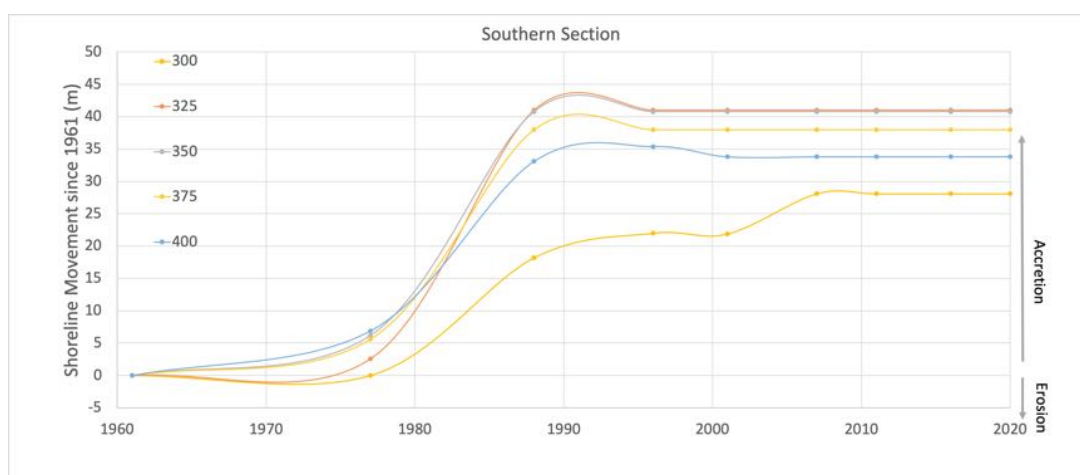
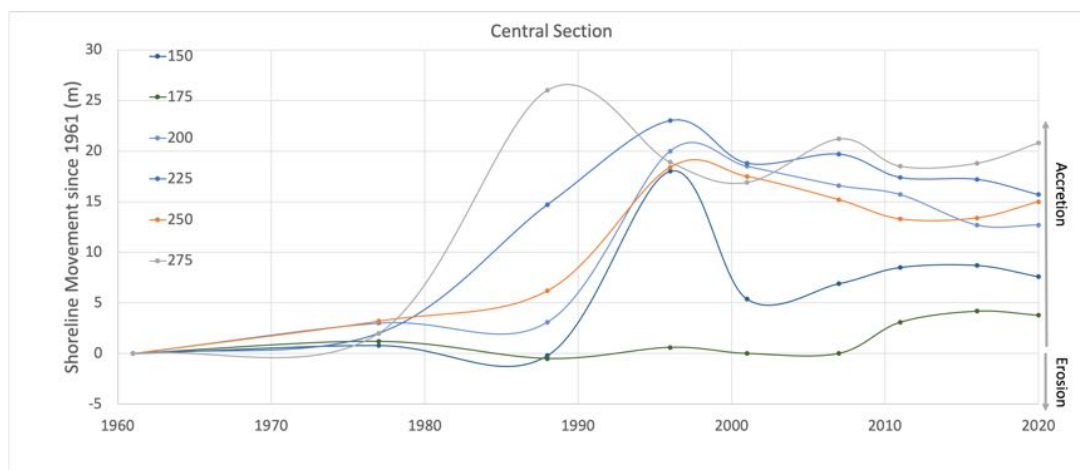
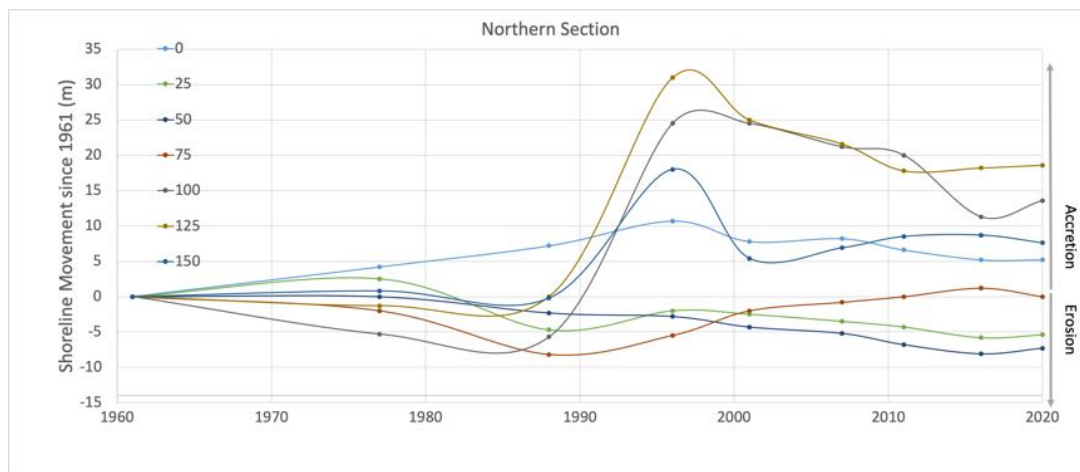
Attachment 1: SBEACH Modelling Storm

100 Year ARI Storm Event Time Series.

Hour	Hourly wind speed measured in km/h	Wave (m Hs)	Peak Period (s)	Water Level (m AHD)
0.00	26.51	0.24	1.74	1.1
3.00	11.46	0.09	1.29	1.1
6.00	13.30	0.11	1.36	1.1
9.00	9.62	0.08	1.21	1.1
12.00	70.00	0.73	2.54	1.1
15.00	51.17	0.50	2.25	1.1
18.00	53.01	0.52	2.28	1.1
21.00	54.85	0.54	2.31	1.1
24.00	49.33	0.48	2.22	1.1



Attachment 2: Coastline Movement Time series





Attachment 3: Site Inspection Report



SITE INSPECTION REPORT No.01	SITE - Lots 503 - 506 Windermere and Cumberland Roads, Lower King	Date: 27/11/2020 Time: 08:00 – 13:00
Client	Harley Dysktra	
Inspection by:	Harrison Davis (Seashore Engineering)	
Synopsis	Seashore Engineering inspected the site on 27th November 2020. The western shoreline of Oyster Harbour adjacent to site is relatively low lying with a laterite rock revetment, local drains, nearshore flats, sandy beach, foredune, foredune swale and estuarine vegetation. The inspection will assist in the assessment of coastal hazards (erosion/inundation) for the proposed development of the site.	
Contract Personnel	Lindsay Bergsma	
Weather	Overcast conditions, some light rain. Light Easterly winds. Tides rising to 0.7mCD at 11:00, before falling again to 0.5mCD at ~13:00.	
Observations - Coastal Geomorphology /Processes	Site Overview • The site is on the western shoreline of Oyster Harbour (adjacent to the Lower King Boating Facility). • There is ~420m of east facing coastal frontage of the site, as measured from Elizabeth Street on the southern end to a drain adjacent to Lot 161 on the Northern end. • The proposed lots appear to be on relatively flat, mostly cleared land, with no visible rock observed on the Lots. • The Esplanade Road is located seaward of all proposed Lots. • There are multiple drains adjacent to the site including one located at the seaward end of Elizabeth Street, and on the northern boundary of proposed Lot 504. Coastal Morphology • Oyster Harbour is a coastal estuary with a southern rock controlled entrance to King George Sound at Emu Point. • Oyster harbour has two major freshwater flow inputs; The King and Kalgan Rivers. • The site is highly sheltered from the offshore wave conditions that approach the exposed sections of Albany's coastline. The site has exposure to fetch limited wind generated local waves from the north east, extending around to the south east. • A rock revetment constructed with laterite/ironstone provides some protection to wind induced waves to The Esplanade and the Lower King Boat Ramp carpark for approximately 270m of the shoreline at the site. • There are sandy nearshore flats for some distance offshore, with the exception of deeper water associated with a dredged basin at the Lower King Boat ramp.	



SITE INSPECTION REPORT No.01	SITE - Lots 503 - 506 Windermere and Cumberland Roads, Lower King	Date: 27/11/2020 Time: 08:00 – 13:00
	• The shoreline is generally a sandy beach with medium/fine grain size but a relatively high shell content (PSD samples were collected to confirm grain size diameter for SBEACH modelling). • The southern end of the beach transitions into foreshore vegetation towards Simmons Street. • The northern end of the beach transitions into dense and woody foreshore vegetation that continues north of the site. • With the exception of the laterite rock revetment, there is generally a low and relatively flat beach and foredune. Wrack was evident on the back face of the low foredune, with wash over expected to occur during high tidal levels with onshore winds. • A low elevation foredune swale with rush or beach grass species was evident behind the foredune in places and is expected to be subject to inundation during higher tides. Water was evident above the surface of the foredune swale in places.	
Design Considerations	• The influence of the drains on providing a flooding pathway requires consideration in determining the impact of high water levels on the site and extent of fill that may be required to achieve required FFLs. (S4). • The laterite rock revetment will influence the allowance for acute storm erosion in sections (S1). However, the rock revetment does not cover the extent of the site and the present design, condition and future maintenance of the structure, presumably constructed by the City of Albany, requires further consideration. • The influence of the road and carpark on the acute storm erosion (S1) and future shoreline change (S2) requires consideration. • The proximity of the site to the shoreline (~30m) likely to require subdivision to be determined as Infill to meet requirements of SPP2.6.	
General Notes: Other investigations on site included the following: • Beach width and slope measurements. • Drain and stormwater outlet locations and dimensions (for inundation) • Depth of water on shallow flats to 60m out from the water line (survey gap for modelling) • Collection of sediment samples to be sent for PSD testing, for modelling. This data will be used where required in the following coastal hazard risk management report.		

**SITE INSPECTION REPORT
No.01**

**SITE - Lots 503 - 506 Windermere and
Cumberland Roads, Lower King**

Date: 27/11/2020
Time: 08:00 – 13:00



Southern extent of site, approximately Aligned with Elizabeth Street, looking North towards Lower King Boat Ramp



High tide mark is visible through deposited seagrass wrack (southern end of site).

**SITE INSPECTION REPORT
No.01**

**SITE - Lots 503 - 506 Windermere and
Cumberland Roads, Lower King**

Date: 27/11/2020
Time: 08:00 – 13:00



Open drain at lower end of Elizabeth Street



Southern termination of laterite rock revetment.

**SITE INSPECTION REPORT
No.01**

**SITE - Lots 503 - 506 Windermere and
Cumberland Roads, Lower King**

Date: 27/11/2020
Time: 08:00 – 13:00



Laterite rock revetment, section to the south of the Lower King Boat Ramp. Design basis and future maintenance by City of Albany require consideration in the extent this structure will provide long term erosion protection to the site.



Laterite rock revetment, section to the north of the Lower King Boat Ramp



The rock revetment continues to the north of the boat ramp for some 150m, approximately 60m of which is visible, low slope, and appears in moderate condition (left), and the remaining 90m of which appears in poorer quality, is partially buried or under plants, and is steeper (right).

**SITE INSPECTION REPORT
No.01**

**SITE - Lots 503 - 506 Windermere and
Cumberland Roads, Lower King**

Date: 27/11/2020
Time: 08:00 – 13:00



Between the Lower King Boat Ramp and Windermere Road, on Mid to Northern end of site, 4m beach backed by small foredune and vegetation.



Aligned with Windermere Road, on Northern end of site: a typical short, relatively flat beach backed by a small foredune, beach rush species and a foredune swale with water evident behind the foredune. This is approximately aligned where the rock revetment terminates to the north.

**SITE INSPECTION REPORT
No.01**

**SITE - Lots 503 - 506 Windermere and
Cumberland Roads, Lower King**

Date: 27/11/2020
Time: 08:00 – 13:00



Drain on northern end of Lot 504 (looking west towards proposed Lots).



Landward of The Esplanade, positioned approximately on proposed Lot 102. Shell evident in fill.

**SITE INSPECTION REPORT
No.01**

**SITE - Lots 503 - 506 Windermere and
Cumberland Roads, Lower King**

Date: 27/11/2020
Time: 08:00 – 13:00



Landward of The Esplanade, positioned approximately on proposed Lot 96.

Seashore Engineering



Seashore Engineering Pty Ltd
www.seaeng.com.au
9757 9992 (SW Office) email: admin@seaeng.com.au
ACN: 69 155 753 361

Bushfire Management Plan Coversheet

This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

Bushfire Management Plan and Site Details

Site Address / Plan Reference: Lot 504 (No. 41) The Esplanade and Lot 503 (No. 47) Cumberland Road		
Suburb: Lower King	State: WA	P/code: 6330
Local government area: City of Albany		
Description of the planning proposal: Scheme amendment (rezoning to allow for commercial and short stay uses)		
BMP Plan / Reference Number: MSC0710	Version: Final v1	Date of Issue: 17/12/2024
Client / Business Name: Anchorage Park Pty Ltd		

Reason for referral to DFES	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	☐	☒
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the BPC elements)?	☐	☒
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	☐	☒
Strategic planning proposal (including rezoning applications)	☒	☐
Minor development (in BAL-40 or BAL-FZ)	☐	☒
High risk land-use	☐	☒
Vulnerable land-use	☐	☒

If the development is a special development type as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

This proposal is for a scheme amendment to re-zone the land to allow for commercial and short stay uses

Note: The decision maker (e.g. local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

BPAD Accredited Practitioner Details and Declaration

Name Jason Benson	Accreditation Level Level 2	Accreditation No. BPAD-37893	Accreditation Expiry 01/08/2025
Company Bio Diverse Solutions		Contact No. 9842 1575	

I declare that the information provided within this bushfire management plan is to the best of my knowledge true and correct

Signature of Practitioner



Date 17/12/2024

BHL Assessment and Bushfire Management Plan



Lot 504 (No. 41) The Esplanade and
Lot 503 (No. 47) Cumberland Road
Lower King, WA 6330
Final v1



Site Details					
Address:	Lot 504 (No. 41) The Esplanade and Lot 503 (No. 47) Cumberland Road				
Suburb:	Lower King	State:	W.A.	Postcode	6330
Local Government Area:	City of Albany				
Description of Building Works:	Scheme Amendment				
Stage of WAPC Planning	Strategic Level Proposal				

BMP Plan Details			
Report / Job Number:	MSC0710	Report Version:	Final v1
Assessment Date:	13 November 2024	Report Date:	17 December 2024
BPAD Practitioner	Michelle Gray (Level 1)	Accreditation No.	BPAD-59508
BPAD Practitioner	Jason Benson (Level 2)	Accreditation No.	BPAD-37893



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Appendix B: WAPC Asset Protection Zone (APZ) Standards, B.2: Siting and Design

Appendix C: City of Albany Fire Management Notice (CoA, 2024/25)

1. Introduction

Anchorage Park commissioned Bio Diverse Solutions (Bushfire Consultants) on behalf of the landowner to prepare a Bushfire Management Plan (BMP) for Lot 504 (No. 41) The Esplanade and Lot 503 (No. 47) Cumberland Road, Lower King. This BMP aims to support a scheme amendment within the City of Albany.

The application seeks to formally amend the City of Albany Local Planning Scheme No. 2 (Scheme) as it applies to Lot 504 (No. 41) The Esplanade and Lot 503 (No. 47) Cumberland Road, Lower King, herein referred to as the “Subject Site”. The rezoning is for the purpose of establishing a tourism precinct on the subject site and for removing the additional uses of hotel, motel, and café/restaurant from Lot 504, as well as changing a portion of Lot 504 from ‘Residential’ to ‘Tourism’.

1.1 Location

The subject site consists of Lot 504 (9,242m²) and Lot 503 (11,574m²), totalling 20,816m². It is currently zoned ‘Residential’ under the City of Albany Local Planning Scheme No. 2 and is located in the municipality of Lower King.

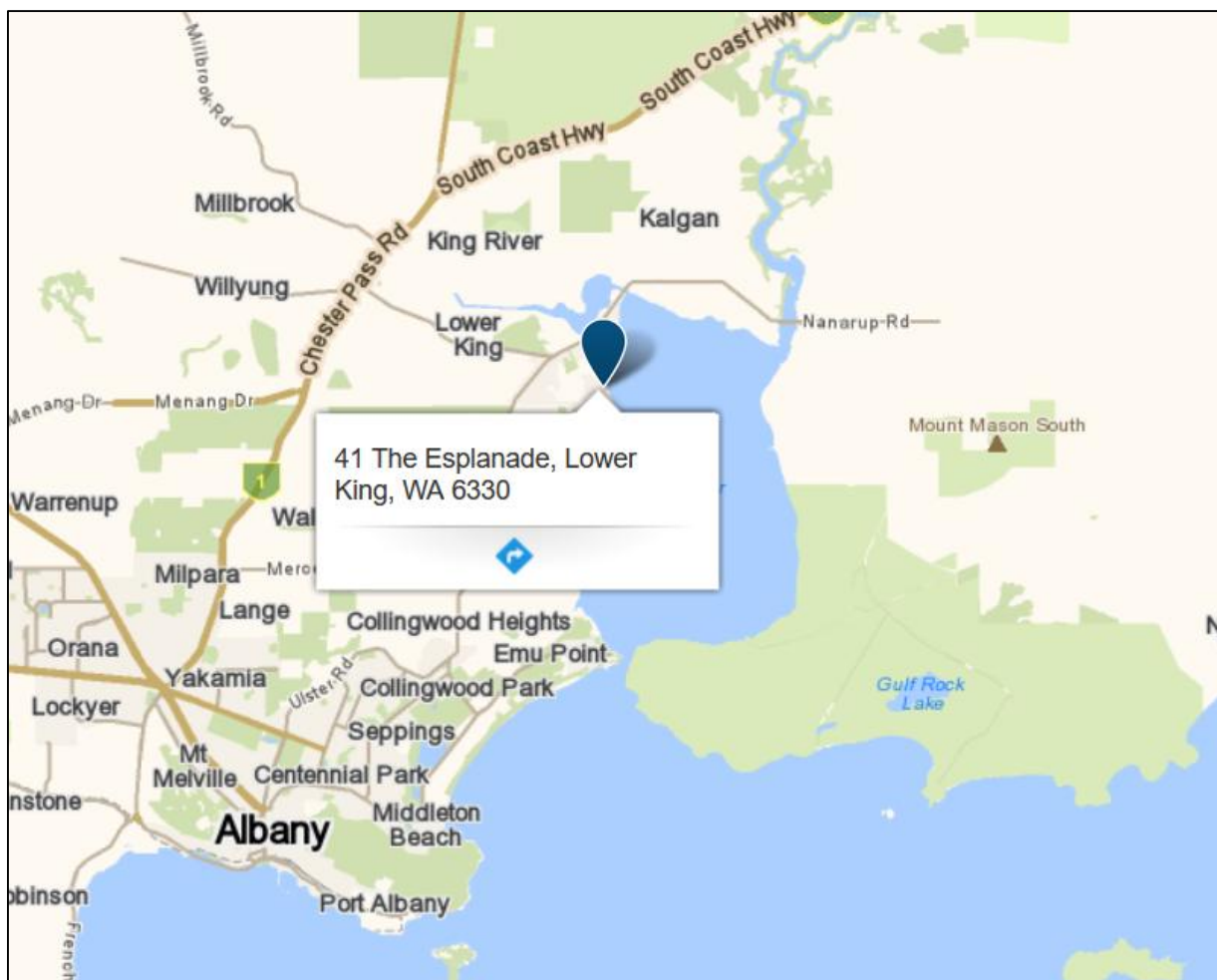


Figure 1: Location Mapping of the subject site

1.2 Development Proposal

The development includes Lot 504 and Lot 503, which are currently zoned ‘Residential’, with the northern portion of Lot 504 having A4 Additional Use provisions permitting hotel and motel land uses. The plan is to modify the Scheme map by removing the A4 Additional Use from Lot 504, rezoning Lot 503 and a portion of Lot 504 from ‘Residential’ to ‘Tourism’, and adding a new A28 Additional Use to a portion of Lot 503. There is currently no concept plan or site plan available for this strategic proposal. Roads, lots, and services will be constructed in future stages. Future planning applications will be required to meet the requirements of State Planning Policy 3.7 Bushfire (WAPC, 2024a) and the associated Planning for Bushfire Guidelines (WAPC, 2024b).

The publicly released Map of Bushfire Prone Areas (OBRM, 2024) indicates that the subject site is partially located within a Bushfire Prone Area (within 100m of more than 1ha of bushfire-prone vegetation). Consequently, it is subject to a planning assessment of bushfire risks. The Map of Bushfire Prone Areas (OBRM, 2024) is shown in Figure 3.



Figure 2: Map of Bushfire Prone Areas and relevance to subject site (OBRM, 2024)

Note: This site is partially located within a bushfire prone area. Future planning proposals that are not located within a bushfire prone area will not be subject to the application of State Planning Policy 3.7 Bushfire (WAPC, 2024a) and the associated Planning for Bushfire Guidelines (WAPC, 2024b).

1.3 Statutory Framework

This document and the recommendations contained within are aligned to the following policy and guidelines:

- *Planning and Development Act 2005;*
- *Planning and Development (Local Planning Scheme) Regulations 2015;*
- *State Planning Policy (SPP) 3.7 Bushfire (WAPC, 2024a);*
- *Planning for Bushfire Guidelines (WAPC, 2024b);*
- *Building Act 2011;*
- *Building Regulations 2012;*
- *Building Code of Australia (National Construction Code) (NCC, n.d.);*
- *Fire and Emergency Services Act 1998.*
- *AS3959-2018 "Construction of Buildings in Bushfire Prone Areas" current and endorsed standards;*
- *Bushfires Act 1954; and*
- *CoA Fire Management Notice (CoA, 2024/25).*

2 Environmental Considerations

2.1 Native Vegetation – Modification and Clearing

This BMP assumes that all proposed future development can maintain an Asset Protection Zone (APZ) in a low-fuel state, as per the WAPC Asset Protection Zone (APZ) Standards, B.2: Siting and Design (refer to Appendix B). Internal vegetation coverage is minimal and mainly contains introduced weed species in the form of grassland, having been previously cleared. The low-fuel areas are to be managed in perpetuity and implemented by the developer during future construction stages. Strategies to manage low-fuel areas for the developer and future landowners are outlined in Section 5.2 of this report.

The removal of native vegetation is not required as part of this proposal.

2.2 Review of the Environmental Data Sets (Landgate SLIP)

A review of the environmental data sets (Landgate SLIP) as identified in the Western Australian Planning Commission (WAPC) (2024c). *Bushfire Management Plan Manual*, does not identify that any regulated (restricted) vegetation will be affected by the proposal, see Table 1 Environment Dataset Review.

Table 1: Environmental Dataset Review

Dataset	Impact on Proposal	Comment
Conservation category wetlands and buffer	Potentially	Oyster Harbour is listed in the WMS contaminated site layer for pollution from agriculture, sedimentation, introduced marine pests, and urban development.
Wetlands and Waterways	Potentially	The subject site is adjacent to Oyster Harbour and is within the Albany Waterways Management Area.
Landscape Hazards	Yes	Soil Landscape Risk - Wind and water erosion risk area covers the subject site area and surrounds. Soil Landscape Quality - Surface acidity and salinity risk areas cover the subject site area and surrounds.
RAMSAR wetlands	No	
Threatened and priority flora	No	
Threatened Ecological Communities	No	
Bush Forever areas 2000	No	
Clearing regulations –Environmentally Sensitive Areas	No	
Swan Bioplan Regionally Significant Natural Areas 2010	No	
Conservation Covenants Western Australia	Unaware	

Note: Relevant checks have been completed and the proposal does not currently impact on and of the above sites. However, the management strategies contained in this BMP, assume that all environmental approvals will be achieved or clearing permit exemptions will be applied.

2.3 Revegetation or Landscaping

There is no revegetation/landscaping known as part of this proposal or any future landscaping. An accredited Level 2 Bushfire Practitioner is to review and approve any future planting in the subdivision to ascertain if the actions increase the bushfire risk in the development.

3 Bushfire Assessment Results

The bushfire assessment for this site has followed the methodology as defined by AS 3959 Bushfire Attack Level (BAL) Method 1 Assessment and WAPC Planning for Bushfire Guidelines (WAPC, 2024b).

3.1 Assessment Inputs

Bushfire Assessment inputs for the site has been calculated using the Method 1 BAL Assessment procedure as outlined in AS3959-2018. This incorporates the following factors:

- WA adopted the Fire Danger Index (FDI), being FDI 80;
- Vegetation Classes;
- Effective Slope under classified vegetation; and
- Distance between the proposed development site and classified vegetation.

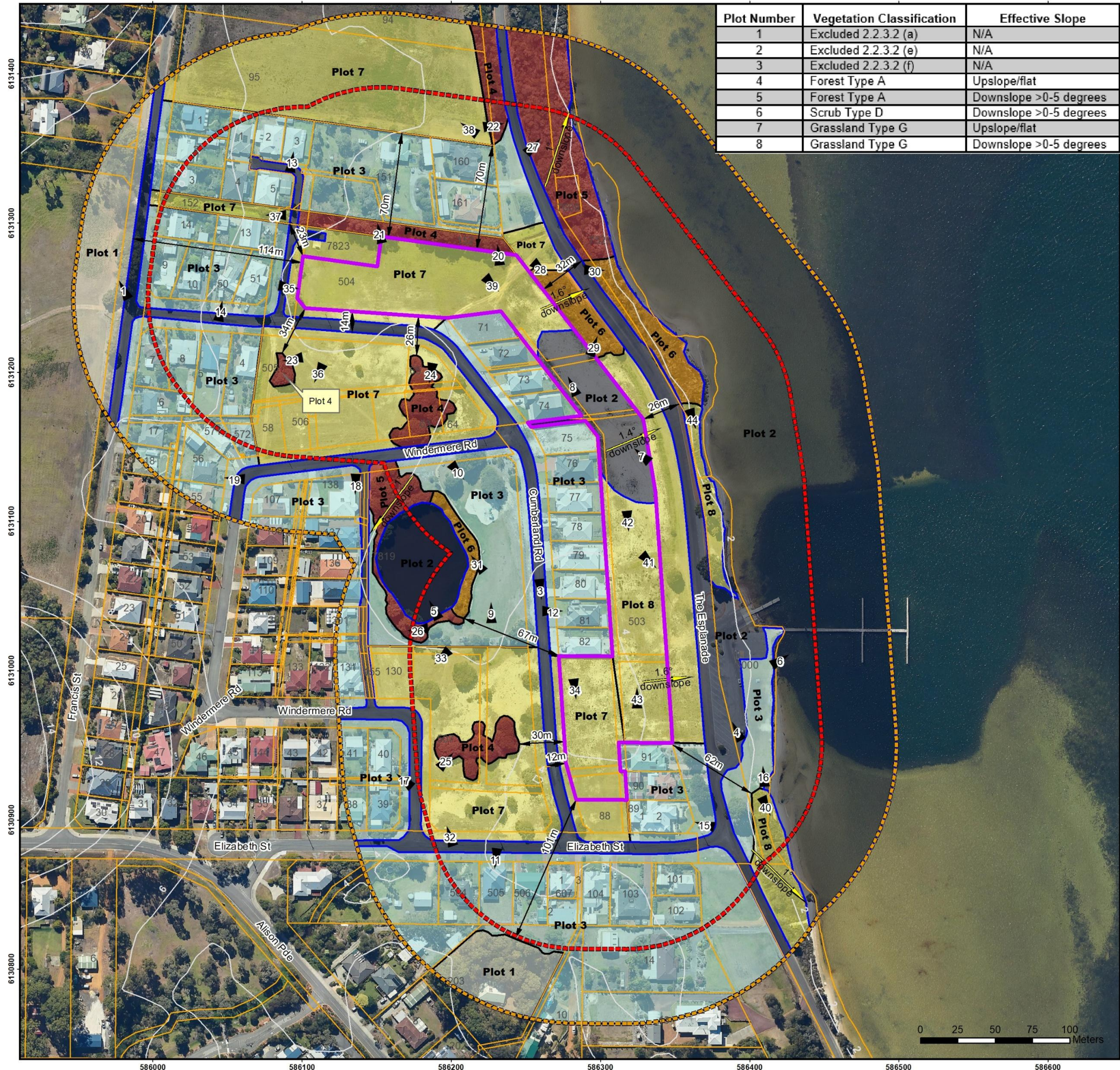
3.1.1 Vegetation Classification

Site assessment occurred on the 13th of November 2024 by a Bushfire Practitioner from Bio Diverse Solutions, Michelle Gray (BPAD-59508). All vegetation within 150m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2018. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified on the following pages and shown on the Vegetation Classification Map on the following page.

A summary of the Plot data assessed as per Clause 2.2.3 of AS 3959-2018 is provided below in Table 2, detailed plot data is provided in Appendix A.

Table 2: Vegetation Classification Table (in accordance with AS 3959-2018) of the subject site

Plot Number	Vegetation Type	Effective Slope
1	Excluded 2.2.3.2 (a)	N/A
2	Excluded 2.2.3.2 (e)	N/A
3	Excluded 2.2.3.2 (f)	N/A
4	Forest Type A	Upslope/flat
5	Forest Type A	Downslope >0-5 degrees
6	Scrub Type D	Downslope >0-5 degrees
7	Grassland Type G	Upslope/flat
8	Grassland Type G	Downslope >0-5 degrees



Plot Number	Vegetation Classification	Effective Slope
1	Excluded 2.2.3.2 (a)	N/A
2	Excluded 2.2.3.2 (e)	N/A
3	Excluded 2.2.3.2 (f)	N/A
4	Forest Type A	Upslope/flat
5	Forest Type A	Downslope >0-5 degrees
6	Scrub Type D	Downslope >0-5 degrees
7	Grassland Type G	Upslope/flat
8	Grassland Type G	Downslope >0-5 degrees

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Perth Office: Level 18, 191 St Georges Terrace Perth, WA 6850 (08) 9842 1575



Overview Map Scale 1:100,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastral
- 2m Contours
- Photo Point
- Separation Distance
- Slopes Degrees
- Vegetation Classification Border Exclusion (e)
- Vegetation Classification Border

Classified Vegetation

- A Forest
- D Scrub
- G Grassland

Excluded Vegetation

- Clause 2.2.3.2 (a), (b), (c) and (d)
- Clause 2.2.3.2 (e) non-vegetated
- Clause 2.2.3.2 (f) low threat vegetation

Scale 1:2,500 @ A3
GDA MGA 2020 Zone 50

Data Sources
Overview Map: World Topographic Map Service, ESRI 2012
Cadastral, Roads and Aerial Imagery Data © 2024 Western Australian Land Information Authority
"Location information data licensed from Western Australian Land Information Authority (WALIA) trading as Landgate. Copyright in the location information data remains with WALIA. WALIA does not warrant the accuracy or completeness of the location information data or its suitability for any particular purpose."

CLIENT Anchorage Park Pty Ltd (c/- Planning Solutions)
Lot 504 (No. 41) The Esplanade and
Lot 503 (No. 47) Cumberland Road
Lower King WA 6330

Figure 3: Vegetation Classification

Prepared by	Accreditation Level	Accreditation Number
MKG	Level 1	BPAD-59508
QA Check	Drawn by	Status
JRB	WAB	FINAL
File	Date	Date (Aerial Photo)
MSC0710	16/12/2024	April 2024

3.2 Assessment Outputs

The Bushfire Hazard Level (BHL) process provides an indication of the likely impact of a bushfire event as it interacts with bushfire hazards within and adjacent to the site. The BHL measures the potential intensity of a bushfire and the expected level of bushfire attack on a site by categorising the hazard (WAPC, 2024b). The allocation of the bushfire hazard category is determined as per Table 4 of the Planning for Bushfire Guidelines (WAPC, 2024b), as shown in Figure 4.

Table 4: Bushfires Hazard Level (BHL) and vegetation classification (as per AS 3959)

HAZARD LEVEL	CLASSIFICATION/CHARACTERISTICS
Extreme	- Class A: Forest - Class B: Woodland - Class D: Scrub - Any classified vegetation with a greater than 10-degree slope
Moderate	- Class C: Shrubland - Class E: Mallee/Mulga - Class G: Grassland, including sown pasture and crops - Vegetation that has a low hazard level, but is within 100 metres of vegetation classified as a moderate or extreme hazard, is to adopt a moderate hazard level
Low	- Low threat vegetation, which may include mangroves and other saline wetlands, areas of maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks. - Managed grassland in a minimal fuel condition, meaning there is insufficient fuel available to significantly increase the severity of the bushfire attack, for example, short-cropped grass to a nominal height of 100 millimetres. - Non-vegetated areas, waterways, exposed beaches, roads, footpaths, buildings or rock outcrops.

Figure 4: BHL Assessment Categories by Vegetation Type (WAPC, 2024b)

3.3 Potential Bushfire Impacts - BHL allocation

The potential bushfire impact on the site / proposed development from each of the identified vegetation plots is presented in Table 3 and shown on the BHL mapping (Figure 5).

Table 3: Potential Bushfire impacts to the Site (BHL)

Plot Number	Vegetation Type (Table 2.3)	Effective Slope (Table 2.4.3)	BHL Allocation
1	Excluded 2.2.3.2 (a)	N/A	Moderate
2	Excluded 2.2.3.2 (e)	N/A	Low
3	Excluded 2.2.3.2 (f)	N/A	Moderate
4	Forest Type A	Upslope/flat	Extreme
5	Forest Type A	Downslope >0-5 degrees	Extreme
6	Scrub Type D	Downslope >0-5 degrees	Extreme
7	Grassland Type G	Upslope/flat	Moderate
8	Grassland Type G	Downslope >0-5 degrees	Moderate

NOTES ON BHL ASSESSMENT

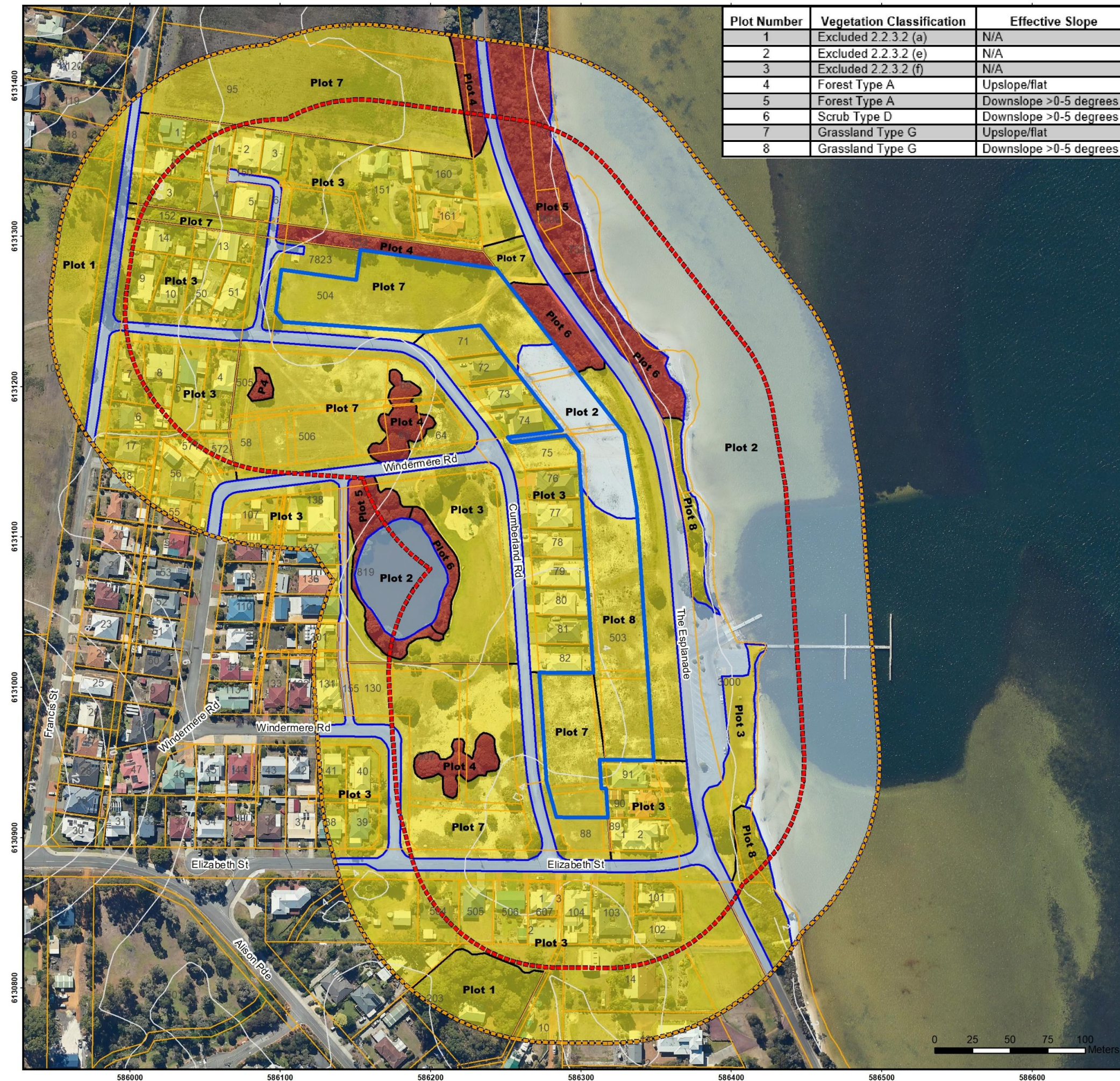
- The BHL assessment was prepared by an Accredited Level 2 Bushfire Planning Practitioner (BPAD-37893);
- The BHL Assessment and Map has been prepared in accordance with the Department of Planning, Lands and Heritage (WAPC) Planning for Bushfire Guidelines (WAPC, 2024b);
- It is noted that some of the vegetation is internal to the subject site. Therefore, the separation distance from this vegetation is 0m. However, this vegetation is under the control of the landowner and can be removed/modified to a low-threat state;
- In the future, internal grassland vegetation (part of Plots 7 and 8) will be managed in a low fuel condition;
- The whole of the subject site is currently subject to a low/moderate BHL;
- The subject site is partially located in a bushfire prone area; see Figure 2 (OBRM, 2024). Part of the subject site is not located within a bushfire prone area;
- Future planning proposals that are not located within a bushfire prone area will not be subject to the application of State Planning Policy 3.7 Bushfire (WAPC, 2024a) and the associated Planning for Bushfire Guidelines (WAPC, 2024b); and
- As this is a strategic-level assessment, a BAL assessment will be required in subsequent planning stages, such as for WAPC subdivisions or development approvals that are located in the.

Note on internal vegetation

The internal vegetation on the subject site consists of Grassland Type G, which is mapped as a moderate bushfire hazard. Onsite vegetation is within the control of the landowner and can be removed or modified to lower the bushfire risk. Offsite vegetation is not within the control of the landowner and therefore cannot be removed or modified by the landowner. As a result, the bushfire threat from offsite vegetation cannot be reduced. Bushfire management measures external to the subject site are not required as part of this proposal. For the required separation distances from each vegetation plot to achieve BAL-12.5 – BAL-29, refer to Table 4. Offsite vegetation mainly affects the northern and northeastern portions of the rezoning proposal.

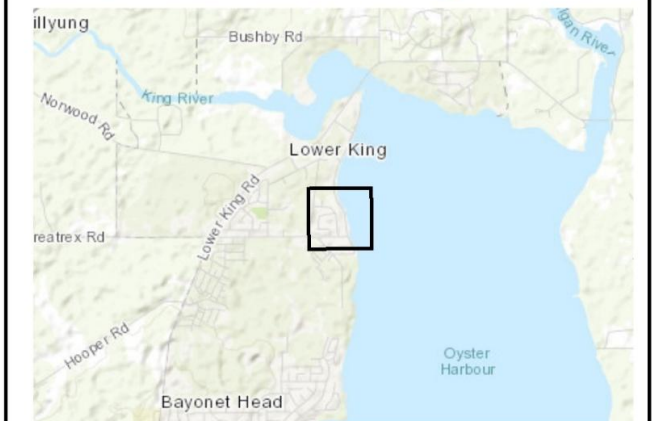
Table 4: Minimum Required Separation Distances from Classified Vegetation (m)

Plot Number	Vegetation Type (Table 2.3)	Slope (Table 2.4.3)	Separation Distance for each BAL Rating				
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
4	Forest Type A	Upslope/flat	<16	16-<21	21-<31	31-<42	42-<100
5	Forest Type A	Downslope >0-5 degrees	<20	20-<27	27-<37	37-<50	50-<100
6	Scrub Type D	Downslope >0-5 degrees	<11	11-<15	15-<22	22-<31	31-<100
7	Grassland Type G	Upslope/flat	<6	6-<8	8-<12	12-<17	17-<50
8	Grassland Type G	Downslope >0-5 degrees	<7	7-<9	9-<14	14-<20	20-<50



Plot Number	Vegetation Classification	Effective Slope
1	Excluded 2.2.3.2 (a)	N/A
2	Excluded 2.2.3.2 (e)	N/A
3	Excluded 2.2.3.2 (f)	N/A
4	Forest Type A	Upslope/flat
5	Forest Type A	Downslope >0-5 degrees
6	Scrub Type D	Downslope >0-5 degrees
7	Grassland Type G	Upslope/flat
8	Grassland Type G	Downslope >0-5 degrees

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Overview Map Scale 1:100,000

Legend

- Subject Site
 - 100m Assessment Boundary
 - 150m Assessment Boundary
 - Cadastre
 - 2m Contours
 - Vegetation Classification Border Exclusion (e)
 - Vegetation Classification Border
- Bushfire Hazard Level**
- Extreme
 - Moderate
 - Low

Scale
 1:2,500 @ A3
 GDA MGA 2020 Zone 50

Data Sources
 Overview Map: World Topographic Map Service, ESRI 2012
 Cadastral, Roads and Aerial Imagery Data © 2024 Western Australian Land Information Authority (WALIA)
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Figure 5: Bushfire Hazard Level Map

Prepared by	JRB	Accreditation Level	Level 2	Accreditation Number	BPAD-37893
QA Check	MKG	Drawn by	GSK	Status	FINAL
File	MSC0710	Date	17/12/2024	Date (Aerial Photo)	Apri 2024

4 Identification of Bushfire Hazard Issues

4.1 Bushfire Hazard Level

The identified bushfire risks associated with the subject site include continuous external vegetation to the north and east. These areas primarily consist of Forest Type A and Scrub Type D, which are classified as Extreme BHL. Under hot, dry, and unstable conditions (Severe to Catastrophic bushfire weather), the subject site is most at risk from bushfire from these directions. Currently, the vegetation to the north, east, south, west, and internal to the subject site is partially managed grassland. If left unmanaged, this grassland vegetation poses a moderate BHL to the proposed development.

To the north, south, east, and west, there are mixed residential areas, managed POS, Oyster Harbour, and small patches of vegetation. These managed areas present a Low/Moderate BHL. The proposal meets the acceptable solution of Bushfire Protection Criteria 4: Strategic Planning Element 2: Siting and Design (WAPC, 2024b) by achieving a post-development BHL of moderate or low.

In the future, all new habitable buildings within the bushfire prone area will require a site-specific BAL assessment to support the development in subsequent stages (i.e., WAPC subdivision applications or development applications). The current landowners are required to manage the lots in accordance with the CoA Fire Management Notice as issued under s33 of the Bushfire Act 1954 (GoWA, 1954), as provided in Appendix C.

4.2 Bushfire Landscape Assessment (BLA)

An analysis of the vegetation types and corresponding bushfire fuels (to AS 3959-2018) at a landscape scale (2km) identifies the north, south, southwest, and west as the areas at the highest risk of fire running into the subject site due to the continuous areas of vegetation (see Figure 6). There is also a thin strip of vegetation to the northeast, which could potentially create a wick towards the site. These areas consist predominantly of Class A Forest and Scrub Type D, which are defined as Extreme BHL and present the highest risks to the site.

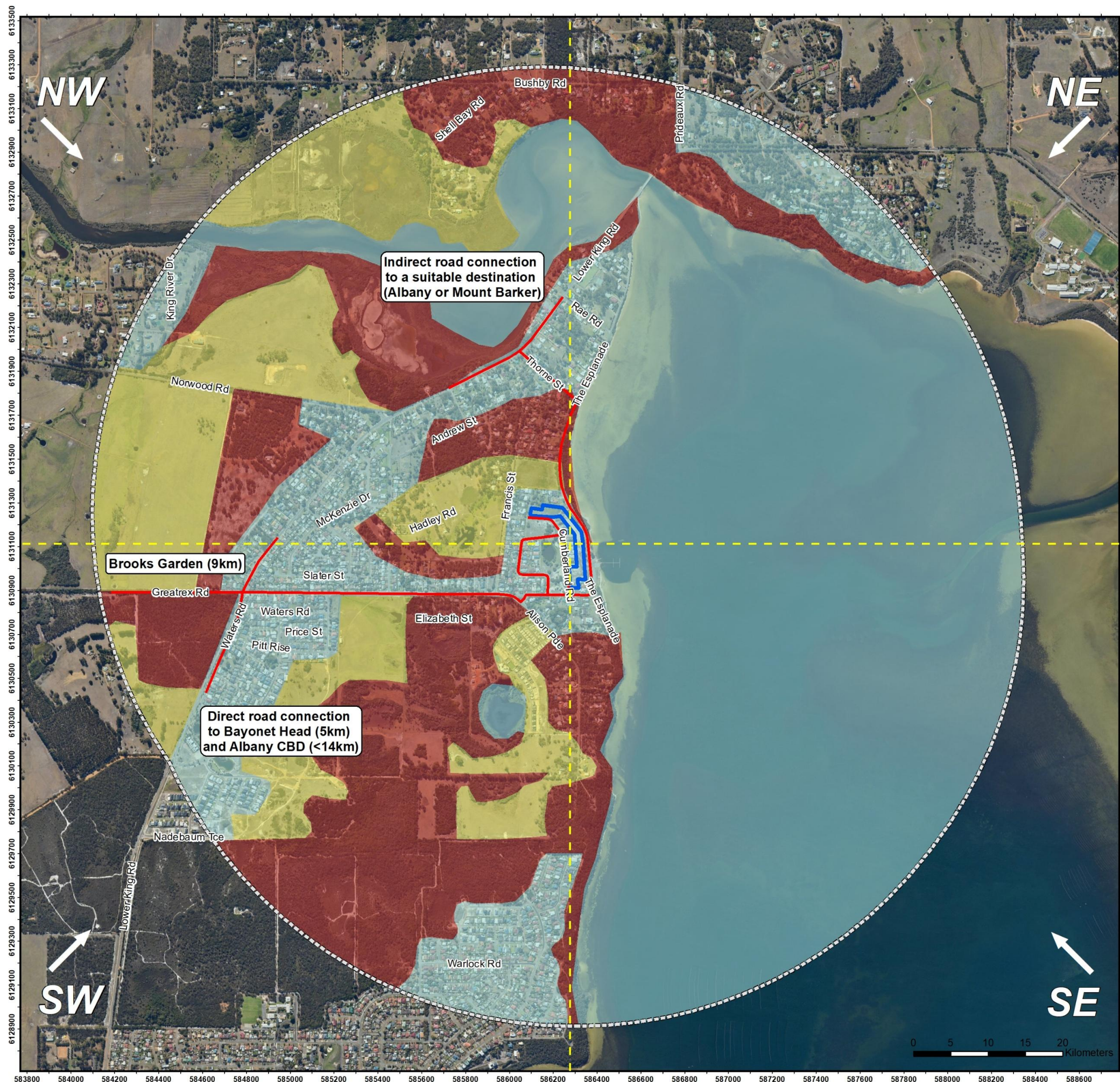
To the southwest, west, and northwest, there is a mosaic pattern of unmanaged grasses and small patches of remnant vegetation. These areas consist predominantly of Grassland Type G, which has a Moderate BHL allocation. To the north, south, and west of the subject site, residential built-out areas and CoA-managed POS exist, resulting in a limited opportunity for a landscape-scale fire. To the north, east, and southeast are Oyster Harbour and the King River, where the threat of a landscape-scale bushfire from these directions is limited.

The larger areas of continuous vegetation exist to the north, south, southwest, west, and northwest, presenting the highest expected fire risk. The interspersed mosaic patterns of unmanaged grasses and built-out areas within the Extreme bushfire risk zones could potentially limit fire run from the broader landscape to the subject site. Built-out areas and mosaic areas of vegetation to the southwest, west, and northwest are expected to have a lower intensity of bushfire but still pose a medium risk (moderate BHL) of fire running into the site. A BLA matrix is provided in Table 5 and Figure 6.

Table 5: Broader Landscape Assessment – points-based system to determine type

Criteria	5 points	2 points	1 point	Points
Proximity of the planning proposal to a suitable destination is:	>10km	1-10km	<1 km	2
The road pattern from the planning proposal to a suitable destination is:	Complex and indirect (cul-de-sacs and/or multiple intersections)	Mixed road patterns	Simple and/or direct (limited intersections)	2
The predominant vegetation pattern is:	Large tracts of vegetation (contiguous vegetation)	A mosaic pattern of vegetation (e.g. vegetation within rural living precincts)	Cleared vegetation (e.g. clearing for residential-zoned urban lots)	2
Exposure of the planning proposal to an identified external bushfire hazard (excluding Grass type G) is from:	Three or four aspects	Two aspects	From nil or one aspect only	2
Total points	8			

Broader Landscape Type A applied.



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Overview Map Scale 1:500,000

Legend

- Subject Site
- 2km Assessment Buffer
- Public Access Route
- Broader Landscape Vegetation**
 - Low Threat Vegetation or Non-vegetated
 - Unmanaged Grassland / Mosaic Pattern
 - All Other Classified Vegetation

Scale
 1:500,000 @ A3
 GDA MGA 2020 Zone 50

Data Sources
 Overview Map: World Topographic Map Service, ESRI 2012
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Figure 6: Broader Landscape Assessment Map

Prepared by	JRB	Accreditation Level	Level 2	Accreditation Number	BPAD-37893
QA Check	MKG	Drawn by	BRM	Status	FINAL
File	MSC0710	Date	13/12/2024	Date (Aerial Photo)	APRIL 2024

4.3 Access

The subject site has direct access to both Cumberland Road and The Esplanade, which, along with the surrounding existing public road network, provides safe access and egress in two different directions to at least two different destinations (see Figure 7: Access and Water Map). The existing roads are constructed to the required standards as stated in the Planning for Bushfire Guidelines (WAPC, 2024b) with an all-weather surface (two-way access). The Esplanade travels north towards Thorne Street, which heads northwest towards Lower King Road. Cumberland Road and The Esplanade both connect to Elizabeth Street to the south, which heads west towards Lower King Road. Lower King Road heads southwest towards the Albany CBD and north to several alternative destinations, including Brooks Garden which along with Albany CBD is classified as a "Suitable Destination".

All future buildings will have direct access and road frontage that provides safe access and egress in two different directions to two alternative destinations.

4.4 Water Supply

A reticulated water supply is currently available at the site. The subject site has several Water Corporation WA (WCWA) standard hydrants located adjacent to its boundary on Cumberland Road, The Esplanade, and Elizabeth Street. The reticulated water network is consistent with the Design Standard DS 63, Water Reticulation Standard Design, and Construction Requirements for Water Reticulation Systems up to DN250 (Water Corporation, 2012), and currently meets the acceptable solutions established by the guidelines.



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Overview Map Scale 1:100,000

Legend

- Subject Site
- ➔ Public Access Route
- W Water Point

Scale
 1:6,000 @ A3
 GDA MGA 2020 Zone 50

Data Sources
 Overview Map: World Topographic Map Service, ESRI 2012
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Figure 7: Access and Water Map

Prepared by	JRB	Accreditation Level	Level 2	Accreditation Number	BPAD-37893
QA Check	KPK	Drawn by	GSK	Status	FINAL
File	MSC0710	Date	13/12/2024	Date (Aerial Photo)	04/17/2024

5 Assessment against the Bushfire Protection Criteria

5.1 Compliance Table

The Planning for Bushfire Guidelines (WAPC, 2024b) outlines bushfire protection criteria for assessing subdivision and development proposals for compliance. The bushfire protection criteria are an outcomes-based system of assessing bushfire risk management, divided into four elements:

- Element 1: Location;
- Element 2: Siting and Design of Development;
- Element 3: Vehicle Access;
- Element 4: Water.

The subject site has been assessed and is required to meet the “Acceptable Solutions” of each element of the bushfire mitigation measures (WAPC, 2024b). Under the Planning for Bushfire Guidelines (WAPC, 2024b), a scheme amendment to facilitate vulnerable land use should also refer to the requirements and bushfire protection criteria in Section 8 – Vulnerable Land Uses. The proposal has been assessed against all elements of the bushfire protection criteria and found to be compliant; refer to Table 6: Bushfire Protection Criteria 4: Strategic Planning and Table 7: Bushfire Protection Criteria 8: Development – Vulnerable Class 9 Buildings. Noting if in future planning the tourism components were located out of the bushfire prone area no further assessment under SPP 3.7 and the guidelines would be required.

Table 6: Bushfire Protection Criteria 4: Strategic Planning

Element	Acceptable Solution	Applicable or not Yes/No	Proposal meets Acceptable Solution
Element 1 – Location	A1.1a Broader Landscape Type A	Yes	Compliant The subject site is located within a Broader Landscape Type A. The Broader Landscape Assessment matrix in Section 4.2 and the Broader Landscape Assessment Map (Figure 6) provide justification for the allocation of the BLA Type. Proposal meets Acceptable Solution A1.1a.
	A1.1b Broader Landscape Type B	No	The proposal has not been assessed as Broader Landscape Type B. Not assessed to A1.1b.
Element 2 – Siting and Design	A2.1 Siting and design	Yes	Compliant The subject site currently has a pre-development BHL of moderate (see Figure 5: Bushfire Hazard Level Map). The moderate BHL will be maintained post-development. With appropriate separation from offsite vegetation, future buildings can be located within BAL-29 or lower, or be located outside the bushfire prone area mapping. In future stages, buildings located outside the bushfire prone area mapping will likely not require further assessment against SPP 3.7 (WAPC, 2024a) and the associated Guidelines (WAPC, 2024b). Proposal meets Acceptable Solution A2.1.
	A2.2 Clearing of Native vegetation	No	The removal of native vegetation is not planned or required as part of this proposal. Not assessed to A2.2b.
Element 3 – Vehicular Access	A3.1 Public Roads	Yes	Compliant Cumberland Road, The Esplanade, and the existing surrounding road network have 20m wide road reserves and a trafficable all-weather surface of 6-8m. No new public roads are planned as part of this proposal, and the existing roads have been constructed to the required LGA standards and meet the technical requirements established by the guidelines. Proposal meets Acceptable Solution A3.1.
	A3.2 Access Routes	Yes	Compliant The subject site has direct access to both Cumberland Road and The Esplanade, which, along with the surrounding existing public road network, provides safe access and egress in two different directions to at least two suitable destinations (see Figure 7: Access and Water Map). The existing roads are constructed to the required standards as stated in the Planning for Bushfire Guidelines (WAPC, 2024b), with an all-weather surface (two-way access). The Esplanade travels north towards Thorne Street, which heads northwest towards Lower King Road. Cumberland Road and The Esplanade both connect to Elizabeth Street to the south, which heads west towards Lower King Road. Lower King Road heads southwest towards the Albany CBD, north to several alternative destinations and west to Brooks Garden, which is considered a "Suitable Destination". Proposal meets Acceptable Solution A3.2.

Table 6 cont.

Element	Acceptable Solution	Applicable or Not Yes/No	Proposal meets Acceptable Solution
Element 3 – Vehicular Access	A3.3a No-Through roads	No	No-through roads are not being utilised with this proposal. Not assessed to A3.3a.
	A3.3b No-Through roads requirements	No	No-through roads are not being utilised with this proposal. Not assessed to A3.3b.
Element 4 – Water	A4.1 Identification of future water supply	Yes	Compliant. A reticulated water supply is currently available to the subject site. The nearest Water Corporation WA (WCWA) standard hydrants are located on the eastern boundary on The Esplanade and the western boundary on Cumberland Road. This meets the acceptable solutions established by the guidelines. Proposal meets Acceptable Solution A4.1.

Table 7: Bushfire Protection Criteria 8: Development – Development – Vulnerable tourism land uses and day uses

Element	Acceptable Solution	Applicable or not Yes/No	Proposal meets Acceptable Solution
Element 1 – Location	A1.1a Broader Landscape Type A	No	Not Applicable. Not assessed to A1.1.
Element 2 – Siting and Design	A2.1a Siting and design	Yes	Compliant With appropriate separation from offsite vegetation, future buildings can be located within BAL-29 or lower, or be located outside the bushfire prone area mapping. Buildings located outside the bushfire prone area mapping will likely not require further assessment against SPP 3.7 (WAPC, 2024a) and the associated Guidelines (WAPC, 2024b) in future stages. Proposal can meet Acceptable Solution A2.1a.
	A2.1b Asset Protection Zone (APZ)	Yes	Compliant Future buildings can achieve an APZ of the required dimensions to ensure BAL-29 or lower can be attained. The APZs can be contained solely within the lot boundary, provided appropriate separation is met from offsite vegetation. APZs can be maintained as per the WAPC Asset Protection Zone (APZ) Standards, B.2: Siting and Design (refer to Appendix B). Proposal meets Acceptable Solution A2.1b.
	A2.2a Siting within 40 kW/m ² (BAL-40) and/or more than 40 kW/m ² (BAL-FZ)	No	Siting within BAL-40 or BAL-FZ will not be required. Not assessed to A2.2a.

Table 7 cont.

Element	Acceptable Solution	Applicable or Not Yes/No	Proposal meets Acceptable Solution
Element 2 – Siting and Design	A 2.2b Asset Protection Zone (APZ)	No	In the future, an APZ can be established within the lot boundary. Not assessed to A2.2b.
	A2.3 Clearing of Native Vegetation	No	The removal of native vegetation is not planned or required as part of future development at this site. Not assessed to A2.3.
	A2.4 Landscape Management Plan	No	This proposal is for rezoning; details of building location and landscaping are not available. Not assessed to A2.4.
	A2.5 On-site shelter (if required)	No	This proposal is for rezoning; an on-site shelter has not been considered at this stage of planning and is not required. Not assessed to A2.5.
Element 3 – Vehicular Access	A3.1 Public Roads	Yes	Compliant Cumberland Road, The Esplanade, and the existing surrounding road network have 20m wide road reserves and a trafficable all-weather surface of 6-8m. No new public roads are planned as part of this proposal, and the existing roads have been constructed to the required LGA standards and meet the technical requirements established by the guidelines. Proposal meets Acceptable Solution A3.1.
	A3.2a Access Routes	Yes	Compliant The subject site has direct access to both Cumberland Road and The Esplanade, which, along with the surrounding existing public road network, provides safe access and egress in two different directions to at least two suitable destinations (see Figure 7: Access and Water Map). The existing roads are constructed to the required standards as stated in the Planning for Bushfire Guidelines (WAPC, 2024b), with an all-weather surface (two-way access). The Esplanade travels north towards Thorne Street, which heads northwest towards Lower King Road. Cumberland Road and The Esplanade both connect to Elizabeth Street to the south, which heads west towards Lower King Road. Lower King Road heads southwest towards the Albany CBD, north to several alternative destinations and west to Brooks Garden, which is considered a "Suitable Destination". Proposal meets Acceptable Solution A3.2.
	A.3.2b For a day use with no overnight accommodation	No	The site has public road access in two different directions to two different suitable destinations. Not assessed to A3.2b.

Table 7 cont.

Element	Acceptable Solution	Applicable or Not Yes/No	Proposal meets Acceptable Solution
Element 3 – Vehicular Access	A3.3a No-Through roads	No	Future developments will not require the use of no-through roads. Not assessed to A3.3a.
	A3.3b No-Through roads requirements	No	Future developments will not require the use of no-through roads. Not assessed to A3.3b.
	A3.4 Emergency access ways	No	Emergency access ways will not be required at subsequent planning stages. Not assessed to A3.4.
	A3.5 On-site shelter	No	This proposal is for rezoning; an on-site shelter has not been considered at this stage of planning. Not assessed to A3.5.
	A3.6 Fire service access route	No	A fire service access route is not planned or required at this stage of planning. Not assessed to A3.6.
	A3.7 Internal vehicular access and private driveways	No	This proposal is for rezoning; private driveways are not required at this stage of planning. Private driveways will likely be less than 70m in length. Not assessed to A3.7.
	A3.8 Signage	No	Not applicable at this stage. Not assessed to A3.8.
Element 4 – Water	A4.1 Water supply	Yes	Compliant. A reticulated water supply is currently available to the subject site. The nearest Water Corporation WA (WCWA) standard hydrants are located on the eastern boundary on The Esplanade and the western boundary on Cumberland Road. This meets the acceptable solutions established by the guidelines. Proposal meets Acceptable Solution A4.1.

5.2 Other Bushfire Mitigation Measures

The bushfire risk assessment (Section 4.0) has identified the bushfire risks associated with the site. The following section details additional measures to help mitigate these risks for the proposed development.

5.2.1 Minimise Ignition Sources

There is little control over offsite ignition sources; however, the following measures are recommended to be undertaken by the developer while in ownership of the land:

Prior to the bushfire season (December to May), the following activities should be undertaken:

- Mowing, slashing, and brush cutting (noting it is illegal to do so on designated total fire ban days);
- Maintenance of access into and out of the site; and
- Ensuring subcontractors are aware of their obligations through contractual requirements.

During the summer bushfire season (1st December to 14th May inclusive, as designated in the fire control notice), the following maintenance activities internal to the site should be planned and risk assessed prior to commencement:

- Mowing, slashing, and brush cutting (noting it is illegal to do so on designated total fire ban days);
- Welding, grinding, and hot works (not undertaken on designated total fire ban days); and
- Managing temporary waste disposal areas and green waste dumps—ensuring piles do not exceed 1.5m in height and have bare mineral earth surrounding them (minimum of 10m).

The Site Construction Manager (during construction phases), in consultation with the developer, is responsible for ensuring safety during construction activities in the bushfire season and for maintaining the safety of the site and adjacent properties at all times from potential ignition sources.

5.2.2 Barrier Fencing

In November 2010, the Australian Bushfire CRC issued a “Fire Note” (Bushfire CRC, 2010), which outlined the potential for residential fencing systems to act as a barrier against radiant heat, burning debris and flame impingement during bushfire. The research aimed to observe, record, measure and compare the performance of commercial fencing of Colourbond steel and timber (treated softwood and hardwood).

The findings of the research found that:

“.. Colourbond steel fencing panels do not ignite and contribute significant heat release during cone calorimeter exposure” (exposure to heat)

“.. Colourbond steel (fencing) had the best performance as a non-combustible material. It maintained structural integrity as a heat barrier under all experimental exposure conditions, and it did not spread flame laterally and contribute to fire intensity during exposure”

It is also noted that non-combustible fences are recommended by WAPC (2024), through APZ standards: Fences and sheds within the APZ are constructed using non-combustible materials e.g. colourbond iron, brick, limestone, metal post and wire. The developer will be encouraged to build Colourbond or non-combustible fences where applicable.

5.2.3 Individual Fire Plan

While this proposal is for a scheme amendment and there are currently no buildings on the site, future occupants should prepare their own individual fire plans. It is important for residents to commit to developing a bushfire survival plan that details preparations and actions to take if a bushfire threatens. By compiling information as outlined above, individual lot owners can be prepared for their response in a bushfire emergency. Landowners should not rely on emergency personnel to attend their properties and therefore it is stressed to prepare an individual bushfire emergency plan regarding their intentions and property. This Bushfire Management Plan is not an individual bushfire emergency plan. More information can be gained from the DFES website (s):

[DFES - Department of Fire and Emergency Services](#)

[Home - Emergency WA Warnings & Incidents](#)

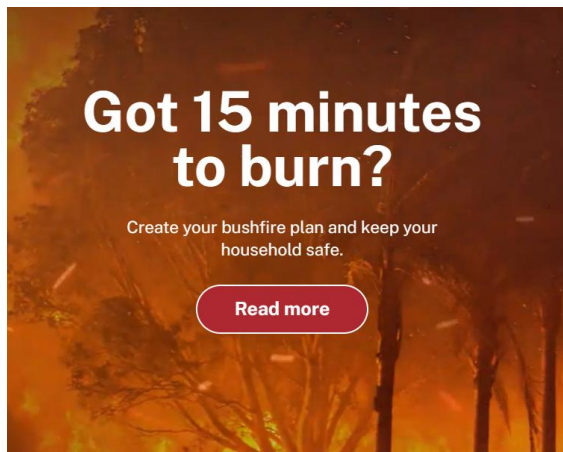


Figure 8: DFES Emergency Access Plan Home Page (DFES, 2023)

The Australian Fire Danger Ratings and Warning systems are shown below in Figure 9.

Australian Fire Danger Rating System

Moderate: Plan and prepare.
Most fires can be controlled. Stay up to date and be alert for fires in your area.

High: Be ready to act.
Fires can be dangerous. Decide what you will do if a fire starts. Leave bushfire risk areas if necessary.

Extreme: Take action now to protect your life and property. Fires will spread quickly and be extremely dangerous. Put your bushfire plan into action. If you and your property are not prepared to the highest level, plan to leave early.

Catastrophic: For your survival, **leave bushfire risk areas.** These are the most dangerous conditions for a fire. If a fire starts and takes hold, lives are likely to be lost. Homes cannot withstand fires in these conditions.

When there is minimal risk, Fire Danger Ratings will be set to **'No Rating'**. On these days you still need to remain alert and abide by local seasonal laws and regulations.

Monitor conditions and [emergency.wa.gov.au](https://www.emergency.wa.gov.au) for ratings and bushfire warnings. If a fire starts near you, take action immediately to protect your life. Do not wait for a warning.

Your life may depend on the decisions you make, even before there is a fire. Create or review your bushfire plan at mybushfireplan.wa.gov.au

Fire Danger Ratings and Bushfire Warnings

When a bushfire starts, things can change in a matter of minutes so it's important to stay up to date through official information sources.

During a bushfire, emergency services will provide you with as much information as possible, but no system is foolproof. If you believe you are in danger, act immediately to stay safe and do not wait for a warning.

If you see smoke or flames call Triple Zero (000) and put your bushfire plan into action immediately.

Bushfire warning levels change to reflect the increasing risk to your life or property, and the decreasing amount of time you have until the fire arrives.

The warning levels for bushfires are:

Advice	Watch and Act	Emergency Warning	All Clear
A fire has started but there is no immediate threat to lives or homes. Be aware and keep up to date.	There is a possible threat to lives or homes. You need to leave or get ready to defend – do not wait and see.	There is a threat to lives or homes. You are in danger and need to take immediate action to survive.	The danger has passed and the fire is under control. Take care and remain vigilant in case the situation changes.

Where to find ratings and warnings:

- Emergency WA [emergency.wa.gov.au](https://www.emergency.wa.gov.au)
- DFES Emergency Information Line 13 DFES (13 3337)
- ABC Radio or 6PR - Your local radio frequency
- DFES Facebook [facebook.com/dfeswa](https://www.facebook.com/dfeswa)
- DFES Twitter twitter.com/dfes_wa

Make a plan

Dangerous bushfires can start at any time and can quickly turn into a life-threatening situation for you and your loved ones. Your safety will depend on how prepared you are and the decisions you make. Create a bushfire plan in under 15 minutes at mybushfireplan.wa.gov.au

For more information visit dfes.wa.gov.au/prepare

Figure 9: Australian Fire Danger Ratings and Warning Systems (DFES, 2023)

6 Implementation Actions

The responsibilities of the developer(s), Landowners and local government are shown in Table 8 and 9.

6.1 Developer's Responsibility

It is recommended the developer be responsible for the following:

Table 8: Implementation actions current landowner/developer

Developer		
No	Implementation Action	Entity Responsible
1	It is recommended in future planning that the Tourism land use is not located in the bushfire prone area mapping to reduce risk to visitors to the area. Commercial, retail, and residential can be located in the bushfire prone area provided that BAL 40 and BAL-FZ zones are avoided.	Developer/Planner
2	Ensure that at future planning stages (development application), the requirements of State Planning Policy 3.7 (WAPC, 2024a) and the associated Planning for Bushfire Guidelines (WAPC, 2024b) are adequately addressed. This will require a BAL assessment where located in bushfire prone area and an updated BMP report at WAPC subdivision stages. An individual BAL assessment or Bushfire Management Plan to support building/development applications.	Landowner
3	Continue to manage lots in ownership as per the current CoA Fire Management Notice and this BMP's requirements until lots are sold and titles relinquished. See Appendix C for the current CoA Fire Management Notice, the COA website should be checked annually in August for updated notices.	Landowner
4	Reticulated water is connected and planned for in subsequent stages of planning.	Landowner

6.2 Local Government Responsibility

It is recommended the local government be responsible for the following:

Table 9: Implementation actions, City of Albany

CoA		
No	Implementation Action	Stage of approval
1	Ensure that at future planning stages (WAPC subdivision application and development application), the requirements of State Planning Policy 3.7 (WAPC, 2024a) and the associated Planning for Bushfire Guidelines (WAPC, 2024b) are adequately addressed. This will require a BMP and BAL Contour Plan in bushfire prone area areas to support building/development applications.	Development and Building Approval
2	Monitor landowner compliance with the Bushfire Management Plan and the annual CoA Fire Management Notice as issued under s33 of the Bushfire Act 1954 (GoWA, 1954), as provided in Appendix C.	Ongoing

7 Disclaimer

The recommendations and measures contained in this assessment report are based on the information available at the time of writing following the instructions of the regulatory authorities and following the requirements of the Australian Standards 3959-2018 – Building in Bushfire Prone Areas, WAPC State Planning Policy 3.7 Bushfire (WAPC, 2024a), WAPC Planning for Bushfire Guidelines (WAPC, 2024b), and applying best practise as described by Fire Protection Association Australia. These are considered the minimum standards required to balance the protection of the dwellings and occupants with the aesthetic and environmental conditions required by local, state and federal government authorities. They DO NOT guarantee that a building will not be destroyed or damaged by a bushfire, people injured, or fatalities occur either at the site or while evacuating. All surveys and forecasts, projections and recommendations made in this assessment report and associated with this proposed development are made in good faith on the basis of the information available to the fire protection consultant at the time of assessment. The achievement of the level of implementation of fire precautions will depend amongst other things on the actions of the landowner or occupiers of the land, over which the bushfire consultant has no control. Notwithstanding anything contained within, the consultant/s will not, except as the law may require, be liable for any loss or other consequences (whether or not due to negligence of the bushfire consultant) arising out of the services rendered by the consultant.

AS3959-2018 Disclaimer: It should be borne in mind that the measures contained within this Standard (AS3959-2018) cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the unpredictable nature and behaviour of fire and extreme weather conditions.

Building to AS 3959-2018 is a standard primarily concerned with improving the ability of buildings in designated bushfire prone areas to better withstand attack from bushfire thus giving a measure of protection to the building occupants (until the fire front passes) as well as to the building itself (AS 3959, 2018).

8 Certification

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Hazard Level (BHL) stated in this document. This assessment has been prepared in accordance with the requirements of AS 3959-2018 and the Planning for Bushfire Guidelines (WAPC, 2024b).



SIGNED, ASSESSOR: DATE: 17/12/2024

Jason Benson, Bio Diverse Solutions

Accredited Level 2 Bushfire Practitioner (Accreditation No: BPAD-37893)



9 Revision Record

Revision	Prepared By	Summary	Reviewed By	Date
Draft Id	Jason Benson	Internal QA review	Michelle Gray	12/12/2024
Draft Id	Jason Benson	Internal TR review	Kathryn Kinnear	13/12/2024
Final Id	Jason Benson	Issued to client		17/12/2024

10 References

AS3959-2018 Australian Standard, *Construction of buildings in bushfire-prone areas*, Building Code of Australia, Primary Referenced Standard, Australian Building Codes Board and Standards Australia.

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11 Appendices

Appendix A: Vegetation Classifications to AS3959-2018

Appendix B: WAPC Asset Protection Zone (APZ) Standards, B.2: Siting and Design

Appendix C: City of Albany Fire Management Notice (CoA, 2024/25)

Appendix A

Vegetation Classification to AS3959-2018

Vegetation classification to AS3959-2018

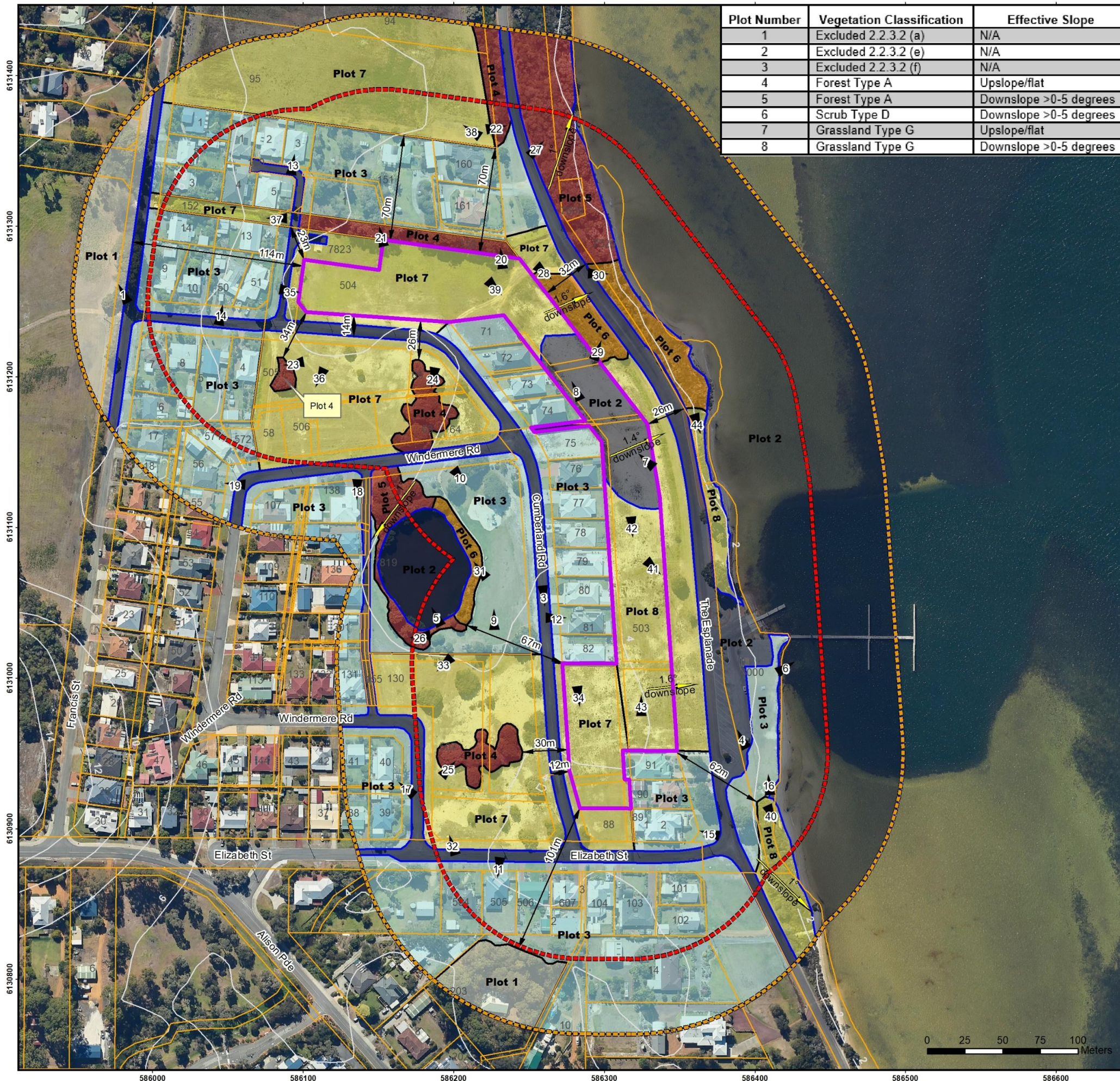
Site Details			
Address:	Lot 504 (No. 41) The Esplanade and Lot 503 (No 47) Cumberland Road		
Suburb:	Lower King	State:	W.A.
Local Government Area:	City of Albany		
Stage of WAPC Planning	Strategic Level Proposal		

BMP Plan Details			
Report / Job Number:	MSC0710	Report Version:	Final
Assessment Date:	13 November 2024	Report Date:	17 December 2024
BPAD Practitioner	Michelle Gray	Accreditation No.	BPAD-59508
BPAD Practitioner	Jason Benson	Accreditation No.	BPAD-37893

Vegetation Classification

Site assessment occurred on the 13th of November 2024 by Michelle Gray (BPAD-59508) and again on the 17th of December by Jason Benson (BPAD-37893). All vegetation within 150m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2018. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified in the following pages and shown on the Vegetation Classes Map Page 3.

Plot Number	Vegetation Type (Table 2.3)	Slope (Table 2.4.3)
1	Excluded 2.2.3.2 (a)	N/A
2	Excluded 2.2.3.2 (e)	N/A
3	Excluded 2.2.3.2 (f)	N/A
4	Forest Type A	Upslope/flat
5	Forest Type A	Downslope >0-5 degrees
6	Scrub Type D	Downslope >0-5 degrees
7	Grassland Type G	Upslope/flat
8	Grassland Type G	Downslope >0-5 degrees



Plot Number	Vegetation Classification	Effective Slope
1	Excluded 2.2.3.2 (a)	N/A
2	Excluded 2.2.3.2 (e)	N/A
3	Excluded 2.2.3.2 (f)	N/A
4	Forest Type A	Upslope/flat
5	Forest Type A	Downslope >0-5 degrees
6	Scrub Type D	Downslope >0-5 degrees
7	Grassland Type G	Upslope/flat
8	Grassland Type G	Downslope >0-5 degrees

Albany Office: 29 Hercules Crescent Albany, WA 6330 (08) 9842 1575
Denmark Office: 7/40 South Coast Highway Denmark, WA 6330 (08) 9848 1309
Esperance Office: 2A/113 Dempster Street Esperance, WA 6450 (08) 9072 1382
Perth Office: Level 18, 191 St Georges Terrace Perth, WA 6850 (08) 9842 1575



Overview Map Scale 1:100,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastral
- 2m Contours
- Photo Point
- Separation Distance
- Slopes Degrees
- Vegetation Classification Border Exclusion (e)
- Vegetation Classification Border

Classified Vegetation

- A Forest
- D Scrub
- G Grassland

Excluded Vegetation

- Clause 2.2.3.2 (a), (b), (c) and (d)
- Clause 2.2.3.2 (e) non-vegetated
- Clause 2.2.3.2 (f) low threat vegetation

Scale 1:2,500 @ A3
GDA MGA 2020 Zone 50

Data Sources
Overview Map: World Topographic Map Service, ESRI 2012
Cadastral, Roads and Aerial Imagery Data © 2024 Western Australian Land Information Authority
"Location information data licensed from Western Australian Land Information Authority (WALIA) trading as Landgate. Copyright in the location information data remains with WALIA. WALIA does not warrant the accuracy or completeness of the location information data or its suitability for any particular purpose."

CLIENT Anchorage Park Pty Ltd (c/- Planning Solutions)
Lot 504 (No. 41) The Esplanade and
Lot 503 (No. 47) Cumberland Road
Lower King WA 6330

Site Plan / BAL Assessment

Prepared by	Accreditation Level	Accreditation Number
MKG	Level 1	BPAD-59508
QA Check	Drawn by	Status
JRB	WAB	FINAL
File	Date	Date (Aerial Photo)
MSC0710	16/12/2024	April 2024

Plot	1	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (a)
			Location: West and south of the subject site. Separation Distance: 114m to the west and 101m to the south. Description: Classifiable vegetation located >100m from the subject site. As per exclusion clause 2.2.3.2 (a) of AS3959-2018.

Photo Id 1: View facing north-northwest towards a vegetated area >100m from the site, located to the west of the subject site.
Note: The photo was taken on a different day than the most recent site assessment.

Plot	1 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (a)
No Photo due to no access. Vegetation exclusion taken from aerial map.			Additional Photo of Plot 1.

Photo Id 2: Access was not available to this portion of Plot 1, as the area is surrounded by existing housing. This portion of the plot is located >100 meters from the subject site and is located to the south of the subject site.

Plot	2	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			Location: South, east and west of the subject site. Description: Roads, driveways, tracks, waterways, buildings and other non-vegetated areas. As per exclusion clause 2.2.3.2 (e) of AS3959-2018.

Photo Id 3: View facing south along Cumberland Road, located to the west of the subject site.

Plot	2 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			Additional Photo of Plot 2.

Photo Id 4: View facing north-northwest along The Esplanade and public car park, located to the east-southeast of the subject site.

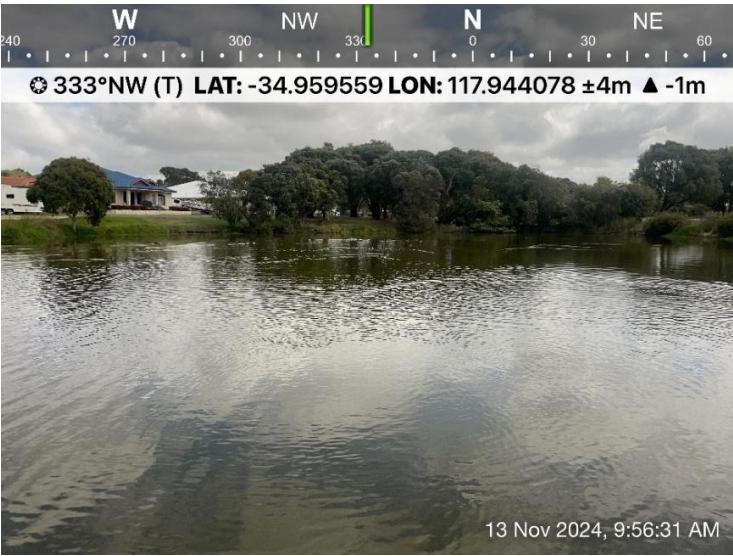
Plot	2	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			Additional Photo of Plot 2.

Photo Id 5: View facing north-northwest towards a lake, located to the west of the subject site.

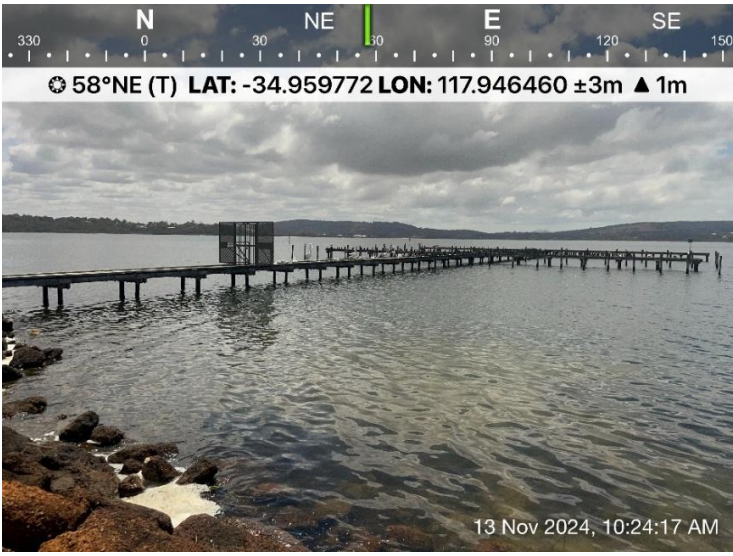
Plot	2 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			Additional Photo of Plot 2.

Photo Id 6: View facing northeast towards Oyster Harbour, located to the east of the subject site.

Plot	2 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			Additional Photo of Plot 2.

Photo Id 7: View facing northwest towards a non-vegetated area, located internally in the centre of the subject site.

Plot	2 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			Additional Photo of Plot 2.

Photo Id 8: View facing north-northwest towards a non-vegetated area, located internal to the north end of the subject site.

Plot	3	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			Location: North, east, southeast, south and west of the subject site. Description: Maintained gardens and lawns within Asset Protection Zones (APZ) surrounding existing buildings, vacant lots managed in a low fuel condition, firebreaks and other low-threat vegetation. Excluded as per AS3959 exclusion clause 2.2.3.2 (f). Available fuel loading: <2 t/ha.

Photo Id 9: View facing north towards low-threat vegetation within a public park, maintained by the City of Albany, located to the west of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			Additional Photo of Plot 3.

Photo Id 10: View facing southeast towards low-threat vegetation and playground maintained by the City of Albany, located to the west of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			Additional Photo of Plot 3.

Photo Id 11: View facing south towards low-threat vegetation surrounding existing dwellings, located to the southwest of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			Additional Photo of Plot 3.

Photo Id 12: View facing east towards low-threat vegetation surrounding existing dwellings, located to the west of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			Additional Photo of Plot 3.

Photo Id 13: View facing north towards low-threat vegetation surrounding existing dwellings, located to the northwest of the subject site.

Note: The GPS direction in this photo is incorrect.

Plot	3 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			Additional Photo of Plot 3.

Photo Id 14: View facing north towards low-threat vegetation surrounding existing dwellings, located to the west of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			Additional Photo of Plot 3.

Photo Id 15: View facing west towards low-threat vegetation and surrounding existing dwellings, located to the south-southeast of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			Additional Photo of Plot 3.

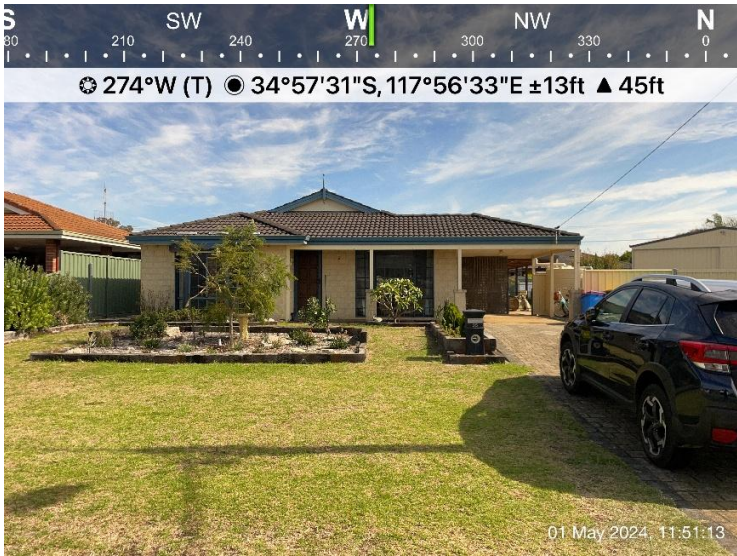
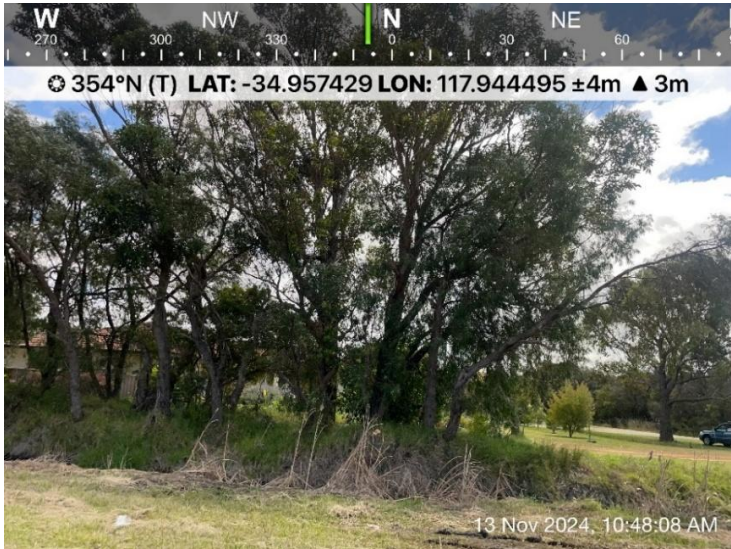
Photo Id 16: View facing north towards low-threat vegetation maintained by the City of Albany, located to the southeast of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			Additional Photo of Plot 3.

Photo Id 17: View facing northwest towards low-threat vegetation and surrounding existing dwellings, located to the west of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			Additional Photo of Plot 3.

Photo Id 18: View facing south towards low-threat vegetation, surrounding existing dwellings and private driveway, located to the west of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			Additional Photo of Plot 3.
<i>Photo Id 19: View facing west towards low-threat vegetation and surrounding existing dwellings, located to the west of the subject site.</i> <i>Note: This photo was taken on a different day than the most recent site assessment.</i>			
Plot	4	Classification or Exclusion Clause	Forest Type A
			Location: North, south and west of the subject site. Separation Distance: 0m to the north, 26m to the south and 30m to the west. Description: A small patched and a single thin strip of forest vegetation consisting of mixed Eucalyptus and peppermint trees within a drainage reserve, vacant land and within CoA managed park. The area features a dense canopy cover with a multilayered understorey of grasses and rushes. Although these areas are small in size, they are unmanaged and cannot be excluded from classification. Due to the application of the precautionary principle, they have been classified as Forest Type A. Average vegetation height: 5-10m. Vegetation Coverage: 30-70% foliage cover. Available fuel loading: 25-35 t/ha. Effective slope: Upslope/flat.
<i>Photo Id 20: View facing north towards a thin strip of forest vegetation, located to the north of the subject site.</i>			

Plot	4 cont.	Classification or Exclusion Clause	Forest Type A
			Additional Photo of Plot 4.

Photo Id 21: View facing north towards forest vegetation, located on the northern boundary of the subject site.
 Note: This photo was taken on a different date than the original site assessment.

Plot	4 cont.	Classification or Exclusion Clause	Forest Type A
			Additional Photo of Plot 4.

Photo Id 22: View facing east towards forest vegetation, located to the north of the subject site.
 Note: The GPS direction in this photo is incorrect.

Plot	4 cont.	Classification or Exclusion Clause	Forest Type A
SW W NW N 10 240 270 300 330 0 30 ☉ 304°NW (T) LAT: -34.957961 LON: 117.943075 ±4m ▲ 3m  13 Nov 2024 11:05:03 AM			Additional Photo of Plot 4.

Photo Id 23: View facing west towards forest vegetation, located to the west of the subject site.
 Note: The GPS direction in this photo is incorrect.

Plot	4 cont.	Classification or Exclusion Clause	Forest Type A
E SE S SW W 90 120 150 180 210 240 270 ☉ 182°S (T) LAT: -34.957955 LON: 117.943996 ±4m ▲ 4m  13 Nov 2024 11:10:43 AM			Additional Photo of Plot 4.

Photo Id 24: View facing south towards forest vegetation, located to the west of the subject site.

Plot	4 cont.	Classification or Exclusion Clause	Forest Type A
			Additional Photo of Plot 4.

Photo Id 25: View facing northeast towards forest vegetation, located to the west of the subject site.

Plot	5	Classification or Exclusion Clause	Forest Type A
			Location: Northeast and west. Separation Distance: 32m to the northeast and 67 m to the west. Description: Thin strips of forest vegetation consisting of mixed Eucalyptus, Melaleuca and peppermint trees within a foreshore reserve and CoA-managed Park. The area features a dense canopy cover with a multilayered understorey of grasses and rushes. Although these strips of vegetation are small, they are unmanaged and cannot be excluded from classification. Due to the application of the precautionary principle, it has been classified as Forest Type A. Average vegetation height: 5-10m. Vegetation Coverage: 30-70% foliage cover. Available fuel loading: 25-35 t/ha. Effective slope: Downslope >0-5 degrees.

Photo Id 26: View facing west towards forest vegetation, located to the west of the subject site.

Note: This photo was taken on a different date than the original site assessment.

Plot	5 cont.	Classification or Exclusion Clause	Forest Type A
			Additional Photo of Plot 5.

Photo Id 27: View facing northeast towards forest vegetation, located to the northeast of the subject site.

Note: This photo was taken on a different date than the original site assessment.

Plot	6	Classification or Exclusion Clause	Scrub Type D
			Location: Northeast and west of the subject site. Separation Distance: 0m and 26m to the east and 67 m to the west. Description: Scrub vegetation consisting of low Acacia, peppermints, tea tree, paperbark, Leucopogon, weeds, grasses sedges and rushes. Average vegetation height: 2-4m. Occasional tree in this plot; however, the overall average height is 4m. Vegetation Coverage: 10-30% foliage cover. Available fuel loading: 25 t/ha. Effective slope: Downslope >0-5 degrees.

Photo Id 28: View facing southeast towards scrub vegetation, located to the northeast of the subject site.

Note: This photo was taken on a different date than the original site assessment.

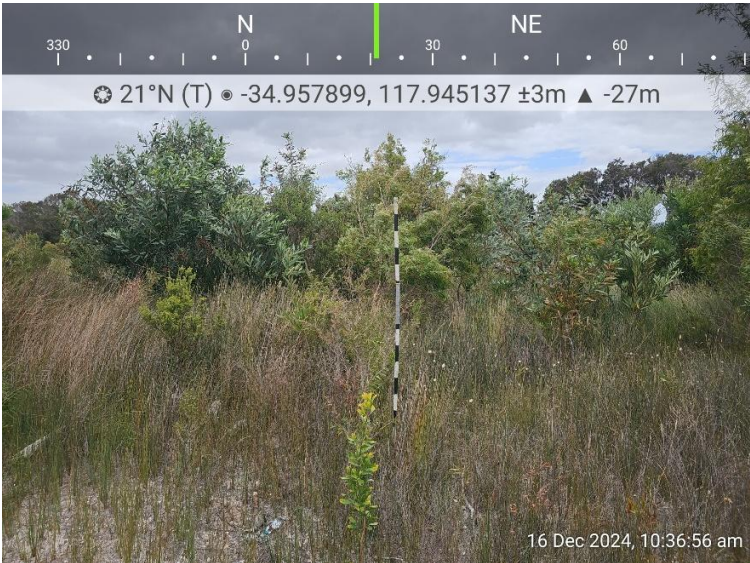
Plot	6 cont.	Classification or Exclusion Clause	Scrub Type D
			Additional Photo of Plot 6.

Photo Id 29: View facing north-northeast towards scrub vegetation, located to the east-northeast of the subject site.
 Note: This photo was taken on a different date than the original site assessment.

Plot	6 cont.	Classification or Exclusion Clause	Scrub Type D
			Additional Photo of Plot 6.

Photo Id 30: View facing east towards scrub vegetation, located to the northeast of the subject site.
 Note: This photo was taken on a different date than the original site assessment.

Plot	6 cont.	Classification or Exclusion Clause	Scrub Type D
			Additional Photo of Plot 6.

Photo Id 31: View facing northwest towards scrub vegetation, located to the west of the subject site.

Note: This photo was taken on a different date than the original site assessment.

Plot	7	Classification or Exclusion Clause	Grassland Type G
			Location: Internal to the subject site in the north and south and external in the north, northeast, southwest, west and northwest. Separation Distance: 0m to internal vegetation and 12m to the west, 23m to the northwest and 70m to the north from the subject site. Description: Mixed unmanaged grasses and weeds in open areas. This area appears to be under some management and may be developed in the future; however, the ongoing management is currently unknown. Therefore, the precautionary principle has been applied, and it has been classified as Grassland Type G. Average vegetation height: 100-300mm. Vegetation Coverage: <10% trees. Available fuel loading: 4.5 t/ha. Effective slope: Upslope/flat.

Photo Id 32: View facing north-northwest towards grassland vegetation, located to the southwest of the subject site.

Plot	7 cont.	Classification or Exclusion Clause	Grassland Type G
			Additional Photo of Plot 7.

Photo Id 33: View facing southwest towards grassland vegetation, located to the west of the subject site.

Plot	7 cont.	Classification or Exclusion Clause	Grassland Type G
			Additional Photo of Plot 7.

Photo Id 34: View facing south towards grassland vegetation, located internal to the subject site to the south.

Plot	7 cont.	Classification or Exclusion Clause	Grassland Type G
			Additional Photo of Plot 7.

Photo Id 35: View facing east towards grassland vegetation, located to the west of the subject site.

Plot	7 cont.	Classification or Exclusion Clause	Grassland Type G
			Additional Photo of Plot 7.

Photo Id 36: View facing southwest towards grassland vegetation, located to the west of the subject site.

Plot	7 cont.	Classification or Exclusion Clause	Grassland Type G
			Additional Photo of Plot 7.

Photo 1d 37: View facing west towards a drainage reserve with grassland, located to the northwest of the subject site.

Note: This photo was taken on a different date than the original site assessment. The photo shows trees with <10% coverage in the reserve on the boundary; however, the overall classification in this area is Grassland Type G.

Plot	7 cont.	Classification or Exclusion Clause	Grassland Type G
			Additional Photo of Plot 7.

Photo 1d 38: View facing northwest towards grassland vegetation, located to the north of the subject site.

Note: The GPS direction in this photo is incorrect.

Plot	7 cont.	Classification or Exclusion Clause	Grassland Type G
			Additional Photo of Plot 7.

Photo Id 39: View facing southeast towards grassland vegetation, located internal to the subject site to the north.

Plot	8 cont.	Classification or Exclusion Clause	Grassland Type G
			Location: Internal in the south of the subject site and external to the east and southeast. Separation Distance: 0m. Description: Mixed unmanaged grasses and weeds in open areas. Some portions of this plot appear to be under some management and may be developed in the future; however, the ongoing management is currently unknown. Therefore, the precautionary principle has been applied, and it has been classified as Grassland Type G. Average vegetation height: 100-500mm. Vegetation Coverage: <10% Trees. Available fuel loading: 4.5 t/ha. Effective slope: Downslope >0-5 degrees.

Photo Id 40: View facing south-southeast towards grassland vegetation, located to the southeast in the subject site.

Note: This photo was taken on a different date than the original site assessment.

Plot	8 cont.	Classification or Exclusion Clause	Grassland Type G
			Additional Photo of Plot 8.

Photo Id 41: View facing southeast towards grassland vegetation, located internal to the subject site to the east.

Plot	8 cont.	Classification or Exclusion Clause	Grassland Type G
			Additional Photo of Plot 8.

Photo Id 42: View facing south towards grassland vegetation, located central to the subject site.

Plot	8 cont.	Classification or Exclusion Clause	Grassland Type G
			Additional Photo of Plot 8.

Photo Id 43: View facing north towards grassland vegetation, located internal to the subject site in the south.

Plot	8 cont.	Classification or Exclusion Clause	Grassland Type G
			Additional Photo of Plot 8.

Photo Id 44: View facing southeast towards grassland vegetation, located to the east of the subject site.

COMMENTS ON VEGETATION CLASSIFICATIONS:

- Distances from vegetation were made based on surface fuels to edge of lot (subject site) boundary;
- Effective slopes were measured in the field using a Nikon Forestry Pro and represented on the respective plots;
- Method 1 (AS 3959-2018) Simplified procedure was used for vegetation classification Assessment process;
- All vegetation was classified within the subject site and within 150m of the lot boundaries to AS 3959 Table 2.3; and
- The perimeter of the vegetation was measured using field GPS and notations on field GIS maps.

CERTIFICATION

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959-2018.



SIGNED, ASSESSOR: DATE: 17/12/2024

Jason Benson, Bio Diverse Solutions
Accredited Level 2 BAL Assessor (Accreditation No: BPAD-37893)



REVISION RECORD

Revision	Prepared By	Summary	Reviewed By	Date
Draft Id	Michelle Gray	Internal Review	Jason Benson	9/12/2024
Draft Id v2	Jason Benson	Internal Review	Leanne Shilton	10/12/2024
Final Id	Jason Benson	Final Issued to Client		17/12/2024

Appendix B:

WAPC Asset Protection Zone (APZ) Standards, B.2: Siting and Design



B.2: SITING AND DESIGN

State Planning Policy outcome for Element 2:
Siting and design

Ensure siting and design solutions:

- manage or mitigate the bushfire risk to people, property and infrastructure; and
- avoid, or where unavoidable, minimise clearing of native vegetation.

B.2.1 IDENTIFYING AN ASSET PROTECTION ZONE

An Asset Protection Zone (APZ) is a low fuel area, maintained around a building to increase the likelihood a building will survive a bushfire, by reducing the potential for direct flame contact, radiant heat exposure and ember attack. The APZ allows emergency services access and provides an area for firefighters and home-owners to defend their property.

The width of an APZ should ensure the radiant heat impact does not exceed 29 kW/m² for a habitable building, or 10 kW/m² where a building is identified for use as an on-site shelter. Where a building or development site achieves a radiant heat impact of 29k W/m² or lower in its pre-development state (prior to any vegetation clearing or modification), an APZ is generally not required.

However, providing for the ongoing management of an APZ in perpetuity, as low threat vegetation, within the implementation section of the BMP and/or condition of development approval, will ensure the BAL rating of the building does not increase over time.

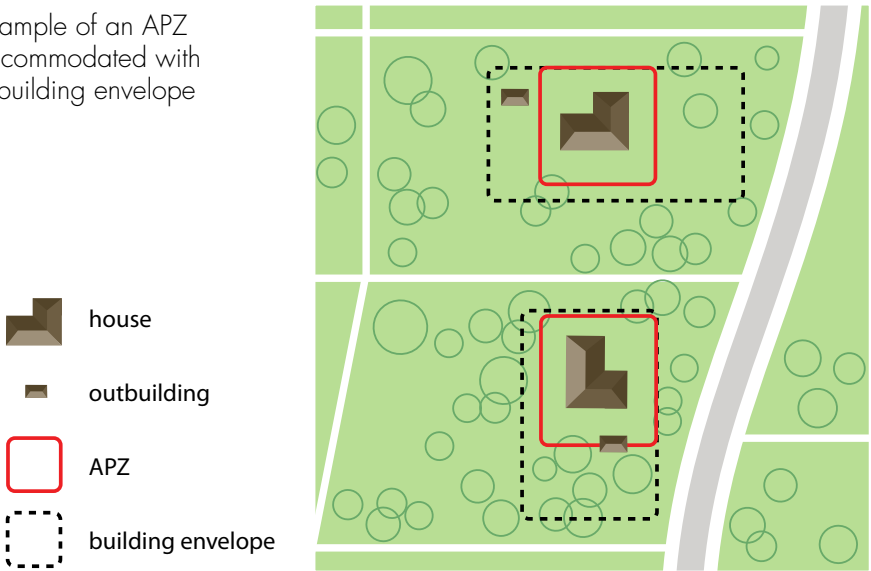
Clearing or modification of native vegetation to reduce the radiant heat impact below 29 kW/m² is generally not supported.

At the subdivision stage where a lot contains a building envelope, and the development site(s) is yet to be determined, the BMP should demonstrate the lot(s) can achieve an indicative development site(s) with a radiant heat impact not exceeding 29 kW/m², within the building envelope (Figure 24).

It may not be necessary for an entire building envelope to achieve 29 kW/m² or lower, where this results in unnecessary clearing or modification of native vegetation.

An APZ should be contained within the boundaries of the lot on which the building is situated, except in instances where it is demonstrated the vegetation on the adjoining land is, and will continue to be, low threat as per cl. 2.2.3.2 of AS 3959, or the vegetation on the adjoining lot is, and will remain in perpetuity, non-vegetated. However, it should be noted there is no requirement for a neighbouring landowner or land manager (public or private) to be party to a legal agreement to undertake ongoing management of vegetation as low threat, in perpetuity.

Figure 24: Example of an APZ accommodated with a building envelope





Exclusion of vegetation on adjoining land, which is covered by a local government firebreak notice, issued under section 33 of the *Bushfires Act 1954*, may occur in limited circumstances at the development application stage. Where it is evident the adjoining landowner is managing the vegetation in accordance with the firebreak notice, a copy of the firebreak notice and photographic evidence of the managed vegetation should be included in a BMP. It will also be necessary to seek written confirmation from the local government, to confirm support for the exclusion.

B.2.2 DESIGNING AN ASSET PROTECTION ZONE

An APZ should not be seen as an area entirely cleared of vegetation, but as a strategically designed space that considers how existing and future mature vegetation, and combustible and non-combustible features interact with and affect the building's resilience to bushfire.

An APZ should provide the greatest level of vegetation management within at least three metres of a habitable building, to ensure adequate unobstructed defensible space for emergency services to operate. This area should contain minimal vegetation and be free of combustible materials and obstructions. Within the remainder of the APZ, planting of vegetation can increase as you move farther away from the building.

The placement of plants within an APZ is a key design technique. Separation of garden beds with areas of low fuel or non-combustible material will break up fuel continuity and reduce the likelihood of vegetation within an APZ supporting a bushfire. It is important to consider the plant density and final structure and form of plants in their mature state.

Strategic landscaping measures can be applied, such as replacing weeds with low flammability vegetation to create horizontal and vertical separations between the retained vegetation.

Mulches used within the APZ should be non-combustible. The use of stone, gravel, shells, rock and crushed mineral earth is encouraged. Very fine or light mulch (such as shredded pine bark, pine needles, or poplar woodchips) less than five millimeters in diameter should be avoided. It is recommended that wood mulch is used in garden beds or areas where the moisture level is higher by regular irrigation, and these areas are separated with non-combustible elements, such as pathways and open spaces.

Incorporation of landscaping features, such as masonry feature walls, can provide habitable buildings with barriers to wind, radiant heat and embers. These features can include noise walls or wind breaks. Use of Appendix F of AS 3959 for bushfire resistant timber selection or the use of non-combustible fencing materials such as iron, brick, limestone, metal post and wire is encouraged within an APZ.

B.2.3 MANAGEMENT OF AN ASSET PROTECTION ZONE

Ongoing maintenance of an APZ is usually enforced through a condition of a development approval, which should refer to **Table 9** APZ technical requirements within this Appendix.

In addition to regular maintenance of an APZ, further bushfire protection can be provided by:

- ensuring gutters are free from vegetation
- installing gutter guards or plugs

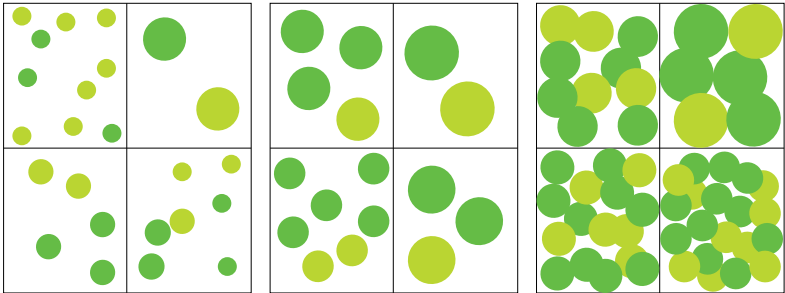
- regular cleaning of underfloor spaces, or enclosing them to prevent gaps
- trimming and removing dead plants or leaf litter
- pruning climbing vegetation (such as vines) on a trellis, to ensure it does not connect to a building, particularly near windows and doors
- removing vegetation in close proximity to a water tank to ensure it is not touching the sides of a tank
- following the requirements of the relevant local government firebreak notice, which may include additional provisions such as locating wood piles more than 10 metres from a building.

Preparation of a property prior to the bushfire season and/or in anticipation of a bushfire is beneficial even if your plan is to evacuate. Embers can travel up to several kilometres from a bushfire and fall into small spaces and crevices or land against the external walls of a building. Best practice recommends objects within the APZ are moved away from the building prior to any bushfire event. Objects may include, but are not limited to:

- door mats
- outdoor furniture
- potted plants
- shade sails or umbrellas
- plastic garbage bins
- firewood stacks
- flammable sculptures
- playground equipment and children's toys.



Table 9: Asset Protection Zone (APZ) technical requirements

OBJECT	REQUIREMENT
Fences within the APZ	Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (combustible, dead vegetation matter less than 6 mm in thickness)	• Should be managed and removed on a regular basis to be maintained as low threat vegetation • Should be maintained at less than two tonnes per hectare (on average) • Mulches should be non-combustible such as stone, gravel, shells, rock or crushed mineral earth or wood mulch more than five millimetres in thickness.
Trees* (more than 6 m in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building • Branches at maturity should not touch or overhang a building or powerline • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be less than 15 per cent of the total APZ area • Tree canopies at maturity should be at least 5 m apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided the total canopy cover within the APZ does not exceed 15 per cent and is not connected to the tree canopy outside the APZ. Tree canopy cover – ranging from 15 to 70 per cent at maturity  15% 30% 70%

APPENDIX B

100



OBJECT	REQUIREMENT
Shrub* and scrub* (0.5 m to 6 m in height). Shrub and scrub more than 6 m in height are to be treated as trees.	- Should not be located under trees or within three metres of buildings - Should not be planted in clumps more than five square metres in area - Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground cover*(less than 0.5 m in height. Ground cover more than 0.5 m in height is to be treated as shrub)	- Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above - Can be located within two metres of a structure but three metres from windows or doors if more than 100 mm in height.
Grass	- Grass should be maintained at a height of 100 mm or less, at all times - Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	Within three metres of each wall or supporting post of a habitable building; the area is kept free from vegetation but can include ground cover, grass and non- combustible mulches as prescribed above.
Liquid petroleum gas cylinders	- Should be located on the side of a building farthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building - The pressure relief valve should point away from the house - No flammable material within six metres from the front of the valve - Must sit on a firm, level and non-combustible base and be secured to a solid structure.

Notes:

* Plant flammability, landscaping design and maintenance should be considered – refer to following explanatory notes

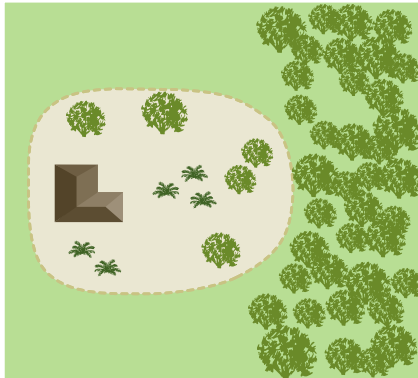
Fine fuel load is the combustible, dead or dry vegetation matter on the ground, near ground, or elevated. Fine fuel includes grass, leaves, bark and twigs less than six millimetres in diameter that ignite readily and are burnt rapidly when dry.

Fine fuel should be maintained at less than 2t/ha. 100gm/m² equates to 1t/ha. To estimate a fuel load (in t/ha), collect the dry fine fuel from a representative one square meter and weigh (in grams using kitchen scales) and multiply the weight by 0.01.

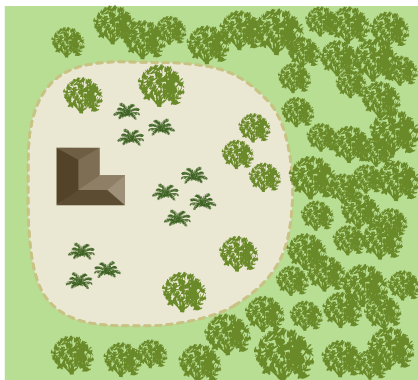


Figure 25: Design of an Asset Protection Zone

Hazard on
one side



Hazard on
three sides



Legend

- APZ
- trees
- shrubs

Regardless of whether an Asset Protection Zone exists in accordance with the acceptable solutions and is appropriately maintained, it should be noted that fire fighters are not obliged to protect an asset if they think the separation distance between the dwelling and vegetation is unsafe.

B.2.4 PLANT FLAMMABILITY

There are certain plant characteristics that are known to influence flammability, such as moisture or oil content and the presence and type of bark. Plants with lower flammability properties may still burn during a bushfire event but may be more resistant to burning and some may regenerate faster post-bushfire.

There are many terms for plant flammability, which should not be confused, including:

- **Fire resistant** – plant species that survive being burnt and will regrow after a bushfire and, therefore, may be highly flammable and inappropriate for a garden in areas of high bushfire risk.
- **Fire retardant** – plants that can absorb more of the heat of the approaching bushfire without burning, compared to more flammable plants.
- **Fire wise** – plants that have been identified and selected based on their low flammability properties and linked to maintenance advice and planting location within a garden.

Although not a requirement of the Guidelines, local governments may develop their own list of fire wise or fire-retardant plant species that suit the environmental characteristics of an area. When developing a recommended plant species list, local governments should consult with ecologists, land care officers or environmental authorities to ensure the plants do not present a risk to threatened ecological communities, threatened or endangered species or their habitat.

When selecting plants, private landholders and developers should aim for plants within the APZ that have the following characteristics:

- grow in a predicted structure, shape and height
- are open and loose branching with leaves that are thinly spread
- have a coarse texture and low surface-area-to-volume ratio
- will not drop large amounts of leaves or limbs that require regular maintenance
- have wide, flat and thick or succulent leaves
- trees that have bark attached tightly to their trunk or have smooth bark
- have low amounts of oils, waxes and resins (which will often have a strong scent when crushed)
- do not produce or hold large amounts of fine dead material in their crowns
- will not become a weed in the area.

Appendix C

City of Albany Fire Management Notice



FIRE MANAGEMENT NOTICE 2024/25

FIRST AND FINAL NOTICE IS HEREBY SERVED TO OWNERS AND OCCUPIERS OF LAND IN THE CITY OF ALBANY

This notice constitutes the City of Albany Fire Management Notice pursuant to Section 33 of the *Bush Fires Act 1954*.

You are required to prepare and maintain your property for the fire season. This Notice specifies the actions you must take on the land that you own and/or occupy, and with respect to any matter which is on the land that you own or occupy.

All fire mitigation measures must be in place by and maintained for the following periods:

North East Sector	1 October 2024 to 30 April 2025
South West Sector	1 December 2024 to 14 May 2025

City of Albany officers are authorised to enter and remain upon private property, without notice to the owner, to inspect and confirm compliance with this Notice. If you fail to comply with the requirements contained within this Notice, penalties under the *Bush Fire Act 1954* may apply.

The owner or occupier of land who has received notice under Section 33(1) of the *Bush Fires Act 1954* and who fails or neglects in any respect duly to comply with the requirements of the notice is guilty of an offence and liable to a fine of \$5000.

All land with total area less than 4000m² (0.4ha)

The owner or occupier must reduce any fire hazard on their land by:

- Reducing and/or maintaining *fine fuel load** over the whole land to no more than 50mm in height
- Creating and maintaining *hazard specific fire breaks**
- Creating and maintaining *Building Protection Zones**

*SEE DEFINITIONS

All land with an area 4000m² (0.4ha) to 500,000m² (50ha)

The owner or occupier must reduce any fire hazard on their land by:

- Creating and maintaining *perimeter fire breaks**
- Maintaining *fine fuel load** over all grassland to an average of eight (8) tonnes per hectare
- Creating and maintaining *hazard specific fire breaks**
- Creating and maintaining *building protection zones**

*SEE DEFINITIONS

Non-Agricultural Non-Cropping Non-Stock Land over 500,000m² (50ha)

The owner or occupier must reduce any fire hazard on their land by:

- Creating and maintaining *perimeter fire breaks**
- Maintaining *fine fuel load** over all grassland to an average of eight (8) tonnes per hectare
- Creating and maintaining *hazard specific fire breaks**
- Creating and maintaining *building protection zones**

*SEE DEFINITIONS

Agricultural Cropping and/or Stock Grazing Land over 500,000m² (50ha)

The owner or occupier must reduce any fire hazard on their land by:

- Creating and maintaining *perimeter fire breaks** are not compulsory but recommended
- Creating and maintaining *hazard specific fire breaks**
- Creating and maintaining *building protection zones**
- Cropping paddocks must be broken into compartments not exceeding 250 hectares in area, each separated by internal trafficable breaks.

*SEE DEFINITIONS

Definitions

Perimeter Fire Breaks - are a continuous (no dead ends) trafficable access track that has standard dimensions of 3 metres wide with 4 metres vertical clearance, located within 20 metres of the property boundary. It can be created by ploughing, cultivating, scarifying, burning or otherwise clearing including slashing and maintaining vegetation length below 50mm.

Hazard Specific Fire Breaks - are a 3 metre low fuel area around inflammable hazards with vegetation maintained below 50mm. Includes but is not limited to; haystacks, non-dwelling sheds, green electricity power domes, electricity power poles and fuel storage areas.

Fine Fuel Load - are grasses and dead combustible vegetation matter up to 6mm in diameter. It does not include processed mulch below an average depth of 50mm.

A fuel load depth of 125mm (fine fuels) to the mineral earth is indicative of approximately 8 tonnes per hectare.

The more fuel load, the higher the flame height and increased fire intensity.

Inflammable - means a substance or material easily ignited and capable of bursting into flames without the need of an ignition source.

Trafficable - means the capacity to allow a firefighting truck or other firefighting vehicle to safely navigate the interior perimeter of the property safely without impediment.

Definitions

Building Protection Zone - is a defensible space immediately adjacent to a building no less than three metres wide, clear of inflammable vegetation and material.

Combustible objects, plants, garden supplies such as mulches should be avoided within 10 metres of the building and vegetation kept to a minimum and kept in a low fuel state.

From 10 metres to 20 metres of the building, land must be parkland cleared and in low fuel state. The *building protection zone* may reduce the likelihood and impact that direct flame contact, radiant heat or ember attack may have on buildings in the event of a bushfire.

Gutters, roofs, and walls of all buildings to be free of inflammable matter and maintained.

Information Subsidiary to the Fire Management Notice

Variation to the requirements of the Fire Management Notice:

If you cannot meet these fire management notice requirements, you must apply for a variation.

Applications for variations must be submitted to the City of Albany by the 01 November 2024.

Please contact the City of Albany on 6820 3000 or visit the City's website www.albany.wa.gov.au.

City approved treatment plans:

All properties and/or land subject to an approved Bushfire Management Plan (BMP) or an approved Bushfire Attack Level assessment (BAL), because of subdivision, development application or City approved treatment plan, must comply with the listed requirements and conditions in their entirety. Compliance with additional plans does not constitute compliance with this notice.

The City will only accept a BMP or BAL completed by an accredited Bush Fire Planning and Design Practitioner. A BMP can encompass single or multiple properties. All properties covered by a BMP or BAL must comply with all conditions of the BMP or BAL. Property owners and/or occupiers must still comply with all requirements in this notice and with ALL additional requirements outlined within the BMP, BAL or treatment plan.

To check your property zone and subdivision mitigation requirements please contact City of Albany Planning Services on 6820 3000 or email compliance@albany.wa.gov.au.

Information Subsidiary to the Fire Management Notice

Plantation Lots:

Owners and lessees of plantation lots must comply with the Department of Fire and Emergency Services (DFES) *Guidelines for Plantation Fire Protection* (the guidelines) in addition to this fire management notice. The guidelines are available from the DFES website: publications.dfes.wa.gov.au.

Useful Information

A guide to preparing property in bushfire prone areas can be obtained from the Department of Fire and Emergency Services and accessed at publications.dfes.wa.gov.au.

NORTH EAST SECTOR FIRE SEASON

1 October 2024 – 14 November 2024	Restricted Burning permits required
1 October 2024 – 30 April 2025	Requirements of Fire Notice MUST be in place and maintained
15 November 2024 – 15 February 2025	BURNING PROHIBITED
16 February 2025 – 30 April 2025	Restricted Burning permits required

SOUTH WEST SECTOR FIRE SEASON

1 November 2024 – 14 December 2024	Restricted Burning permits required
1 December 2024 – 14 May 2025	Requirements of Fire Notice MUST be in place and maintained
15 December 2024 – 14 March 2025	BURNING PROHIBITED
15 March 2025 – 14 May 2025	Restricted Burning permits required

These dates are subject to change. Any changes will be published in the local newspapers and on the City of Albany website at www.albany.wa.gov.au.

Bush Fire Brigade Boundaries

Please refer to the City of Albany website for volunteer Brigade contacts:

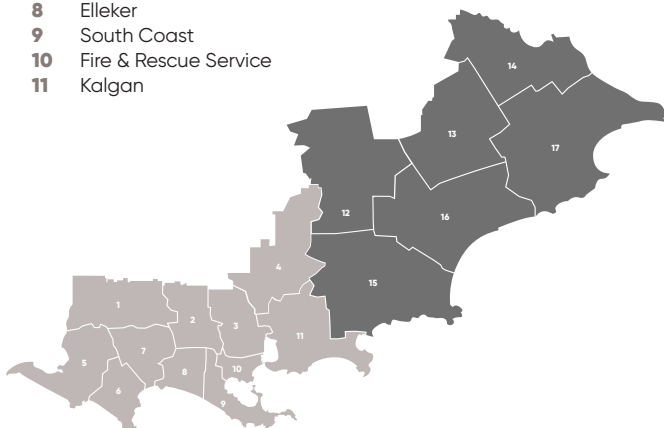
www.albany.wa.gov.au/volunteer-bushfire-brigades

South West

- 1** Redmond
- 2** Highway
- 3** King River
- 4** Napier
- 5** Youngs Siding
- 6** Bornholm
- 7** Torbay
- 8** Elleker
- 9** South Coast
- 10** Fire & Rescue Service
- 11** Kalgan

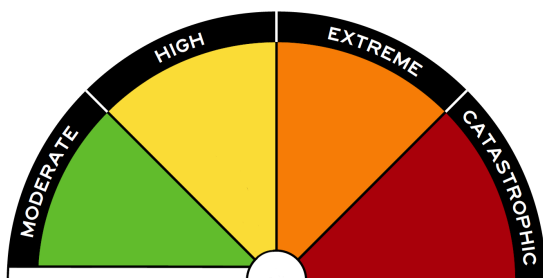
North East

- 12** South Stirling
- 13** Kojaneerup
- 14** Gnowellen
- 15** Manypeaks
- 16** Green Range
- 17** Wellstead



Fire Danger Rating

Fire Danger Ratings (FDRs) tell you how dangerous a fire would be if one started. The higher the FDR, the more severe the bushfire will be. They are based on weather conditions forecast by the Bureau of Meteorology.



Fire Danger Rating	Fire Behaviour	Action required
Moderate Plan and prepare	Most fires can be controlled	Stay up to date and be alert for fires in your area
High Be ready to act	Fires can be dangerous	Decide what you will do if a fire starts
Extreme Take action now to protect life and property	Fires will spread quickly and be extremely dangerous	Put your bushfire plan into action
Catastrophic For your survival, leave bushfire risk areas	If a fire starts and takes hold, lives are likely to be lost	Homes cannot withstand fires in these conditions. Stay safe by going to a safer location early in the morning or the night before.

When there is minimal risk, Fire Danger Ratings will be set to **'No Rating'**. At this level, fires are not expected to spread in a fast or life-threatening way.

DISCLAIMER:

Environmental Conditions

The requirement to clear a fire break under this notice exempts an owner or occupier from needing a permit to clear native vegetation under the *Environmental Protection Act 1986* however it does not authorise an owner or occupier to carry out excessive clearing. Clearing or removal of native vegetation beyond the requirements of this notice will require permission from other State Legislative Authorities.

Any land subject to environmental value such as, but not limited to, Threatened Ecological Communities (TEC), Aboriginal sites as defined in the Aboriginal Heritage Act, Bush Forever Sites, Conservation covenant, Riparian vegetation or Declared Flora and Fauna should seek further information about what activities can or cannot be done prior to carrying out the requirements under this notice.

Owners and/or Occupiers must contact the relevant State Government agency which include but are not limited to: *Department of Primary Industries and Regional Development, Department of Biodiversity, Conservation and Attractions, Department of Planning, Lands and Heritage, and Department of Water and Environmental Regulation.*

Failure to comply with this Notice

Failure or neglect to comply with this notice is an offence and can result in a penalty of up to \$5000.

City of Albany officers, servants, workers or contractors engaged by the City of Albany and any vehicles, appliances and machinery are authorised to enter and remain upon private property, without notice to the owner, to carry out the requirements of this notice that are not complied with by the date specified in this notice and any expenses, included court related costs, may be recovered from the owner and/or occupier of the property.

The City may vary a requirement or condition of this Notice at its discretion.

Any 'variation to requirements' approval you hold may be declared void at any time by the City.

This notice is issued and authorised by:

Andrew Sharpe
Chief Executive Officer



PHONE: 08 6820 3000

EMAIL: STAFF@ALBANY.WA.GOV.AU

ADDRESS: 102 NORTH RD, YAKAMIA, ALBANY WA, 6331

WEBSITE: ALBANY.WA.GOV.AU