

Alkimos Coastal Village Foreshore Management Plan

Prepared for DevelopmentWA

By Urbacqua

September 2026

Acknowledgement

We acknowledge the traditional owners of the south-west of Western Australia, the Noongar peoples, and give thanks to their custodianship of Country. We pay our respect their deep ancestral knowledge, to elders past, present and emerging, and their ongoing connection to the skies, waters and lands of our Country.

Disclaimer and Limitation

This document is published in accordance with and subject to an agreement between Urbaqua and the Client, DevelopmentWA, for who it has been prepared for their exclusive use. It has been prepared using the standard of skill and care ordinarily exercised by environmental professionals in the preparation of such Documents.

This report is a qualitative assessment only, based on the scope of services defined by the Client, budgetary and time constraints imposed by the Client, the information supplied by the Client (and its agents), and the method consistent with the preceding. Urbaqua has not attempted to verify the accuracy or completeness of the information supplied.

Any person or organisation that relies upon or uses the document for purposes or reasons other than those agreed by Urbaqua and the Client without first obtaining the prior written consent of Urbaqua, does so entirely at their own risk and Urbaqua, denies all liability in tort, contract or otherwise for any loss, damage or injury of any kind whatsoever (whether in negligence or otherwise) that may be suffered as a consequence of relying on this Document for any purpose other than that agreed with the Client.

Copying of this report or parts of this report is not permitted without the authorisation of the Client or Urbaqua.

EXECUTIVE SUMMARY

The Alkimos Coastal Village Foreshore Management Plan provides a comprehensive framework for the long-term protection, activation, and management of a 27.84 hectare foreshore area that forms the central recreational and environmental interface of the Alkimos Coastal Village development. Prepared for DevelopmentWA, the plan responds to extensive stakeholder engagement including with the City of Wanneroo, Surf Life Saving WA, Water Corporation, State agencies, and local Yued and Whadjuk knowledge holders, and is grounded in key planning, environmental and cultural considerations. The foreshore is recognised as a future “Regional Beach,” necessitating a careful balance between public access, landscape protection, and coastal hazard resilience.

The plan identifies the foreshore’s significant environmental values, including remnant Quindalup dune vegetation, habitat for common and conservation-significant fauna, and culturally meaningful dune and limestone formations. While most vegetation is in Very Good condition, informal access tracks have caused degradation in several areas. Management responses include fencing, rehabilitation of approximately 3.77 hectares of degraded tracks, weed control, dune stabilisation, and maintaining ecological connectivity.

This foreshore management plan does not foresee any significant vegetation clearing except for areas associated with the City of Wanneroo’s Alkimos Surf Life Saving Club project. Any clearing for proposed developments that are not part of this foreshore management plan (ie. facilities that are not already contemplated) will require this foreshore management plan to be revised to address potential environmental impacts, mitigation measures, management requirements, and any required assessment and approval processes.

The plan confirms a preferred location for the SLSC adjacent to the safest beach segment (ALK5) and east of the 42-year coastal process line, balancing safety, operational visibility, and minimisation of vegetation loss. Supporting infrastructure, such as beach access paths, a principal shared path, picnic facilities, car parking, and integrated public open space, has been planned to optimise community use while ensuring compliance with State coastal planning policies and the City’s Local Planning Policy 4.21. Public access will be formalised into five designated beach paths, reducing erosion and protecting sensitive dune systems.

Cultural values are a central component of the plan, reflecting strong Noongar connections to the coastal landscape. Recommendations include embedding Noongar language, narratives and public art; protecting culturally significant landforms; using Cultural Heritage Monitors during any ground disturbance; and supporting ongoing relationships between knowledge holders and foreshore-based organisations such as the surf life saving club.

Coastal process assessments indicate generally stable shorelines with localised erosion hotspots, supporting planned asset placement outside relevant hazard lines and establishing future adaptation triggers. The plan incorporates fire risk mitigation, UXO (unexploded ordnance) considerations, and ongoing monitoring requirements, with implementation staged alongside subdivision of the broader Alkimos Coastal Village development.

Overall, the Foreshore Management Plan provides a coordinated, culturally informed and environmentally responsible basis for creating an inclusive, lively and resilient regional coastal destination that reflects both natural character and community aspirations, while ensuring sustainable management for the future.

CONTENTS

Executive Summary	i
1 Introduction	4
1.1 Study area	4
1.2 Plan purpose	4
1.3 Land details	7
1.4 Preparation of the plan	8
1.5 Objectives	8
2 Planning and policy context	10
2.1 Relevant State Government strategies and policies	10
2.2 Relevant City of Wanneroo strategies and policies	10
2.3 Planning background	11
2.4 Regional planning context	14
2.5 Future planning	15
3 Existing Environment	16
3.1 Climate and rainfall	16
3.2 Land use	18
3.3 Topography	19
3.4 Geology	19
3.5 Soils	23
3.6 Vegetation	23
3.7 Fauna	34
3.8 Heritage	37
3.9 Coastal processes and hazard risks	40
3.10 Key issues	44
4 Foreshore management plan	47
4.1 Objectives and outcomes	47
4.2 Key Plan elements	48
4.3 Other management requirements	61
4.4 Strategies and actions	63
5 Implementation	66
5.1 Implementation schedule and reporting	66
5.2 Monitoring	67
6 References	73
Appendix 1: Alkimos Coastal Node – Foreshore Reserve Vegetation Assessment (PGV Environmental, 2024)	75
Appendix 2: Alkimos Foreshore Elder Engagement: Summary	76
Appendix 3: Path access assessment by MP Rogers and Associates	77

Tables

Table 1: Land details for the areas covered by this foreshore management plan.....	7
Table 2: Soil landscape mapping units within the site (DPRID-076)	19
Table 3: Vegetation type within the subject land	25
Table 4: Assessment of vegetation type against key diagnostic characteristics for the Tuart woodlands TEC	30
Table 5: Vegetation condition scale (Keighery 1994).....	30
Table 6: Fauna recorded during the field survey	35
Table 7: Beach Hazard Assessment by (MP Rogers, 2014)	43
Table 8: Key issues and mitigations	45
Table 9: Species list for revegetation (Source PGV Environmental, 2025, adapted by CoW).....	57
Table 10: Completion criteria for revegetation	58
Table 11: Facilities within the study area	60
Table 12: Implementation plan	69

Figures

Figure 1: Alkimos Coastal Village Foreshore Management Plan area.....	5
Figure 2: Current region scheme zones and reserves and land ownership.....	6
Figure 3: Alkimos Eglinton District Structure Plan indicating the general location of the foreshore management plan.....	11
Figure 4: Alkimos Coastal Village Local Structure Plan	13
Figure 5: Shorehaven Foreshore Masterplan	14
Figure 6: Average monthly rainfall (Tamala Park) and average monthly temperature (Gingin).16	
Figure 7: Average annual wind speeds and directions at 9am & 3pm at Gingin Aero station. ..17	
Figure 8: Monthly maximum wind gusts and speeds at 9am and 3pm at Gingin Aero station. ..17	
Figure 9: Historic aerial imagery from Landgate: 1995, 2012 and 2018.....	18
Figure 10: Elevation.....	20
Figure 11: Geology	21
Figure 12: Coastal limestone hazard assessment (Douglas Partners, 2025).....	22
Figure 13: Bush Forever sites, environmentally sensitive areas and vegetation complex	24
Figure 14: Vegetation types.....	27
Figure 15: Significant plant species identified by Ecologia	29
Figure 16: Vegetation condition	31
Figure 17: Habitat mapped by Emerge 2025.....	35
Figure 18: Black Cockatoo foraging habitat to be retained (purple hatch)(RPS, 2019).....	36
Figure 19: Coastal process lines	41
Figure 20: Review of shoreline movement trends (MP Rogers, 2025)	43
Figure 21: Beach units assessed by MP Rogers 2014	44
Figure 22: Alkimos Coastal Village Foreshore Master Plan	49
Figure 23: City of Wanneroo concept for the Alkimos Surf Life Saving Club	51
Figure 24: Location of proposed path network.....	54
Figure 24: Area to be revegetated and protected	56

Plates

Plate 1: Site H9 (Douglas Partners, 2025)	22
Plate 2: Completely degraded vegetation at the northern end of the site	32

1 INTRODUCTION

The Alkimos Coastal Village foreshore area has long been recognised as a “Regional Beach”. Accordingly, the use of this area and location of infrastructure is fundamental to achieving the Vision for the Alkimos Coastal Village.

Urbaqua has been engaged by DevelopmentWA to work with key stakeholders to prepare a foreshore management plan for the Alkimos Coastal Village Foreshore which supports the Vision that “the foreshore will be an energetic and lively place with a distinct coastal flavour” (Alkimos Coastal Village Local Structure Plan, Creative D&P, 2019).

This foreshore management plan outlines objectives and strategies for the future management of the foreshore and indicates a preferred location for the Surf Life Saving Club.

1.1 Study area

Alkimos Coastal Village is located approximately 40km north west of the Perth CBD on the coast, west of the Water Corporation’s Alkimos wastewater treatment plant. The development is south of Shorehaven and north of Alkimos Beach.

The Alkimos Coastal Village foreshore area comprises 22.8ha of Regional Open Space reserve located between the beach and the future Alkimos Coastal Village (Figure 1), however it is noted that some small portions are still the subject of a future Amendment to the Metropolitan Region Scheme (MRS). The foreshore area is approximately 1.4km in length and between 120m and 280m in width.

The study area also includes 0.47ha land within the Water Corporation’s Public Purpose Reserve, 1.65ha of local public open space (POS) and 2.95ha of land indicated on the local structure plan as “Coastal Foreshore (area where values, uses, functions and assets can be located at the end of the planning timeframe)”. This totals 27.84ha (the study area).

The majority of the study area is reserved for Parks and Recreation in the MRS, with a small area associated with the Water Corporation’s Alkimos Desalination Plant reserved for Public Use (Figure 2). These reserves are reflected in the City of Wanneroo’s District Planning Scheme No 2 (DSP2). A portion of the foreshore area remains zoned Urban in the MRS and Urban Development in DSP 2, and as noted above, this land will be subdivided and reserved for Parks and Recreation prior to development commencing. The land that will be future local public open space is zoned Urban in the MRS and Urban Development in DSP2.

1.2 Plan purpose

The foreshore management plan has been prepared to provide guidance on the retention and management of important environmental attributes and landscapes as well as the creation of places for the future community within the context of climate change, supporting opportunities for recreation and other activities, facilitating the community’s connection to nature and the beach.

The foreshore management plan will support the future subdivision and creation of the Foreshore Reserve consistent with the Alkimos Coastal Village Local Structure Plan (Creative D&P, 2019).

DevelopmentWA - Alkimos Coastal Village Foreshore Management Plan

Figure 1 - Study area



* @2025. While Urbaqua has taken care to ensure the accuracy of this product, Urbaqua and client make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. Urbaqua and client cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.
Data source: Landgate, DevelopmentWA Created by: SS Projection: MGA: zone 50.



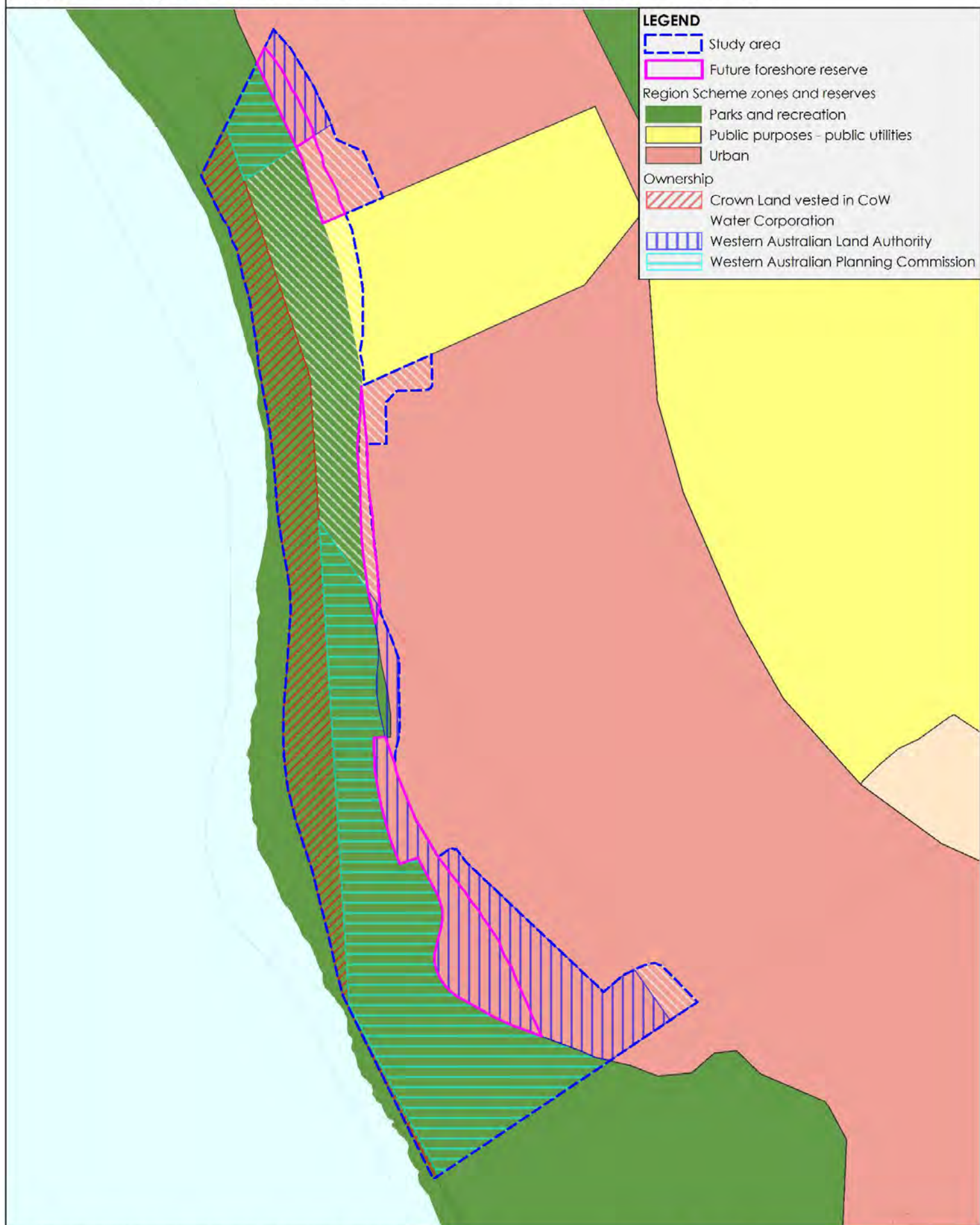
0 130
meters

Scale 1:6,500 @ A4

urbaqua
land and water solutions

DevelopmentWA - Alkimos Coastal Village Foreshore Management Plan

Figure 2 - Region Scheme zones and reserves and land ownership



* @2026. While Urbaqua has taken care to ensure the accuracy of this product, Urbaqua and client make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. Urbaqua and client cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: Landgate, DevelopmentWA. Created by: SS. Projection: MGA: zone 50.



0 130
meters

Scale 1:6,500 @ A4

urbaqua
land and water solutions

This plan provides an indicative location of the Alkimos Surf Life Saving Club and associated facilities and considers general requirements for access, safety and integration with the natural and built environment, as well as use by the community. The final location, design and construction of the development is being undertaken as a separate process by the City of Wanneroo.

The study area also contains areas of public open space within the Alkimos Coastal Village development area that are adjacent to the foreshore. Some of these areas, designated as "Coastal Foreshore" on Figure 1, provide an opportunity for the values, uses, functions and assets to be located at the end of the planning timeframe. The other areas of public open space adjacent to the foreshore are also included in the study area to ensure integration of the functions and design of these spaces with the foreshore area. This foreshore management plan does not include the detailed design of these spaces, however, as this will be undertaken as part of future subdivision and development of the Alkimos Coastal Village.

1.3 Land details

This foreshore management plan addresses land within the existing and proposed foreshore reserve, as well as the adjacent proposed areas of public open space to ensure optimal integration of the function and use of these areas. The land details are summarised in Table 1. Land ownership is shown in Figure 2.

Table 1: Land details for the areas covered by this foreshore management plan.

Lot	Owner	Area (ha)
Reserve 20561	Crown land	5.77
Portion of Lot 1000	WAPC	9.18
Portion of Lot 9001	Water Corporation	6.24
Portion of Lot 9022	WA Land Authority (DevelopmentWA)	5.14
Portion of Lot 9501	WA Land Authority (DevelopmentWA)	1.51
Total		27.84 ha
Areas outside the foreshore reserve		
POS B		0.24
POS C		0.23
POS E		0.41
POS G		0.77
Future foreshore B		0.68
Future foreshore C		0.22
Future foreshore G		2.05
Total		4.6 ha

1.4 Preparation of the plan

This plan has been collaboratively prepared with input from key stakeholders including:

- City of Wanneroo
- Surf Life Saving Western Australia
- Water Corporation
- Department of Planning, Lands and Heritage
- Local Aboriginal knowledge holders

This included workshops to establish the

- (i) objectives, values and opportunities, and
- (ii) concepts for use and management of the foreshore to support delivery of the Vision for the Alkimos Coastal Village.

A further, separate workshop was held with local Aboriginal knowledge holders to better understand the Aboriginal cultural values of the foreshore area. The outcomes from these engagements underpin the strategies and actions contained within this foreshore management plan.

1.5 Objectives

The objectives of the Alkimos Coastal Village Foreshore Management Plan are to:

1. Integrate natural and cultural heritage into the foreshore design
2. Create an inclusive, family-friendly destination for community connection
3. Ensure safe, resilient, and protected foreshore environments
4. Foster a lively and accessible hub of activity

These objectives were developed by the key stakeholders through the collaborative process in response to consideration of the environmental, social and cultural context. They provide a framework for the protection of landscape, cultural and environmental values and delivery of the coastal facilities and infrastructure required to support the regional beach function, as well as the ongoing management of the foreshore reserve by the City.

1.6 Review

This foreshore management plan has been prepared having regard to the development and management actions identified herein and does not contemplate significant vegetation clearing other than that associated with the City of Wanneroo's Alkimos Surf Life Saving Club project. Should additional vegetation clearing, infrastructure or development proposals be advanced within the foreshore reserve that are not considered by this plan (ie. facilities that are not identified in this foreshore management plan), the plan will require review and update to assess the associated environmental impacts, identify appropriate mitigation and management measures, and address any relevant statutory assessment and approval requirements.

The foreshore management plan is intended to be generally valid for 10 years from Council approval unless circumstances arise that warrant an earlier review or update. At the time of review, where any Developer-delivered components remain outstanding, the review shall be undertaken by the Developer.

The review shall have regard to:

- the current policy and statutory planning framework;
- the extent of works completed and those remaining to be delivered;
- monitoring of outcomes and the effectiveness of implemented management actions;
- any changes to coastal processes, environmental conditions or hazard risk;
- updated stakeholder requirements, including those of relevant agencies; and
- the integration of the foreshore with adjacent development, infrastructure and public open space.

2 PLANNING AND POLICY CONTEXT

2.1 Relevant State Government strategies and policies

The following State Government policies and strategies are considered relevant and applicable to the study area and foreshore management plan:

- State Planning Policy 2.6 State Coastal Planning Policy (SPP 2.6)
- State Planning Policy 2.8 Bushland Policy for the Perth Metropolitan Region
- State Planning Policy 3.7 Bushfire
- State Planning Policy 4.2 Activity Centres for Perth and Peel
- State Coastal Planning Policy Guidelines (2020) (SPP 2.6 Guidelines)
- Coastal Planning and Management Manual – A Community Guide for Protecting and Conserving the Western Australian Coast (2003)
- Planning for Bushfire Guidelines (2024)
- Coastal Hazard Risk Management and Adaptation Planning Guidelines (2019)

The policies and relevant guidance have been considered appropriately as part of development of the foreshore management plan.

2.2 Relevant City of Wanneroo strategies and policies

The following local government policies, plans and strategies are considered relevant and applicable to the study area and foreshore management plan:

- City of Wanneroo Coastal Hazard Risk Mapping and Adaptation Plan (2018)
- City of Wanneroo Coastal Management Plan (2021)
- City of Wanneroo Local Biodiversity Strategy
- City of Wanneroo Local Environmental Plan (2009-2014)
- Local Planning Policy 2.4 Site Works and Retaining for Residential Development
- Local Planning Policy 3.2 Activity Centres
- Local Planning Policy 3.3: Fauna Management
- Local Planning Policy 4.13 Caves and Karstic Features
- Local Planning Policy 4.21 Coastal Assets
- Local Planning Policy 4.3 Public Open Space
- Local Planning Policy 4.4 Urban Water Management
- Northern Coastal Growth Corridor Community Facilities Plan, 2020
- Interim Place vision for Alkimos Station Precinct
- Foreshore Management Plan Guidelines, City of Wanneroo, March 2021 Version 1

The policies and relevant guidance have been considered appropriately as part of development of the foreshore management plan.

2.3 Planning background

2.3.1 Alkimos Eglinton District Structure Plan

The Alkimos Eglinton District Structure Plan was approved by the Western Australian Planning Commission in 2009 and by the City of Wanneroo in 2010 (Figure 3). The District Structure Plan identified the establishment of a Coastal Village at Alkimos and the adjacent foreshore as an area of concentrated recreational activity within the context of maintaining the natural state of the foreshore in other parts of the district structure planning area.

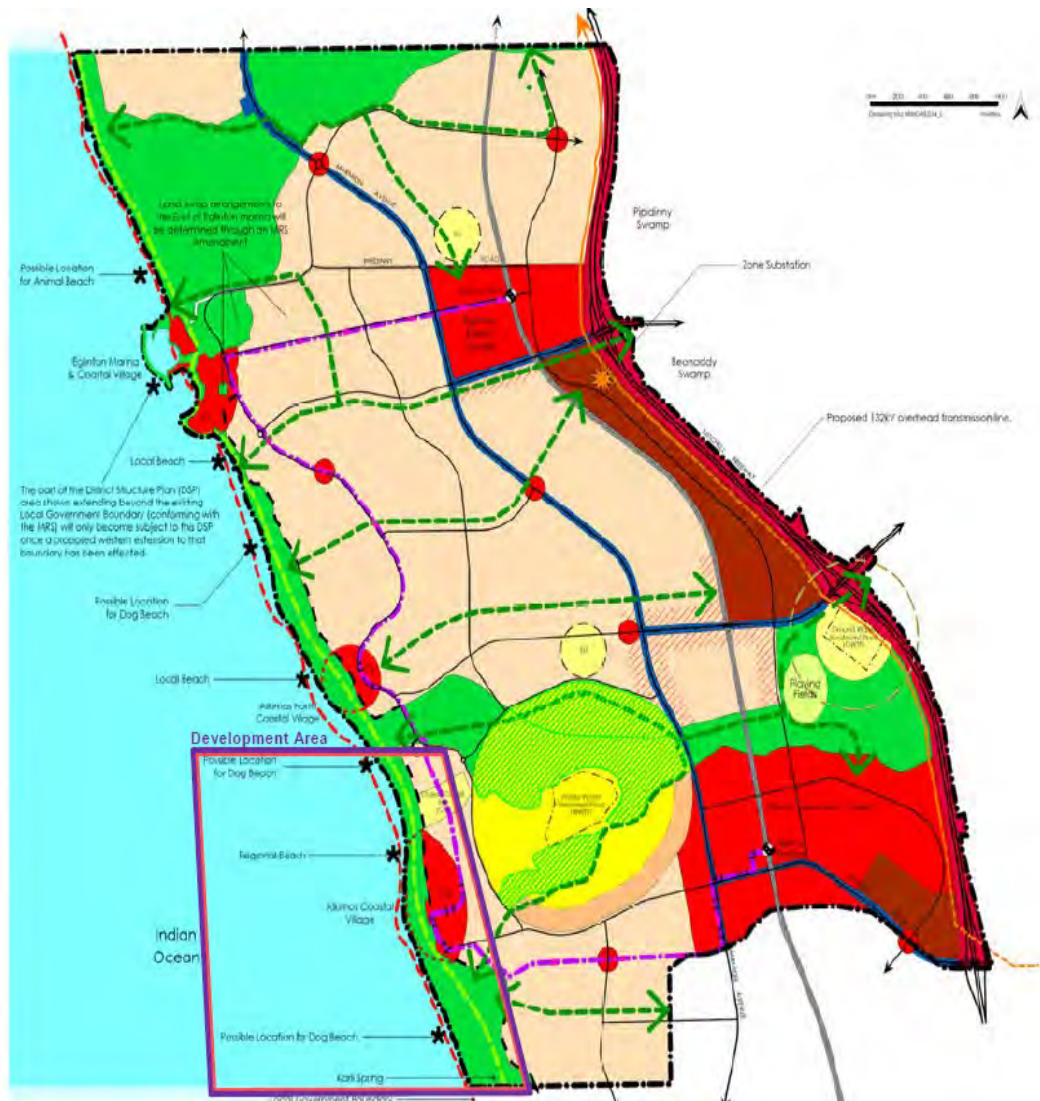


Figure 3: Alkimos Eglinton District Structure Plan indicating the general location of the foreshore management plan

With regard to the Coastal Village, the District Structure Plan noted....

"Physically and visually linked to the Alkimos Secondary Activity Centre, the Alkimos Coastal Village (Local Activity Centre) is located at the southern end of the Alkimos Regional Beach, and provides an important coastal focal point for the community. It will be a place of "vitality" engendering the coastal lifestyle, being an essential element in delivering the vision for the project.

This node has a strategic location centred on an excellent regional swimming beach with panoramic views northward up the coastline.

It is intended that "Alkimos by the Sea" will be an intensive lifestyle and recreation node with:

- o pedestrian promenades*
- o extensive landscaped areas*
- o grassed terraces*
- o boardwalks*
- o shelters*
- o a main street*
- o other beach facilities."*

The District Structure Plan also noted that "infrastructure and large numbers of people will need to be located within the study area (the area affected by coastal processes) in order to facilitate the area to function as a "Regional Beach" and vibrant "Coastal Village".

2.3.2 Alkimos Coastal Village Local Structure Plan

The Alkimos Coastal Village Local Structure Plan was endorsed by the State Government and City of Wanneroo in 2019 (Figure 4). The approved structure plan provides for approximately 6,100 resident in around 2,200 dwellings (650 single, 1,550 group/multiple dwellings with an employment target of 900 jobs. It contains eight (8) areas of public open space, including 1 neighbourhood park. No elements of the Local Structure Plan associated with areas within the FMP have been refined, relocated or omitted since its approval.

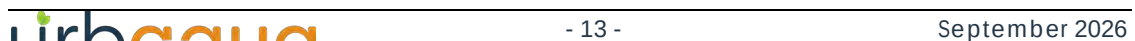
The Regional Beach function is particularly emphasised and includes recognition of the foreshore as a tourist function, with the node including a possible hotel and short stay accommodation, supported by retail, commercial, lifestyle and medical uses in the neighbourhood centre. The establishment of a surf life saving club was also a significant function within the foreshore and the Local Structure Plan proposed an indicative location outside the area considered to be at risk from coastal processes within a 42 year timeframe (yellow triangle on Figure 4), noting that the final location would be addressed through the Foreshore Management Plan.

The Local Structure Plan defined the values and services required to be accommodated foreshore reserve as:

- *Recreation and safety* - provided through development of Surf Life Saving Club and associated facilities and as well as other public recreation facilities such as landscaped areas, shelters, seating, tables, barbeques and a playground.
- *Public access to the beach* - a high level of access is required to support outcomes of the AEDSP (Alkimos Eglinton District Structure Plan) which sought to protect the environmental values of the foreshore reserve in other areas of the coast by focusing recreational activity at this location.

The Local Structure Plan was supported by many technical reports. The Coastal Processes Assessment by MP Rogers and Associates (2013) considered the requirements of SPP 2.6 and established the potential landward extent of the effects of coastal physical processes for a range of planning horizons including 20, 42, 50, 75 and 100 years.

MP Rogers also undertook a beach hazard assessment in 2014 to assist in the identification of the location for the surf life saving club. These findings are discussed further in section 3.9.



The Coastal Hazard Risk Management and Adaptation Plan (Essential Environmental, 2019) also noted that the primary function of the foreshore reserve within the local structure plan area was to “provide public access to the beach, thereby maintaining connectivity and interaction between the coastal village and the beach. A significant level of public access is appropriate given the designation of this location as a ‘Regional Beach’. The high level of access is required to support outcomes of the District Structure Plan which sought to protect environmental values of the foreshore reserve in adjacent areas by focussing recreational activity in a small number of key locations.”

Other supporting documents include:

- Basic Fauna Assessment Alkimos Coastal Village Project No: EP24-166(02) Prepared for Development WA, June 2025
- Alkimos coastal node project, Flora and vegetation survey report update, Ecologia May 2025
- Level 2 Survey of structure plan area completed by Ecologia, 2016 (quadrats shown)
- Cultural Heritage Management Plan by Karrda, 2023
- Landscape Strategy by AECOM, 2019
- Community Development Plan by Creating Communities, 2019
- Local Water Management Strategy by Emerge Associates, 2019
- Bushfire Management Plan by Strategen 2019

These are discussed further in Section 3.

2.4 Regional planning context

The study area abuts Shorehaven to the north and Alkimos Beach to the south.

The opportunities for regional linkages and integrated foreshore outcomes provided by the Shorehaven Foreshore Masterplan (EPCAD, 2010) include links to regional open space and dual use path (pink line). The master plan suggests that a secondary pedestrian route (dotted grey line) may be provided parallel to the beach through the dunes and that the closest location of an east-west path for pedestrians to the beach is approximately 50m north (red dots), however neither of these facilities have been constructed at this stage.

Subsequent to the Shorehaven Foreshore Masterplan, the City has determined that the beach to the north will be designated as a dog beach. This is discussed further in section 4.2.

The Alkimos Beach Foreshore Management Plan (RPS, 2015) proposes a location for the connection of a dual use path to the south. However, this location has since been modified to align with Graceful Blvd. It is also noted that the Alkimos Beach Foreshore Management Plan identifies the current, temporary location of the Alkimos Surf life Saving Club.



Figure 5: Shorehaven Foreshore Masterplan

2.5 Future planning

As stated previously, this foreshore management plan will support the future subdivision and creation of the Foreshore Reserve consistent with the Alkimos Coastal Village Local Structure Plan (Creative D&P, 2019). This includes subdivision and reservation under the Metropolitan Region Scheme (MRS) of the areas of land west of the 100 year coastal process line not yet reserved (refer to Figure 2), as well as transferring the areas identified on the Local Structure Plan as Coastal Foreshore to the City of Wanneroo.

In terms of the MRS amendments contemplated at Figure 2 (depicted with the number 2), there is no time frame specified, however this amendment needs to be progressed to reflect the planning frameworks future land use intentions and ideally should coincide or pre-date the timing to develop the foreshore area.

Further, while it is not yet known when the areas west of the 100 year coastal process line will be created, it would be logical to be associated with subdivision of the land adjacent the relevant portion of future reserve. Accordingly, as the delivery of the Alkimos Coastal Village Local Structure Plan is likely to be staged, the implementation of the foreshore management plan will likely be done in stages and coordinated with the development of the residential/ commercial areas adjacent. Although there may be merit for a reservation and delivery consistent with the foreshore management plan to proceed ahead of the staged development, for instance if the Structure Plan identified “Regional Foreshore Shared Path” (principal shared path) was being sought to be delivered ahead of the adjacent development to provide a continuous link north and south of the foreshore management plan area.

Once an area west of the 100 year coastal process line is created under subdivision, the reserve will be vested in the State. It is anticipated that the State will then request that the City assumes management responsibility for the land. The City will seek to manage the land with power to lease. Subject to this, it is intended that the facility located within the land will be leased to the Alkimos Surf Life Saving Club for a period of approximately 21 years, enabling the ongoing operation and maintenance of the facility by the surf life saving club.

Following subdivision, reservation and handover of all areas of the foreshore to the City of Wanneroo, the City will be responsible for all ongoing management requirements.

All activities associated with the design, construction and management of the Alkimos Surf Life Saving Club are being undertaken as a separate process by the City of Wanneroo.

3 EXISTING ENVIRONMENT

The study area is located along the coast between Shorehaven and Alkimos Beach, Alkimos, in the City of Wanneroo. The foreshore is subject to coastal processes and contains significant areas of remnant vegetation. The key environmental values are described below.

3.1 Climate and rainfall

3.1.1 Prevailing weather

The climate of the study area is typical of the south-western region of Western Australia and is characterised by the Koppen Climate Classification as a Mediterranean climate, with long hot dry summers and cool wet winters. The dominate rainfall mechanisms are frontal systems caused by cold fronts associated with low pressure systems that extend across southern Australia between May and October. During the summer months, thunderstorms and ex-tropical cyclones can bring intense rainfall.

3.1.2 Rainfall

Rainfall data (Figure 6) is provided by the nearby Bureau of Meteorology (BoM) rain gauge at Tamala Park (Station No. # 009264) located approximately 13 km to the south. The average annual rainfall for years from 2004 to 2024 is 627.2mm (BoM, 2026). The pattern is for high rainfall from May to August, with 70% of the year's total rain in four months. It is noted that rainfall is falling later in the year over the last 15 years when compared to the average since 2004.

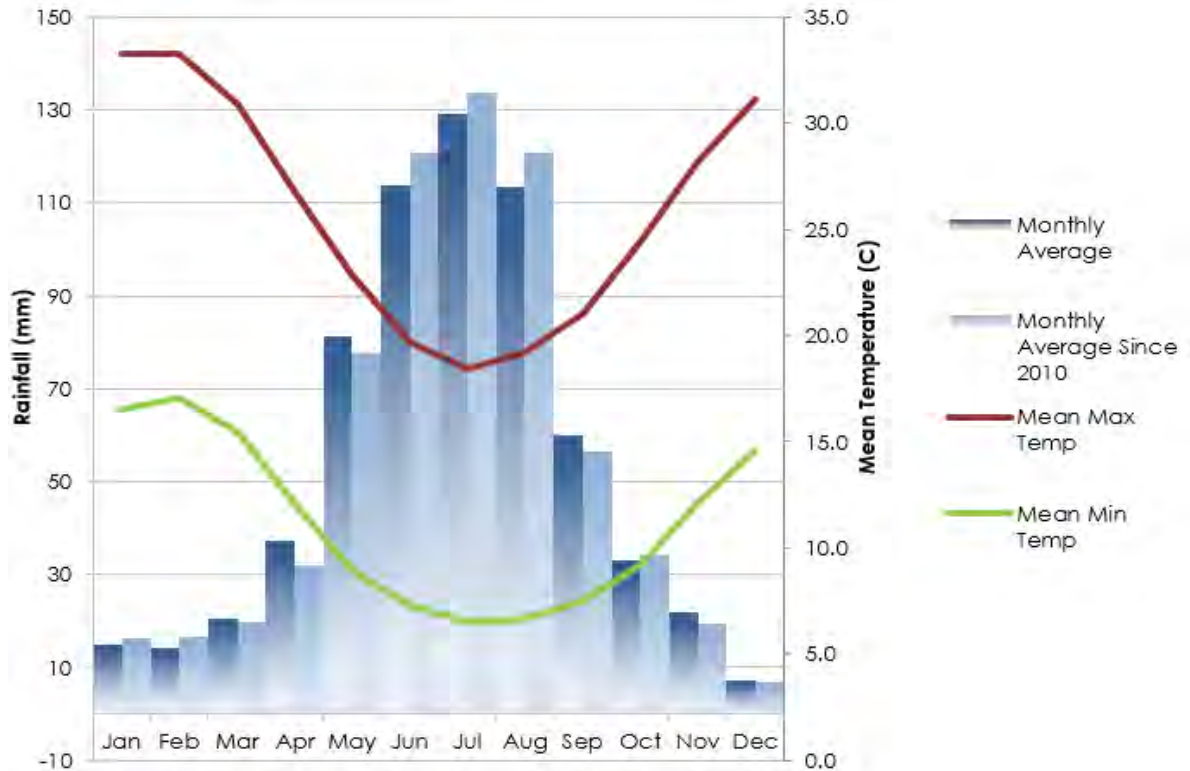


Figure 6: Average monthly rainfall (Tamala Park) and average monthly temperature (Gingin).

3.1.3 Temperature

Temperature data (Figure 6) is provided by the BoM station at Gingin Aero (Station No. #009178), approximately 24km to the north, for years 1996 to 2025. The average monthly maximum temperatures range between 18.4 degrees Celsius (°C) in July and 33.3°C in February, while average monthly minimum temperatures range between 6.5°C in July and 17.0°C in February (BoM,2025).

3.1.4 Wind

The prevailing winds vary daily and seasonally, however on average, winds are from the east in the morning, shifting to the south-west in the afternoon (Figure 7). Wind speeds are generally lowest from April to August, peaking in December/January (Figure 8).

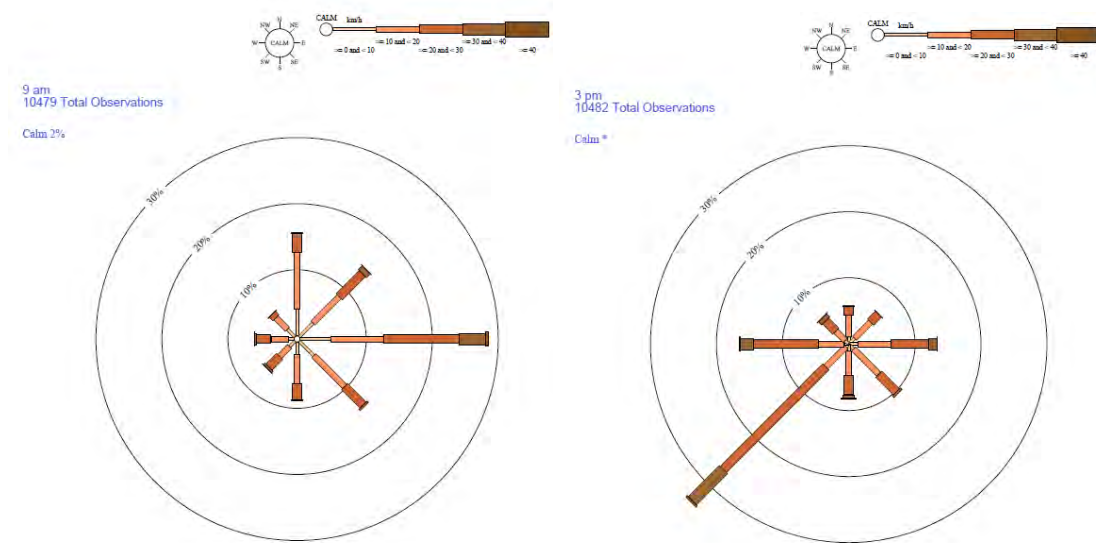


Figure 7: Average annual wind speeds and directions at 9am and 3pm at Gingin Aero station.

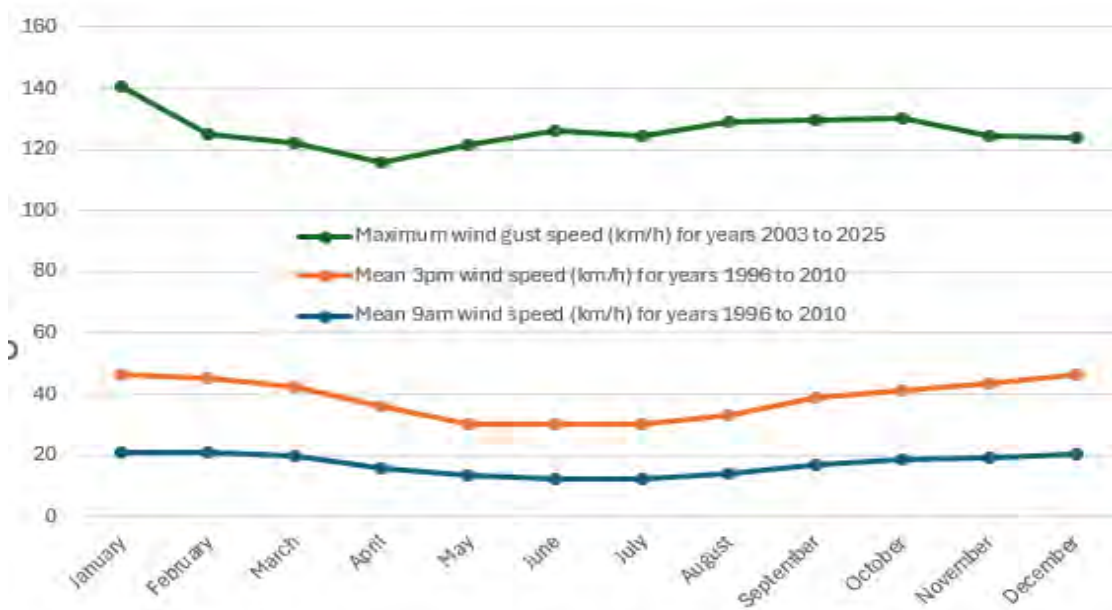


Figure 8: Monthly maximum wind gusts and speeds at 9am and 3pm at Gingin Aero station.

3.2 Land use

The site has functioned as a coastal foreshore area for the last 60 years at least. A review of historical images available from 1965 onwards shows that the site has remained as native bushland with small, cleared areas and access tracks. It is noted that uncontrolled access and works associated with the Alkimos Wastewater treatment plan may have led to some small blowouts in the northern and southern portions of the study area (Figure 9).



Figure 9: Historic aerial imagery from Landgate: 1995, 2012 and 2018

The site is identified by the Department of Defence as having a **slight potential** for unexploded ordnance (UXO). The site (836 Alkimos) is described as being subject to aerial bombing and air to ground gunnery with high explosive ammunition during World War II. Department of Defence advises:

Land use may continue without further UXO investigation or remediation, however Defence recommends obtaining specialist advice and undertaking a detailed UXO risk assessment and developing a UXO management plan. Defence also recommends that any development, land usage re-zoning proposals or other significant changes in proposed activities are preceded by an appropriate UXO risk assessment. Ongoing activities and the possibility of encountering munitions should be adequately addressed in activity plans (e.g. construction site safety management plans).

A site visit by the consultant team suggested that some small areas may have been affected by illegal rubbish dumping, with visible signs of dumped material of unknown origin or substance. The site is not listed on the Department of Water and Environmental Regulation's Contaminated Sites Database as a known or suspected contaminated site, however.

FMP response:

There is a need to manage the existing areas of disturbance and prevent further degradation. This is likely to include revegetation of blowouts, closing and rehabilitating informal access tracks that are not intended to be retained, and implementing measures to manage use of approved access routes. It is also noted that further site assessment will be required for the construction of the surf life saving club to minimise vegetation clearing and appropriately manage any risks associated with UXO and uncontrolled waste materials.

3.3 Topography

The elevation of the site ranges from 0 m Australian height datum (mAHD) at the beach to around 25m mAHD along the dune ridges in the north, central and southern areas of the foreshore (Figure 109).

The subject land comprises a fairly narrow beach backed by a steep foredune that rises quickly to around 10m AHD. While this foredune is relatively unstable, no major blowouts have resulted from the tracks created by four wheel drives and other uncontrolled access, however the loss of vegetation in these areas is significant.

FMP response:

The foreshore management plan is proposing to retain the site's natural landscapes and topographical features where possible. The location recommended for the surf life saving club aims to facilitate views of the regional beach, a key function of the surf club, while allowing the creation of car parks in the lower lying, flatter areas to minimise site works.

3.4 Geology

The subject land is located on the Quindalup Dune System, which comprise calcareous coastal Holocene sands on the western margin of the Swan Coastal Plain. These dunes run somewhat discontinuously from near Bunbury to north of Lancelin (Trudgen, 1990) and are divided into four ages, with the oldest (Q1) the most extensive and the younger phases (Q2-Q4) progressively less extensive. The youngest phase (Q4) is still forming in some areas (McArthur, 1991).

Within the study area, the calcareous sands are underlain by Tamala limestone, a relatively hard aeolianite limestone, which has resulted in the formation of small areas of rocky shoreline where the limestone has been exposed. There are no significant blow outs within the study area.

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

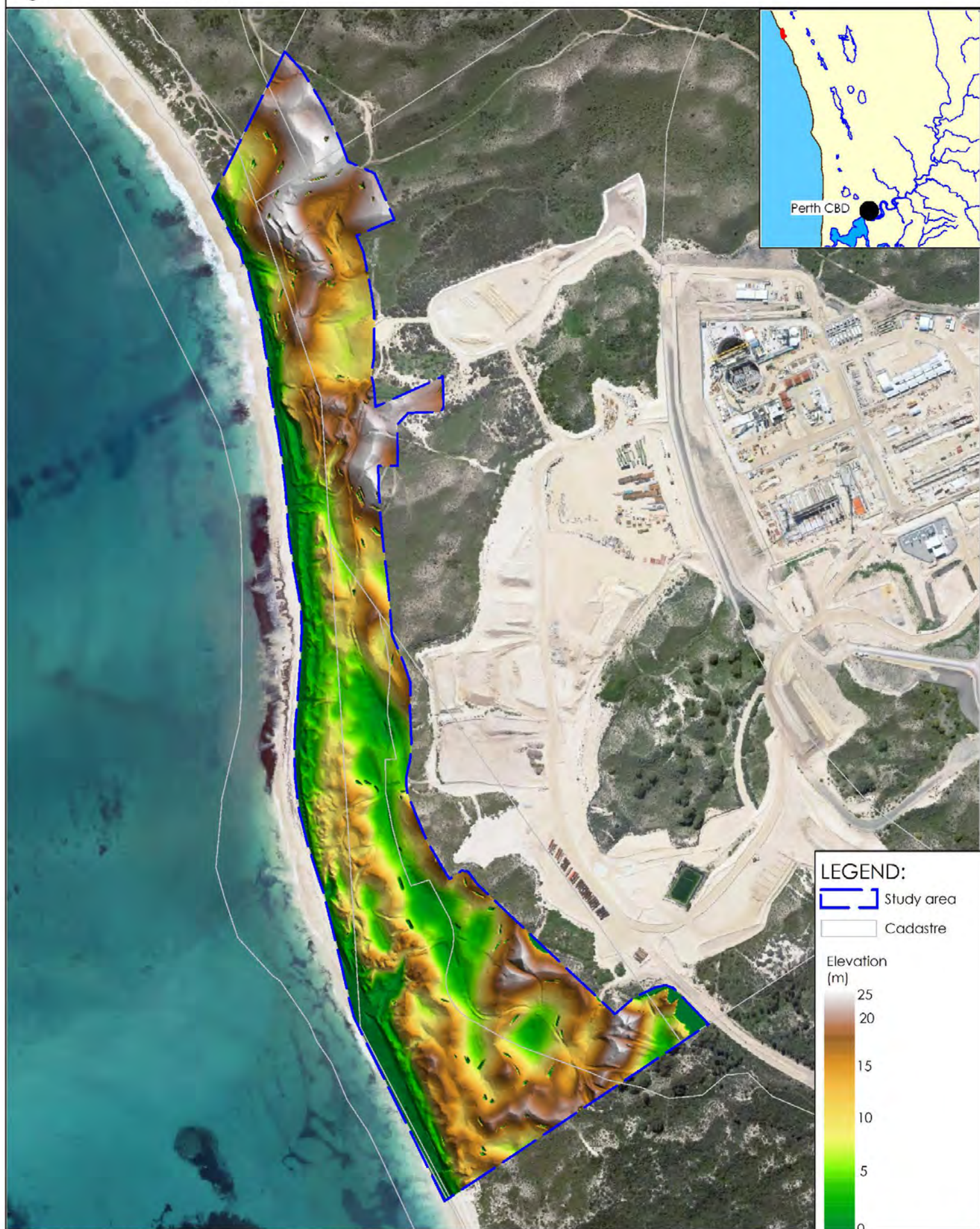
Fine scale soil mapping by the Department of Primary Industries and Regional Development (DPIRD) shows five units as occurring within the site (Figure 1110), as described in Table 2.

Table 2: Soil landscape mapping units within the site (DPRID-076)

Soil landscape unit	Location within site	Description
Quindalup South oldest dune Phase (Q1)	Northern portion	The oldest phase. Dunes or remnants with low relief. Calcareous sands have organic staining to about 30 cm, overlying pale brown sand with definite cementation below 1 m.
Quindalup South third dune Phase (Q3)	South-eastern portion	The third phase. Irregular dunes with high relief and slopes up to 20%. Loose calcareous sand with little surface organic staining and incipient cementation at depth.
Quindalup South youngest dune Phase (Q4)	Southwest portion.	The youngest phase. Irregular dunes with slopes up to 20%. Loose pale brown calcareous sand with no soil profile development.
Karrakatta shallow soils (Spearwood Dune System)	Very small portion in north east of site	Low hills and ridges. Bare limestone or shallow siliceous or calcareous sand over limestone.

DevelopmentWA - Alkimos Coastal Village Foreshore Management Plan

Figure 10 - Elevation



* @2025. While Urbaqua has taken care to ensure the accuracy of this product, Urbaqua and client make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. Urbaqua and client cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.
Data source: Landgate, DevelopmentWA Created by: SS Projection: MGA: zone 50.



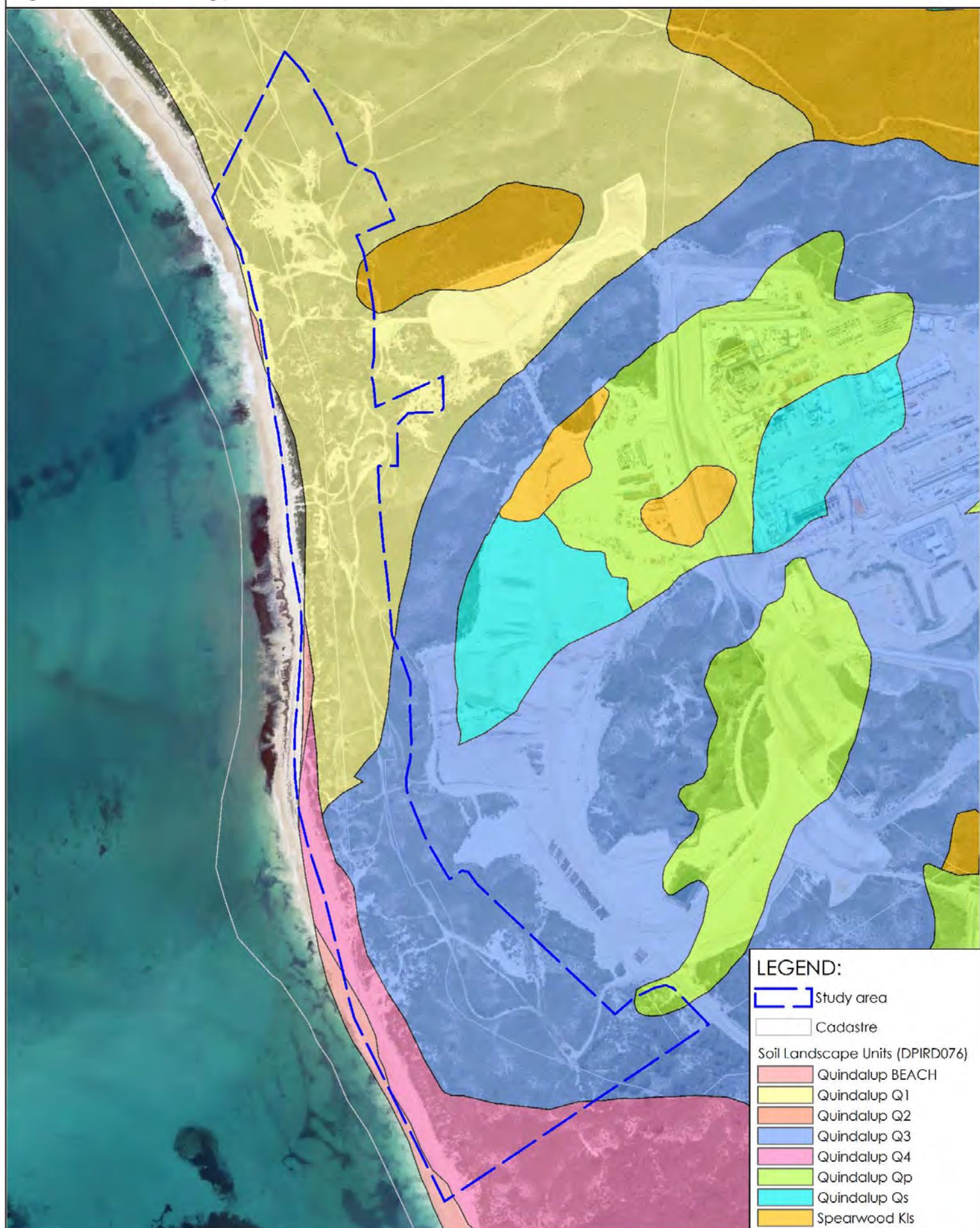
0 130
meters

Scale 1:6,500 @ A4

urbaqua
land and water solutions

DevelopmentWA - Alkimos Coastal Village Foreshore Management Plan

Figure 11 - Geology



*©2025. While Urbaqua has taken care to ensure the accuracy of this product, Urbaqua and client make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. Urbaqua and client cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason. Data source: Landgate, DevelopmentWA, DPIRD Created by: SS Projection: MGA: zone 50.



0 130
meters

Scale 1:6,500@ A4

urbaqua
land and water solutions

A Coastal Limestone Hazard Assessment was undertaken by Douglas Partners in 2025 for Mindarie to Two Rocks for the City of Wanneroo. Within the study area, one area of low risk hazard was identified (Figure 1211) as a rock outcrop located beyond the active beach zone (i.e. above high tide levels) with numerous open solution tubes and a non-continuous crack in the face. Signage has been installed (Plate 1).



Figure 12: Coastal limestone hazard assessment (Douglas Partners, 2025)



Plate 1: Site H9 (Douglas Partners, 2025)

The report notes that the toe of the outcrop is heavily vegetated and difficult to access although the feature is undercut by up to 3 m. The report recommends that the feature should be periodically reinspected to assess development of the existing crack, and the City has acknowledged this activity is already occurring.

FMP response:

Ensure signage is maintained at the site identified as having a low risk hazard and the risk is periodically assessed.

3.5 Soils

The environmental geology of the site is representative of the dunal landforms and the site and is described in the Geological Survey of Western Australia as:

- S2: Calcareous Sand – white, fine to medium-grained, sub-rounded quartz and shell debris, of eolian origin.

The soil (sand) is highly permeable. Preliminary site investigations were carried out by Emerge Associates in 2019 at the indicative public open space areas along the coastal foreshore measured average infiltration rates of between 47 and 58 m/day (Emerge Associates, 2019).

There is no risk of acid sulfate soils being located within the subject land.

FMP response:

The risk of soil erosion from unvegetated areas exposed to the wind will be addressed via erosion and sediment control measures employed as part of implementation of this foreshore management plan.

In addition, a site risk assessment/classification for activities generating uncontaminated dust will be undertaken for the construction of the surf life saving club and other works associated with the implementation of the foreshore management plan in accordance with the City's *Local Planning Policy 4.18: Earthworks and Sand Drift*. The dust management and monitoring requirements resulting from this assessment may include minimising exposed soils, supervising dust generating works, maintaining site stability, deploying controls such as water carts and wind fencing when needed, monitoring dust levels on- and off-site, managing complaints, and applying hydromulch (containing no seeds) to reduce dust and erosion.

3.6 Vegetation

The majority of the study area is contained within Bush Forever Site 397 (Coastal strip from Wilbinga to Mindarie Two Rocks to Yanchep). An Environmentally Sensitive Area is also designated over the site. The vegetation complex on site as classified by Heddle et al, 1980, is Quindalup (Figure 13).

The vegetation within the study area is described in the *Alkimos Coastal Node Project, Flora and Vegetation Survey Report Update*, ecologia Environment, May 2025 and is based on a Level 2 Survey of the structure plan area completed by ecologia Environment, 2016. It is noted, however, that the structure plan area excludes Reserve 20561, which forms part of the foreshore reserve.



An additional survey was therefore undertaken by PGV Environmental on 26 November 2024 to map the vegetation types and condition within the foreshore reserve. A follow-up survey of an expanded area was undertaken on 7 November 2025 and the report is provided in Appendix 1. The surveys included walking the foreshore reserve from north to south and recording the vegetation types and condition. It is noted, however, that the PGV Environmental survey did not cover the whole study area. In these areas, the findings of the survey described by *ecologia* Environment (2025) have been used as it was noted that there was almost no discrepancy between the findings of both surveys. Furthermore, as no disturbance of vegetation is proposed in areas outside the more recent survey, it was not considered critical to review the vegetation type or condition at this stage. Any revegetation of access tracks or blowouts will be undertaken to represent the locally surveyed vegetation (see section 4).

3.6.1 Vegetation types

Six vegetation types were recorded on the site. Descriptions of the vegetation types are provided in Table 3 and shown on Figure 12.

The report by PGV notes that where possible, the terminology for describing vegetation types was matched with similar vegetation types described by *ecologia* Environment in their 2016 survey.

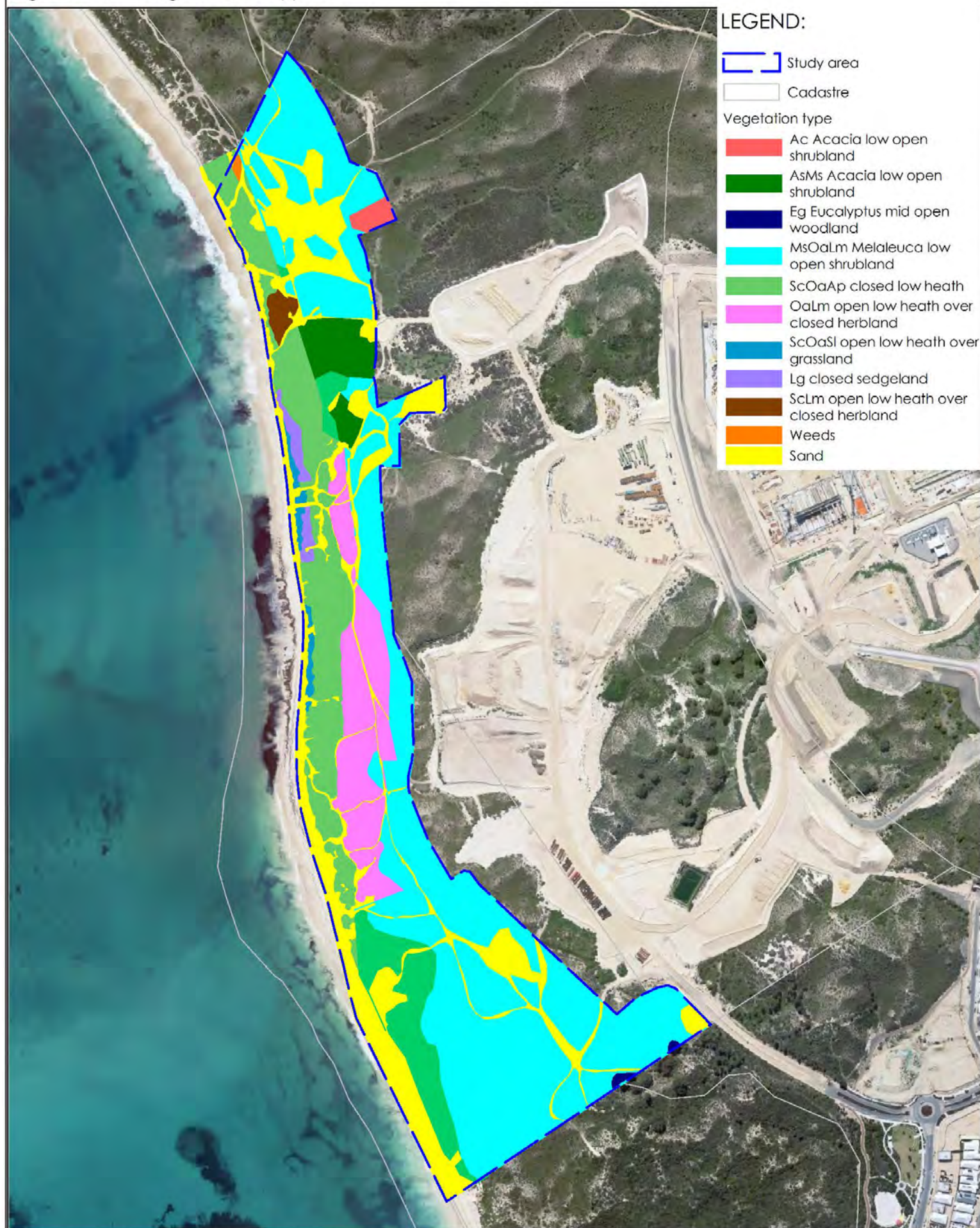
Table 3: Vegetation type within the subject land

Vegetation Type	Description	Photograph
As described by PGV Environmental, 2025		
ScOaAp: <i>Scaevola crassifolia</i> / <i>Olearia axillaris</i> / <i>Acanthocarpus preissii</i> Closed Low Heath	This is the dominant vegetation type in the reserve. <i>Scaevola crassifolia</i> is around 0.4m high and up to 95% cover in most places. <i>Olearia axillaris</i> is taller, at around 0.8-1m, but less common with an average of 10% cover. Other common native species include <i>Acanthocarpus preissii</i> , <i>Tetragona decumbens</i> , <i>Exocarpos sparteus</i> and <i>Lepidosperma gladiatum</i> .	
ScOaSl: <i>Scaevola crassifolia</i> / <i>Olearia axillaris</i> Open Low Heath over <i>Spinifex longifolius</i> Grassland	Occurs close to the beach on the primary dunes or the seaward face of secondary dunes. Similar to ScOaAp but with a less dense shrub cover and <i>Spinifex longifolius</i> is common. Other common native species include <i>Carpobrotus virescens</i> and <i>Threlkeldia diffusa</i>	

Vegetation Type	Description	Photograph
ScLm: <i>Scaevola crassifolia</i> Open Low Heath over <i>Lomandra maritima</i> Closed Herbland	One stand of this vegetation type occurred at the northern end of the site. The vegetation is very low, around 0.3m high. <i>Lomandra maritima</i> was very common and <i>Olearia axillaris</i> was absent. Other native species recorded in this vegetation type included <i>Gastrolobium capitatum</i>, <i>Acrotriche cordata</i>, <i>Cassytha racemosa</i> and <i>Acanthocarpus preissii</i>	
Lg: <i>Lepidosperma gladiatum</i> Closed Sedgeland	<i>Lepidosperma gladiatum</i> Closed Sedgeland occurred in a narrow and moderately deep swale between the primary and secondary dunes near the centre of the site. <i>Lepidosperma gladiatum</i> sedges were up to 1m high with around 70% cover. Other native species present included <i>Spyridium globulosum</i>, <i>Scaevola crassifolia</i>, <i>Cassytha racemosa</i> and <i>Hardenbergia comptoniana</i>	
OaLm: <i>Olearia axillaris</i> Open Low Heath over <i>Lomandra maritima</i> Closed Herbland	This vegetation type occurred in one small area at the southern end of the site. <i>Olearia axillaris</i> was sparse and up to 0.7m high over a moderately dense cover of <i>Lomandra maritima</i>. <i>Scaevola crassifolia</i> was absent.	
MsOaLm: <i>Melaleuca systema</i> / <i>Olearia axillaris</i> / <i>Acanthocarpus preissii</i> Open Low Heath	Occurs at the eastern end of the site on the lower slopes of dunes. Similar to the OaLm vegetation type but with <i>Melaleuca systema</i> a dominant shrub species to 0.5m.	

DevelopmentWA - Alkimos Coastal Village Foreshore Management Plan

Figure 14 - Vegetation types



* @2025. While Urbaqua has taken care to ensure the accuracy of this product, Urbaqua and client make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. Urbaqua and client cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: Landgate, DevelopmentWA Created by: SS Projection: MGA: zone 50.



0 130
meters

Scale 1:6,500 @ A4

urbaqua
land and water solutions

Table 3: Vegetation type within the subject land (continued)

Vegetation Type	Description	Photograph
As described by <i>ecologia</i> Environment, 2025		
Ac: <i>Acacia</i> low open shrubland	<i>Acacia cochlearis</i> and <i>Melaleuca systema</i> low open shrubland	<i>Acacia cochlearis</i> , <i>Acanthocarpus preissii</i> , <i>Acrotriche cordata</i> , <i>Conostylis aculeata</i> , <i>Conostylis pauciflora</i> subsp. <i>euryrhipis</i> , <i>Gompholobium tomentosum</i> , <i>Hibbertia hypericoides</i> , <i>Melaleuca systema</i> , <i>Trachyandra divaricata</i>
AsMs: <i>Acacia</i> low open shrubland	<i>Acacia saligna</i> scattered shrubs over <i>Melaleuca systema</i> low open shrubland	<i>Acacia saligna</i> , <i>Acanthocarpus preissii</i> , <i>Lagurus ovatus</i> , <i>Lolium perenne</i> , <i>Lysimachia arvensis</i> , <i>Melaleuca systema</i> , <i>Lysiandra calycina</i>
Eg: <i>Eucalyptus</i> mid open woodland	<i>Eucalyptus gomphocephala</i> mid open woodland over <i>Rhagodia baccata</i> , <i>Spyridium globulosum</i> and <i>Myoporum insulare</i> mid open shrubland over mixed low shrubs	<i>Acacia cyclops</i> , <i>Acanthocarpus preissii</i> , <i>Eucalyptus gomphocephala</i> , <i>Hardenbergia comptoniana</i> , <i>Olearia axillaris</i> , <i>Spyridium globulosum</i>

3.6.2 Flora

A total of 38 plant species were recorded during the vegetation survey in 2025. This includes 21 native and 17 non-native species. None of the species were identified as having conservation significance as a Threatened or Priority species in this most recent survey.

However, it is noted that while the 2016 survey found no Threatened flora, one significant plant species - *Conostylis pauciflora* subsp. *Euryrhipis* (Priority 4) was observed by *ecologia* Environment as being “widespread across much of the survey area” including in two locations within the study area (Figure 15). It is noted that these locations were also surveyed by PGV but the plant was not observed.

Ecologia Environment also identified that one area within the study area was possibly associated with ‘Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain’ TEC, associated with vegetation type Eg. This area is located on the southern boundary of the study area and is to be retained within the reserve (refer to Map 12 of *ecologia* Environment Report).

The *Ecologia* report noted that the vegetation type Eg was consistent with the ‘Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain’ TEC according to the key criteria described in Table 4. They considered that “the patch of Eg possibly represents the TEC based on the presence of mature tuart trees and vegetation condition, but the patch size was unable to be adequately assessed using the data collected in 2016.”

While *ecologia* Environment’s report is inconclusive as to the presence of Tuarts there is a likelihood and therefore consideration for Tuart tree protection and further its potential to be habitat and foraging for Black Cockatoos. Referring to this, the Tuart trees are not intended to be removed as a consequence of this foreshore management plan. Furthermore, their location achieves a recommended minimum buffer zone of 30 metres extending outward from the outer edge of the mapped Tuart patch’s canopy. The Local Structure Plan proposes the continuation of Graceful Boulevard (which is already cleared for this purpose) and the closest canopy is approximately 40m from the road which will also include the principal shared path contemplated in the foreshore management plan. Accordingly, given the current and future planned development it is considered the Tuarts are adequately protected.



Figure 15: Significant plant species identified by Ecologia

Table 4: Assessment of vegetation type against key diagnostic characteristics for the Tuart woodlands TEC

Tuart woodlands TEC	Vegetation type Eg
Occurs in the Swan Coastal Plain IBRA Bioregion in WA	Yes
Occurs primarily on the Spearwood and Quindalup dune systems	Yes
At least two living established <i>Eucalyptus gomphocephala</i> trees are present in the uppermost canopy layer	Yes
An understorey of native plants is typically present	Yes
The patch of woodland is at least 0.5 ha, and if < 5 ha then the understorey must be in reasonably high condition (i.e., at least 8 native species per 0.01 ha)	Possible (0.08 ha within survey area, but patch may extend outside survey area)

3.6.3 Vegetation condition

The majority of the vegetation was rated in accordance with the vegetation condition scale in Table 54 as being in Very Good condition (Figure 16). Some areas at the northern end and central part of the study area were rated in Good to Completely Degraded condition, largely associated with tracks created from uncontrolled access.

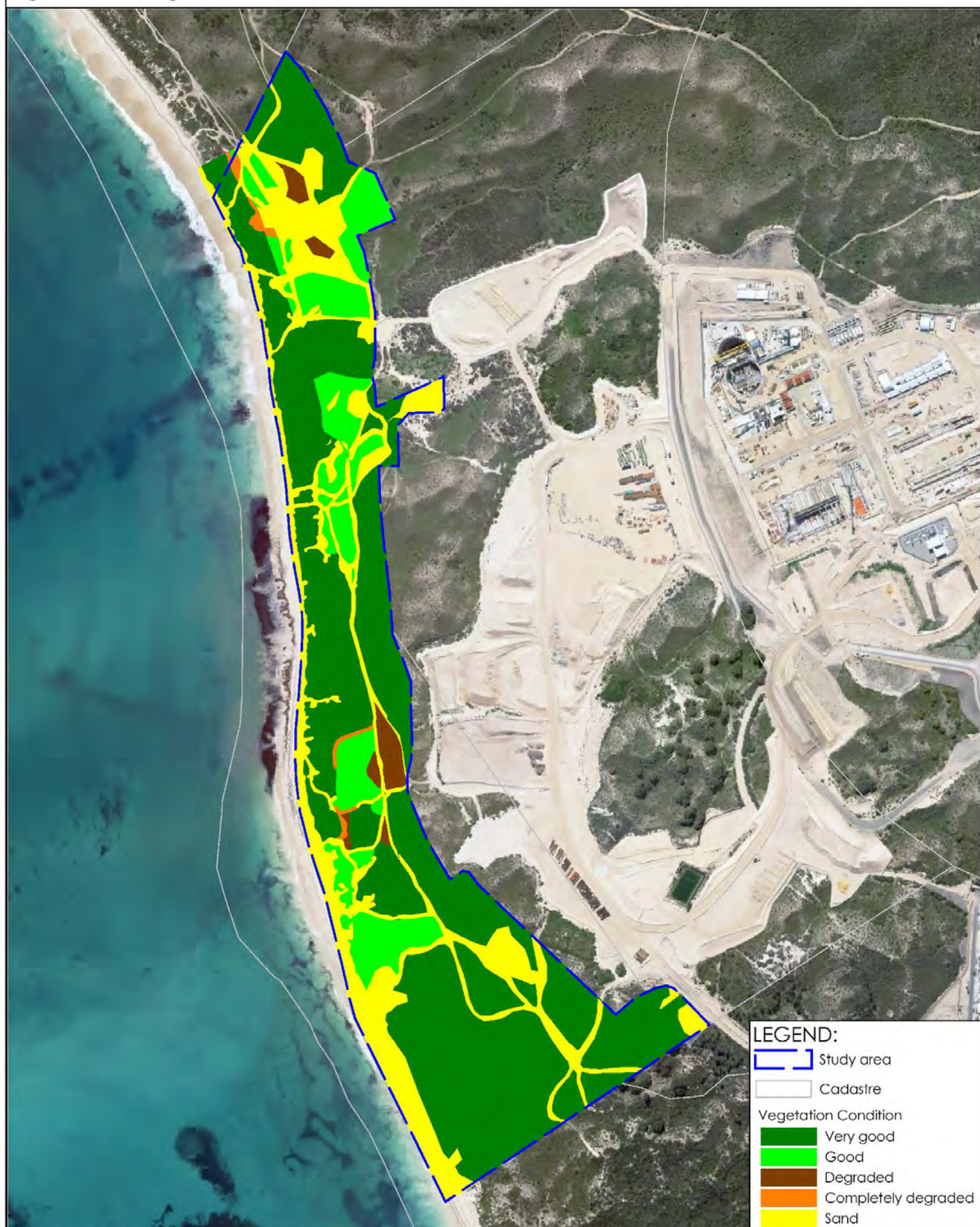
Table 5: Vegetation condition scale (Keighery 1994).

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

Plate 2 shows an area of Completely Degraded vegetation at the confluence of several tracks at the northern end of the site.

DevelopmentWA - Alkimos Coastal Village Foreshore Management Plan

Figure 16 - Vegetation condition



* @2025. While Urbaqua has taken care to ensure the accuracy of this product, Urbaqua and client make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. Urbaqua and client cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.
Data source: Landgate, DevelopmentWA. Created by: SS Projection: MGA: zone 50.



0 130
meters

Scale 1:6,500 @ A4

urbaqua
land and water solutions



Plate 2: Completely degraded vegetation at the northern end of the site

3.6.4 Weeds

The Ecologia report noted that “Introduced plant species made up a significant component of the overall floristic diversity of the survey area with 45 (29%) of all taxa recorded introduced.” Ecologia also recorded several *Solanum linnaeanum* (apple of Sodom) plants, which is a Declared Pest, along a track in the northern section of the survey area (Figure 15). There were no Weeds of National Significance recorded.

Common weed species noted by PGV Environmental included *Bromus diandrus*, *Avena fatua*, *Lagurus ovatus*, *Trachyandra divaricata*, *Pelargonium capitatum* and *Euphorbia terracina*.

3.6.5 Impacts on vegetation

As indicated on Figure 16, there are many areas within the study area that are cleared of vegetation. These have resulted largely from unauthorised access and the creation of tracks leading to the beach and through the dunes.

Foreshore management plan response

This foreshore management plan has been prepared to address the development proposals, management measures and associated vegetation clearing currently identified within the plan, including works associated with the City of Wanneroo's Alkimos Surf Life Saving Club project. Any future vegetation clearing, infrastructure or development not assessed as part of this foreshore management plan (ie. facilities that are not already contemplated) will require the plan to be reviewed and amended to ensure relevant environmental impacts, mitigation measures and statutory approval requirements are appropriately considered. Notwithstanding this, it is considered unlikely that any additional clearing will be required within the foreshore management plan area, as the current width of the informal track network is generally much wider than that required for pedestrian access. However, should clearing be required, this will be undertaken in accordance with any requirements of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*.

At detailed design stage, the siting of any foreshore management plan facilities, including the Surf Life Saving Club and its associated infrastructure, beach access ways and other ancillary facilities, shall seek to avoid impacts to significant native vegetation wherever practicable. Where avoidance is not feasible, the design shall minimise the extent of clearing and disturbance required. Rehabilitation, revegetation and any offset measures shall be considered only after all reasonable avoidance, and minimisation measures have been demonstrated and incorporated into the design.

Consistent with the above mitigation hierarchy, avoidance of impacts to native vegetation is the preferred outcome, followed by impact minimisation, with rehabilitation, revegetation and offsets applied as measures of last resort where residual impacts cannot reasonably be avoided.

As part of the designation of the foreshore path network and establishment of infrastructure associated with the regional beach node, all access paths will be fenced. As per the City's requirements, Conservation Pine Rail Fencing (TS01-7) will be used along the principal shared path boundary and in areas where vehicles front the foreshore, while Coastal Foreshore and Beach Access Way Fencing (TS01-4) will be used within internal beach access ways. This will effectively fence all areas of foreshore vegetation to prevent further unauthorised access. In addition, a hard edge needs to be created between any areas proposed for turf and native vegetation and appropriate signage installed to designate conservation areas. Suitable hard edges include fencing, kerbing or landscape edge treatments.

Areas of degraded vegetation, largely associated with the informal path network (where those paths are not proposed to be retained), will be revegetated (see section 4.2.4) and fenced off to deter the public from entering the revegetation sites. Areas assessed as having a high weed content will be sprayed and revegetated as appropriate.

Fire risk to the foreshore will be managed in accordance with the bushfire management plan for the foreshore area and the [City of Wanneroo Bushfire Risk Management Plan 2025 – 2027](#).

A clearing permit is required to be obtained from the Department of Water and Environmental Regulation (DWER) by the City of Wanneroo for the development of the surf life saving club and its associated facilities. The development footprint is proposed to be located in an area with vegetation that ranges from 'degraded' to 'very good' condition. Subsequently, the preparation of a Revegetation and Rehabilitation Plan will likely be a condition of the clearing permit. Works will be undertaken as per the Clearing Permit conditions and Revegetation and Rehabilitation Plan. These will likely include:

- Site demarcation and temporary fencing to clearly define the approved works area. Temporary fencing to be replaced with conservation boundary fencing upon completion where required.
- Vegetation to be cleared systematically, with suitable material stockpiled for mulching or brushing. Weed-free topsoil to be identified and stockpiled for reuse in restoration areas, and seeds and cuttings to be collected for revegetation propagation prior to clearing starting.
- Priority species within and surrounding the site to be identified, clearly demarcated, and protected where possible. If these individuals cannot be protected, salvage and propagation is to be undertaken using a professional nursery, with any translocation carried out in accordance with relevant guidelines and in consultation with the Department of Biodiversity, Conservation and Attractions (DBCA). Monitoring of retained and transplanted species will occur during and after construction.
- Measures to be implemented to prevent the spread of dieback and weeds, including strict hygiene protocols for vehicles and equipment, use of existing tracks where possible, and careful soil handling. Weed-infested soils are not to be reused, while clean

topsoil and vegetation may be stockpiled for restoration. Imported materials must be certified free of dieback and weeds, and priority weed species will be actively managed throughout the project.

3.7 Fauna

A basic fauna assessment of the Alkimos Coastal Village development (a larger area than the subject land for this plan) was undertaken by Emerge Associates in 2025, documented in *Basic Fauna Assessment Alkimos Coastal Village Project No: EP24-166(02) Prepared for Development WA, June 2025*. This included a desktop search and field survey.

83 native and non-native fauna species were identified from database searches (Protected Matters Search Tool DCCEEW 2025; Dandjoo DBCA 2025; DBCA's conservation significant fauna database (reference no. 14-0525FA); and the Atlas of Living Australia ALA 2025) as occurring or potentially occurring within 10 km of the site. From this desk top search, Emerge identified one threatened, one migratory, one other specially protected and three priority species as having a 'high' or 'moderate' likelihood of occurrence in the Alkimos Coastal Village structure plan area as follows.

- The site lies within the distribution and breeding range of Carnaby's black cockatoo (Endangered) and includes a record of the species in the DBCA database. The species was assigned a moderate likelihood of occurrence in the site but only the woodland and Melaleuca-Banksia shrubland habitats would be suitable.
- Pacific swift (Migratory species) and Peregrine falcon (Other specially protected species) are highly mobile species that may opportunistically fly over or forage in the site for short periods of time as part of a much larger home range. Neither of these species would breed within the site. Any occurrence of pacific swift or peregrine falcon in the site would likely be in the air space and largely independent from terrestrial habitat.
- Multiple DBCA records of the graceful sun moth (Priority 4 – Rare species) occur within the site, particularly within the shrubland habitat. The woodland and heathland habitats also provide suitable habitat including the host plant *Lomandra maritima*.
- The Swan Coastal Plain shield-backed trapdoor spider (Priority 3 – Poorly known) has been recorded within 5 km of the site and Emerge are aware of undocumented records within 2 km. The species is typically found in remnant banksia woodland vegetation and heath on sandy soils and so the woodland, heathland and shrubland habitats would be suitable.
- While quenda (Priority 4 – Rare species) was not observed during the survey, a DBCA record from 2011 occurs within the site. The shrubland, woodland, and Melaleuca-Banksia shrubland contain suitable habitat due to dense ground cover and connectivity to nearby extensive bushland.

Emerge then undertook a field survey on 7 May 2025 and recorded eight native and three non-native fauna species either directly or indirectly (from foraging evidence) (Table 65). No occurrences of threatened, specially protected or priority fauna species were recorded within the site.

Two species listed as a declared pest (C3) pursuant to the BAM Act, *Oryctolagus cuniculus* (rabbit) and *Trichoglossus haematodus* (rainbow lorikeet), were identified from scats and sight.

Table 6: Fauna recorded during the field survey

Category	Species name	Common name	Record type
Birds			
	<i>Anthus australis</i>	Australian pipit	Sight
	<i>Falco cenchroides</i>	Nankeen kestrel	Sight
	<i>Hirundo neoxena</i>	Welcome swallow	Sight
	<i>Lichenostomus virescens</i>	Singing honeyeater	Sight
	<i>Malurus leucopterus</i>	White winged fairywren	Sight
	<i>Sericornis maculatus</i>	Spotted scrubwren	Sight
	<i>Trichoglossus moluccanus</i>	Rainbow lorikeet	Call, sight
	<i>Zosterops lateralis</i>	Silveryeye	Sight
Mammals			
	<i>Canis lupus familiaris</i>	Dog	Tracks
	<i>Macropus sp</i>	Kangaroo	Diggings
	<i>Oryctolagus cuniculus</i>	Rabbit	Scats

3.7.1 Fauna habitat

Five broad fauna habitats were identified within the structure plan area, two of which were in the study area: heathlands and shrublands (Figure 17).

Heathland (blue) with *Acacia* over *Acanthocarpus preissii*, *Santalum* sp., *Lepidosperma* spp. and other native shrubs and herbs.

- Moderate microhabitat complexity.
- Microhabitats consist of woody debris.
- Likely to be used by common and widespread as well as habitat specialist avifauna, reptiles and mammals.
- Provides habitat for Graceful sun moth, Pacific swift, Peregrine falcon, quenda, Swan Coastal Plain shield-backed trapdoor spider.

Open **shrubland** (green) of native and non native shrubs and grasses including areas of *Acacia* sp. and *Xanthorrhoea preissii* shrubs.

- Medium microhabitat complexity
- Microhabitats consist of woody debris, runnels and dense leaf litter.
- Likely to be used by common and widespread as well as habitat specialist avifauna, reptiles and mammals.
- Provides habitat for Graceful sun moth, Pacific swift, Peregrine falcon, quenda, Swan Coastal Plain shield-backed trapdoor spider.


Figure 17: Habitat mapped by Emerge 2025

Emerge (2025) note while these areas of habitat are likely used by a variety of common and conservation significant fauna, many parts of these habitats are modified, exhibiting reduced flora species diversity and reduced structural composition and are therefore less effective in supporting a diverse range of native wildlife, particularly those requiring more specific environmental conditions.

With regard to black cockatoos, PGV Environmental conducted a black cockatoo assessment within the site as part of the broader planning for the Alkimos-Eglinton area in 2018 (PGV Environmental 2018). This was particularly in relation to Carnaby's Black Cockatoo, as the site was deemed to be outside the distribution of Baudin's and Forest red-tailed black cockatoo.

The survey determined that the structure plan area contained foraging and potential breeding habitat with no evidence of potential roosting sites (Figure 18, from RPS, 2019). While the survey noted that majority of the habitat was assessed as being "low quality", the areas within the foreshore reserve and the Water Corporation's Public Purpose Reserve were proposed to be retained.



Figure 18: Black Cockatoo foraging habitat to be retained (purple hatch)(RPS, 2019)

FMP response:

To ensure a consistent and transparent approach to fauna protection, all vegetation clearing and construction activities shall be undertaken in accordance with formal fauna management processes. These will be designed to minimise impacts on native fauna and ensure that all wildlife is managed in a safe, humane and compliant manner throughout the implementation of the foreshore management plan.

Accordingly, any clearing of vegetation and/or construction works will require the preparation and implementation of a fauna management plan which will include the following requirements:

- Awareness sessions with all key personnel involved in the project as part of mandatory site inductions.
- Limiting speed limits with the site to minimise risk of fauna injury or mortality (20 - 30km/h).
- A fauna spotter with appropriate DBCA licenses will be present during any clearing within the site.
- Where required, a qualified wildlife handler will be called to relocate the fauna.
- Details of a wildlife carer for injured wildlife will be made visible to all site personnel.
- Fencing with 800 mm gaps for wildlife will be installed prior to site works and "No access" signage and revegetation notices will be installed as needed.

- A fauna relocation licence will be obtained from DBCA, and a suitable release site identified. Trapping will occur as required prior to clearing within impact areas and any fauna encountered during clearing will be relocated to nearby conservation areas under licence. Duration and type of trapping program will be determined as required/at a later date.
- Any cats captured during the trapping program will be checked for microchips and managed handed over to a CoW Ranger by a ranger or vet. Other feral species, such as rabbits, rats and foxes, will be humanely euthanised.

3.8 Heritage

3.8.1 Aboriginal heritage

The coastal dune system is a landscape of cultural significance to Aboriginal people. The study area is located on the boundary of Yued and Whadjuk Boodja (country).

As noted previously, the foreshore lies within the Quindalup Dune System, an area historically traversed by Noongar people using bidis (walking routes). These dunes form part of a broader cultural landscape, containing ecological features and movement pathways connected to Noongar seasonal use and coastal living. Though no registered Aboriginal sites exist within the study area, the Alkimos Waugyl Trail (a significant Dreaming Trail) runs immediately to the east and connects culturally to the coastal landscape. Karli Spring, which is a registered Aboriginal Heritage Site, is located to the south of the Alkimos Beach development in the dunes.

Limestone formations within and near the foreshore dunes are associated with the Waugyl's journey, a central creation narrative for Noongar people. These natural features have mythological significance and are considered sensitive cultural heritage elements.

Due to the sandy Quindalup dunes and their known preservation qualities, there is a moderate potential for buried cultural materials or ancestral remains, even without surface indicators. Dunes have historically been known locations for burials elsewhere on the Swan Coastal Plain.

The foreshore area supports vegetation communities (Banksia, coastal heath and balgas (grass tree: *Xanthorrhoea* species) that have both ecological and cultural importance, including foraging habitat for Ngoorlak (Carnaby's Black Cockatoo) and plant resources traditionally used by Noongar people. These values contribute to the cultural significance of the broader coastal system.

DevelopmentWA engaged Karrda Pty Ltd to develop a *Cultural Heritage Management Plan for Alkimos Coastal Village* in 2023 (CHMP – Karrda 2024). The CHMP assesses and provides guidance to manage the risks to cultural heritage associated with the development. Recommendations that are relevant to the foreshore management plan are:

- Protect, preserve and avoid the foreshore dunes (Bush Forever Area 397) as far as possible. Only minimal, low-impact access (e.g., pathways, a carpark) should be allowed, avoiding areas of high cultural or ecological sensitivity.
- Protect limestone outcrops (linked to the Waugyl trail). These should be avoided as places of recreation intensification and fenced or otherwise demarcated during any site works to prevent accidental disturbance. Contractors must be briefed on their cultural significance.
- All clearing or excavation in the foreshore zone requires Cultural Heritage Monitors (CHMs), Senior Cultural Authority oversight and an archaeologist on call. This is

particularly important in dune areas where artefacts or ancestral remains may be encountered.

- Protect, salvage, or relocate culturally important flora found within the dune zone, including Balgas and banksia species. Preserve high-quality foraging habitat for Carnaby's Black Cockatoo within foreshore reserves and open space.
- Incorporate Noongar-led cultural interpretation within foreshore public spaces to help retain cultural meaning where physical features may not be visible. This could include:
 - o Use of Noongar naming for the foreshore park and coastal elements
 - o Interpretive signage describing bidis, cultural connections to the coast, and the broader Waugyl narrative
 - o Public art opportunities linked to Noongar cultural themes
- Consider engagement of Noongar Rangers for ecological stewardship and use cultural burning practices where appropriate to support dune ecology and reduce risk.
- Involve Whadjuk and Yued local knowledge holders in planning and foreshore design to ensure cultural protocols are upheld. This involvement should be continued during construction of any facilities and the ongoing management of the reserve.

In addition to the Cultural Heritage Management Plan, Karrda Pty Ltd was engaged by DevelopmentWA to host an additional workshop with local Aboriginal knowledge holders to seek additional information, particularly as it related to the foreshore and marine ecology and landscape. A summary of the discussion is provided in Box 1 and the report from Karrda is contained in Appendix 2.

Box 1: Key messages from local Aboriginal knowledge holders.

Cultural context and significance

- The foreshore is situated on Yued and Whadjuk Country, serving as a cultural boundary and a transit point for Noongar people moving along the Waugyl Dreaming Tracks.
- Noongar belief holds that the sand dunes were created by the Waugyl as it travelled the coast; this Dreaming track links coastal Aboriginal communities from the south to the far north.
- Other significant stories for the area include the Mammung (whale) and Kaarda (goanna) stories.
- Mamaan Maambakoort: This term refers to the ocean waves, meaning "man's beating heart," representing the rhythmic sound of the water and a deep respect for the ocean.

Connection to environment and place

- Plants and animals are viewed through a lens of Noongar spirituality, healing, and ceremony, often linked to totems and kinship systems.
- The Elders advocate for a philosophy where all things are connected, emphasising the need to protect existing vegetation and fauna - Caring for Country.
- Right People Right Place: Engagement should follow cultural governance protocols by involving the specific knowledge holders for that location.

The Elder Reference Group proposed 14 recommendations for the City of Wanneroo and developers (see Appendix 2). These recommendations included the need to:

- Initiate early engagement following "Right People Right Place" principles and include both Yued and Whadjuk knowledge holders.
- Plant tuart trees for shade and natural cooling, and ensure infrastructure like the Surf Life Saving Club is built above existing vegetation to minimize damage.
- Provide beach access for Elders and people with disabilities (including beach buggies), alongside adequate seating and shade.
- Use Noongar language (nomenclature) throughout the development and integrate Noongar narratives into a public art program.
- Research and acknowledge shared history, including profiles like Monop and historical events such as shipwrecks or trading posts.
- Employ Cultural Heritage Monitors during any ground disturbance and implement Aboriginal employment strategies for the project.

3.8.2 European heritage

The European (and broader maritime) history of the *Alkimos* shipwreck is the core European heritage element for the Alkimos beach area. Built as a US Liberty ship during WWII, it served under Norwegian lease before being sold to a Greek company and renamed Alkimos. It gained a reputation as an unlucky ship, with tales of accidents and misfortunes. After prolonged anchoring and repair issues off the WA coast, it broke free and washed ashore near Eglinton Rocks, becoming a famous wreck.

The wreck is famous for ghost stories, including unexplained noises, moving objects and sightings of a spectral sailor named Henry, originating from incidents during its construction and salvage. The wreck is a defining feature of the coast, giving the suburb its name and contributing significantly to local cultural heritage and identity, despite its gradual deterioration.

It is noted, however, that the Alkimos wreck is located off the coast of the Shorehaven development to the north of the study area, and the heritage values and stories have been incorporated into the public realm in this area.

FMP response

The foreshore management plan emphasises that the foreshore is not just an environmental resource, but a culturally connected coastal landscape. This has resulted in recommendations that:

- Avoid or minimise disturbance to dunes and limestone features
- Design accessways carefully to avoid cultural and ecological harm
- Ensure active Noongar engagement throughout design and construction
- Embed cultural interpretation and community benefits into the foreshore public realm
- Identify opportunities for ongoing engagement and knowledge sharing with the local community including the Alkimos Surf Life Saving Club.
- Where clearing of vegetation and construction works associated with the surf life saving club or works that are contemplated, reference to the CHMP can be made as a guide to manage the risks associated with discovery of artefacts and/or ancestral remains.
- Prior to any clearing a recommended approach to manage these risks should include:
 - The party undertaking the clearing to utilise a Noongar Heritage Consultancy to assist in the clearing approach and appointment of suitably Senior Cultural Authority (SCA) and Cultural Heritage Monitors (CHMs).

- o A proposed clearing plan being established that identifies and maps areas requiring special attention (e.g., near bidis, significant trees, limestone outcrops) or proposes the removal of vegetation and/ or fauna habitat.
- o Develop with the Noongar Heritage Consultancy an agreed monitoring plan with the SCA, on the principles of:
 - o CHMs must be present during clearing and/ or excavation in high risk location (e.g., base of dunes, along bidis) and an SCA and archaeologist is on-call for advice or attendance.
 - o For other areas, determine monitoring requirements on a case-by-case basis.

3.9 Coastal processes and hazard risks

The Perth metropolitan coast is characterised by a low diurnal tidal range of approximately 0.5m, ensuring that wave energy, rather than tidal movement, is the primary driver of coastal change. The region's wave climate is dominated by persistent, long-period south to south-westerly swells with an average deep-water height of 2–3m. These conditions vary seasonally, as summer is defined by south-westerly sea breezes reaching 1.5m, while winter brings higher-energy storm waves from the north-west or west.

At Alkimos, the shoreline consists of a reflective sandy beach shaped by northward littoral drift within primary sediment cell RO6G: Pinnaroo Point to Yanchep, and secondary cell 29: Burns Beach Salient to Yanchep (Stul et al, 2015). This area is heavily influenced by offshore and intertidal reefs, which regulate sediment transport and provide a natural buffer against high-energy storm waves.

The [Alkimos Coastal Processes Assessment](#) (MP Rogers, 2013) considered the requirements of SPP 2.6 and established the potential landward extent of the effects of coastal physical processes for a range of planning horizons up to and including 100 years (Figure 19). This line designates the eastward extent of the foreshore area. As noted previously, the foreshore reserve will be extended in future to fully contain the potential landward extent of the effects of coastal physical processes over the 100 year planning horizon mapped in 2013.

Figure 19 also depicts the coastal process lines from the City of Wanneroo Coastal Hazard Risk Management & Adaptation Plan (CHRMAP) (CoW, 2018), also undertaken by MP Rogers and Associates. The difference in the lines is due to the City's CHRMAP assessment being based on a 105 year planning horizon (2015 to 2120), that was in excess of SPP2.6 requirements (which only requires consideration of a 100 year planning horizon) (pers comm, B Garvey, MP Rogers and Associates, 2025).

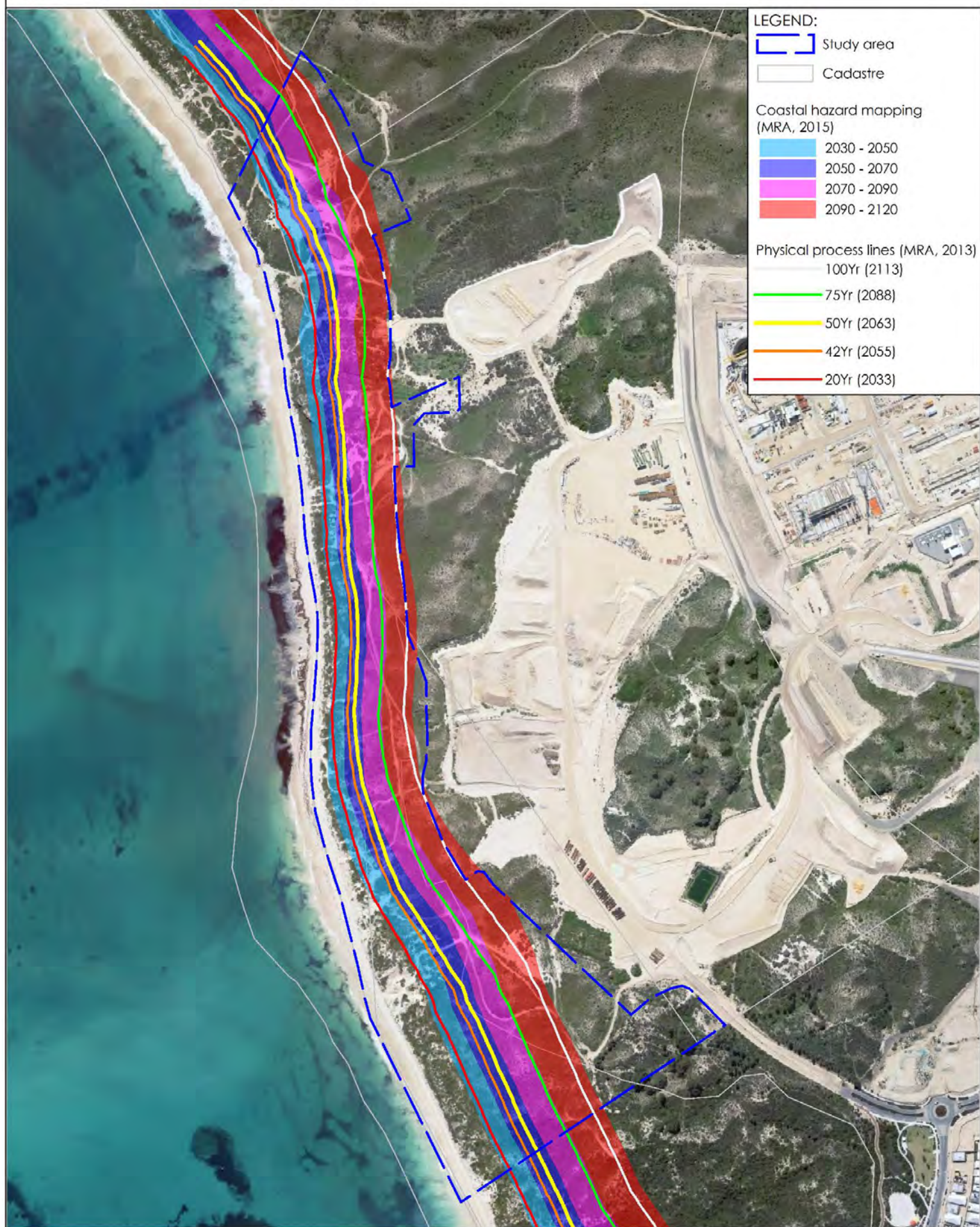
The [Alkimos Coastal Village LSP Coastal Hazard Risk Management & Adaptation Plan](#) (LSP CHRMAP)(Essential Environmental, 2019) provides guidance regarding the ongoing management of coastal hazard risk and makes recommendations for risk management and adaption to provide an appropriate response to the coastal hazards that could impact assets and ensure community awareness of these hazards and responses.

The LSP CHRMAP defines the values and services required to be accommodated within the foreshore reserve as:

- Recreation and safety – Provided through development of a surf lifesaving club and associated facilities as well as other public recreation facilities such as landscaped areas, shelters, seating, tables, barbeques and a playground.

DevelopmentWA - Alkimos Coastal Village Foreshore Management Plan

Figure 19 - Coastal process lines



* @2025. While Urbaqua has taken care to ensure the accuracy of this product, Urbaqua and client make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. Urbaqua and client cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: Landgate, DevelopmentWA. Created by: SS. Projection: MGA: zone 50.



0 130
meters

Scale 1:6,500 @ A4

urbaqua
land and water solutions

- Public access to the beach – A high level of access is required to support outcomes of the District Structure Plan which sought to protect environmental values of the foreshore reserve in other areas of the coast by focussing recreational activity at this location.

The LSP CHRMAP notes that these values and services can be adequately provided for within the area considered to be at risk from coastal processes within the 100 year planning timeframe. It also notes that the surf lifesaving club and associated facilities are able to be considered in the context of a shorter – 42 year planning timeframe, due to the importance of this infrastructure in supporting the regional beach designation.

The LSP CHRMAP also notes that any planning for relocation will be a process of considering the location of assets in the context of expected design life; the worst case exposure assessment (coastal processes lines) at different planning horizons; and the ability of the asset to function in alternative locations within the foreshore reserve.

3.9.1 *Review of shoreline movement trends*

A shoreline movement analysis was completed by MP Rogers and Associates in 2025 for the study area to investigate whether there has been any observed short-term change to the long-term trends. From his high-level review, the following points were noted:

- In recent years, there has been no change to the long-term shoreline trend shown in Figure 20. Most of the foreshore is stable, with spatial fluctuations between a net erosion or accretion rate of less than 0.2 m/year. This is considered to result in a relatively stable shoreline fronting the proposed development.
- As shown in the shoreline movement rate plot (Figure 20), the long-term trend (black line) for chainages between 1,100 m and 1,800 m also remains consistent when recent events are considered (blue line). The foreshore is eroding at varying rates, with the highest rate occurring at chainage 1,300 m, at approximately 1.4 m/year. This is important, as this location has been identified as the proposed site of the surf club and associated infrastructure. Consequently, appropriate consideration is required when planning pathways and other supporting infrastructure within this section of the foreshore, and a more detailed analysis and investigation of long term shoreline movement will be undertaken by a coastal engineer during the design of path access at entry points to the beach including for the surf life saving club.

3.9.2 *Beach assessment*

A hazard assessment was also conducted by MP Rogers of the beaches within the study area (MP Rogers, 2014) to consider the potential physical hazards and risks from natural factors to recreational users of the beach. The results of this assessment are provided in Table 7 (in reference to the units in Figure 21) and suggest that ALK4 and ALK5 appear to be well protected from waves during all events. Given these segments are the least hazardous, MP Rogers proposed this location as the regional beach.

These findings were also supported by Coastal Aquatic Risk Assessment undertaken by Surf Life Saving Australia in 2014.

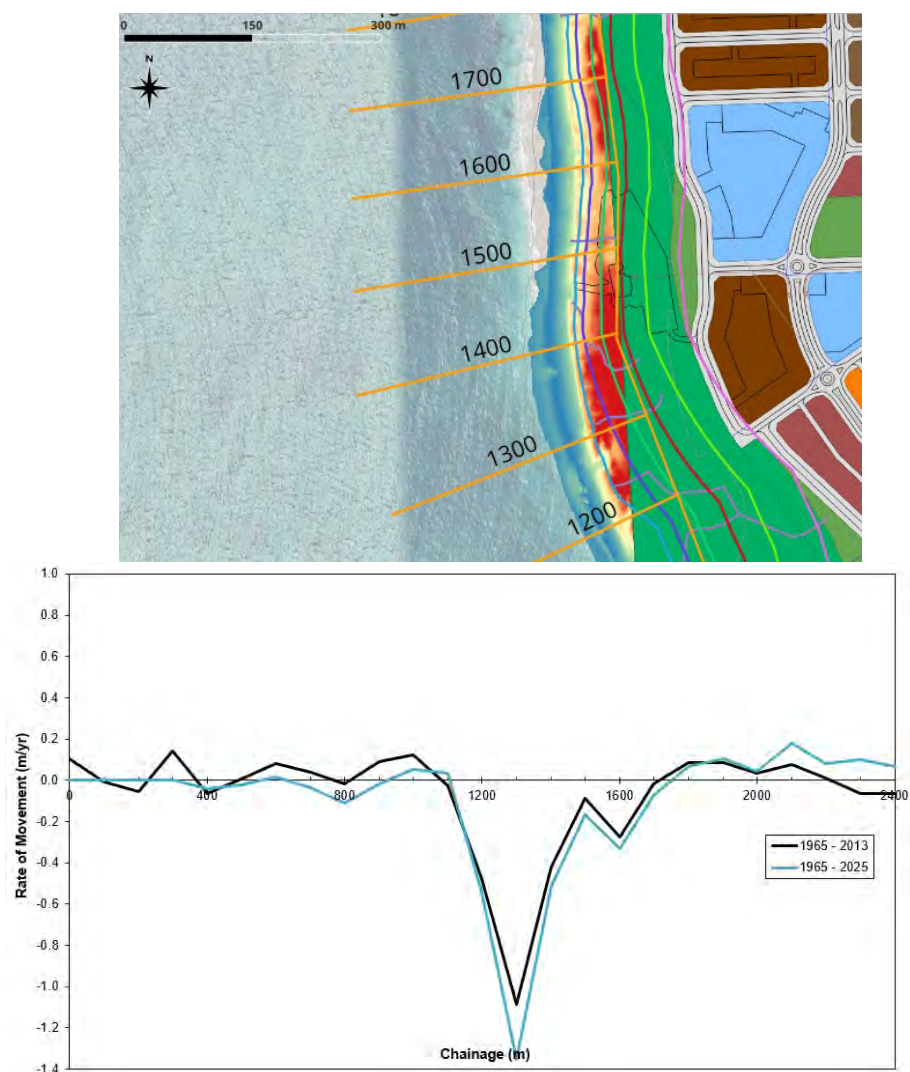


Figure 20: Review of shoreline movement trends (MP Rogers, 2025)

Table 7: Beach Hazard Assessment by (MP Rogers, 2014)

Coastal segment	ALK1	ALK2	ALK3	ALK4	ALK5
Beach type	Transverse bar and rip	Transverse bar and rip	Low tide terrace	Low tide terrace	Reflective / Low tide terrace
Sandy beach hazard rating	5	5	4	4	3
Rock type hazard rating	2	2	2	-	-
Final hazard rating	7 highly hazardous	7 highly hazardous	6 moderately hazardous	4 - moderately hazardous	3 least hazardous
Dune	10-15m accreting	5-15m accreting	+5m accreting	+5m eroding	+5m eroding
Beachface	Medium to steep	Medium to steep	Medium to steep	Steep face	Medium steepness
Swimming conditions	Poor	Poor	Poor	OK	Good
Rock	Rock platform	Rock platform	Rock platform	None	None

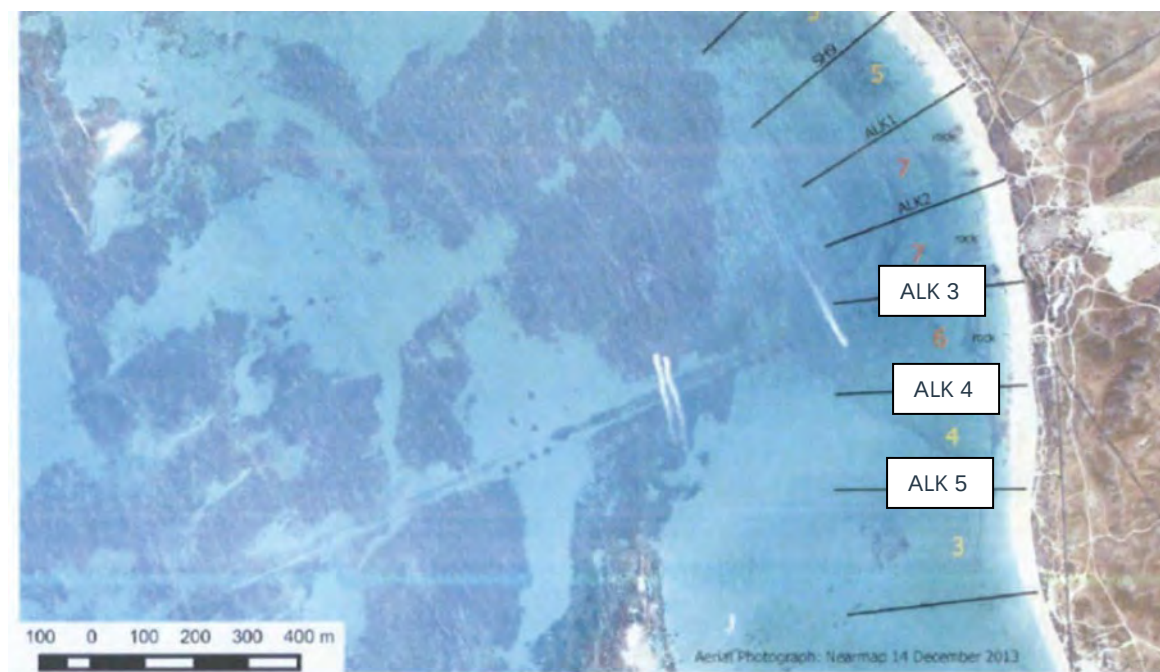


Figure 21: Beach units assessed by MP Rogers 2014

FMP response

The proposed foreshore reserve has been established to provide sufficient space for the appropriate management of the effects of coastal physical processes for the planning horizon of the adjacent development. This includes consideration of recent shoreline movement trends.

The recommended site for the surf life saving club is adjacent to the safest part of the beach and east of the 42-year coastal process line.

The LSP CHRMAP provides appropriate recommendations to address coastal risks within the foreshore area into the future. Where a future CHRMAP review undertaken by the City results in a recommendation that some infrastructure should be subject to a retreat strategy, the relocation of this infrastructure into the areas designated as Coastal Foreshore within the Local Structure Plan (Figure 1) may be considered as appropriate.

The site is also located within the City's coastal monitoring program which includes 6 monthly coastal surveys of the beach and dune areas, photographic monitoring and reporting. If determined to be required in the long term the retreat of the assets will be located landward of the coastal vulnerability line that corresponds to the lifespan of the proposed new asset/s.

3.10 Key issues

Based on the consideration of existing and future site conditions, environmental influences, policies, plans, guidelines and strategies, the following issues have been identified as having particular relevance to the Foreshore Management Plan. These issues are proposed to be addressed as indicated in Table 8.

Table 8: Key issues and mitigations

Issue	Proposed mitigation
Environmental condition - Vegetation condition varies: Most areas are Very Good, but several northern and central sections are Good to Completely Degraded due to uncontrolled access and informal tracks. - Habitat quality is mixed: Heathland and shrubland provide habitat for common fauna and potentially some conservation-significant species (e.g., Graceful Sun Moth), but many areas are modified and have reduced structural diversity. - High weed presence: Several invasive species are present; some Declared Pests (e.g., <i>Solanum linnaeanum</i>). - Landform is reflective of the dunal landscape with steep slopes, dunes and troughs.	Limit vegetation to be cleared, with the exception of the facilities identified to be delivered as part of this foreshore management plan, including the surf life saving club and associated facilities. Degraded path networks not retained will be fenced and revegetated. Landform and topographical features to be retained. Lookouts proposed in future areas of public open space. Design of assets to avoid clearing of vegetation, mitigate impacts and then revegetate. Weed management in areas of high weed presence. Applying for a Native Vegetation Clearing Permit to ensure vegetation impacts are assessed and managed through regulatory approval conditions that minimise, control and, where necessary, rehabilitate vegetation loss.
Coastal processes and hazards - The shoreline is generally stable, but a specific section (chainage ~1300 m) is eroding at up to 1.4 m/year. It is noted that the proposed location for the Surf Life Saving Club aligns with chainage 1400. - Coastal hazards vary along the length of the foreshore. ALK5 is the safest beach segment and ALK1–2 are more hazardous. A low risk hazard limestone rock outcrop was identified at ALK 2.	Infrastructure and facilities to be located beyond the 42year, 50year, 75year and 100year coastal process line as appropriate to the lifespan of the asset. Further assessment of shoreline movement will be undertaken as part of detailed design for beach entry points. Signage will be maintained at the site identified as having a low risk hazard and the risk will be periodically assessed.

Issue	Proposed mitigation
Cultural heritage - The site is associated with strong Aboriginal cultural values and the location sits between Yued and Whadjuk Boodja. - Limestone formations and dune systems have mythological significance (Waugyl). - There is a moderate potential for buried cultural material. - Recommendations from local knowledge holders include increased engagement, accessibility, avoiding dune disturbance, minimising earthworks, using Cultural Heritage Monitors, and incorporating Yued and Whadjuk Noongar narratives, art and interpretation.	Implement recommendations from local knowledge holders where possible, including ongoing engagement in planning and management of the area. Incorporate Noongar-led cultural interpretation within foreshore public spaces.
Land use history - Slight potential for unexploded ordnance (UXO) from WWII training activities—requires targeted assessment where ground disturbance is planned (particularly for SLSC). - Illegal dumping has occurred in limited areas.	Site assessment for UXO risk will be required for all proposed developments that involve ground disturbance. Rubbish will be removed as part of revegetation works.
Foreshore access and degradation - Extensive informal access tracks have led to a loss of vegetation, increased erosion risk and habitat fragmentation. - Clearing may reduce available habitat for native fauna and disrupt ecological linkages. - Construction activities may damage vegetation outside approved work areas through vehicle movements or stockpiling. - Disturbed areas may remain degraded if not properly restored following works.	Formal path network to be established. Tracks not required will be closed and revegetated. Minimise the clearing footprint, retain mature trees where possible and undertake pre-clearing fauna inspections. Clearly delineate clearing boundaries, establish exclusion zones and provide contractor environmental inductions. Rehabilitate disturbed areas using locally native species and monitor revegetation success.

These are discussed in more detail in the following sections.

4 FORESHORE MANAGEMENT PLAN

4.1 Objectives and outcomes

The objectives of the Alkimos Coastal Village Foreshore Management Plan, established as part of the stakeholder engagement process, are to:

1. Integrate natural and cultural heritage into the foreshore design
2. Create an inclusive, family-friendly destination for community connection
3. Ensure safe, resilient, and protected foreshore environments
4. Foster a lively and accessible hub of activity

These objectives are consistent with key City of Wanneroo policies and strategies including:

- Local Planning Policy 4.21 Coastal Assets
- Local Planning Policy 4.3: Public Open Space

The objectives were explored further by key stakeholders, who developed the following outcomes for the foreshore management plan.

4.1.1 *Objective 1: Integrate natural and cultural heritage into the foreshore design*

Outcome: The foreshore management plan will prioritise a nature-based approach, respecting the existing landform and dunes while ensuring vegetation corridors connect the dunes to the scarp. It will also recognise and celebrate Aboriginal heritage through storytelling, art, and interpretive signage, specifically highlighting the "crocodile story" to create a deeper connection to the land. This approach will be supported by the ecological value measures outlined in the document, such as weed and plant pathogen management.

4.1.2 *Objective 2: Create an inclusive, family-friendly destination for community connection*

Outcome: The plan will ensure the foreshore is a welcoming and inclusive space for all abilities through the provision of accessible pathways, facilities, and all-abilities beach access. It will incorporate art, facades, and signage that share knowledge about the area's natural environment and cultural heritage. This will build on the goal of creating a "family friendly and community focused location" with public amenities like playgrounds and landscaped areas.

4.1.3 *Objective 3: Ensure safe, resilient, and protected foreshore environments*

Outcome: The foreshore will be designed for safety and shelter, protecting users from both weather and future climate impacts. Key outcomes include locating permanent infrastructure (like the surf life saving club) outside of high-risk erosion zones and creating public shelters and shaded areas. This aligns with the focus on mitigating coastal hazards and setting aside a foreshore reserve to accommodate the impacts of climate change.

4.1.4 *Objective 4: Foster a lively and accessible hub of activity*

Outcome: The foreshore will be developed as a vibrant destination that is lively day and night. The plan will support both high-density activation and easy access for all users. This includes providing appropriate levels of parking, while also prioritising and integrating active transport

modes such as walking and cycling paths and support for e-rideables. Strategic design will celebrate and provide opportunities to enjoy the foreshore's views, creating a dynamic and attractive regional destination.

These outcomes have been translated into the foreshore management plan as described below.

4.2 Key Plan elements

Public open space, amenities and infrastructure within a regional coastal node are planned and function as an integrated, adaptive system that evolves over time in response to coastal processes, community demand and changing patterns of use. At a regional beach, the foreshore reserve accommodates a relatively high level of facilities and infrastructure commensurate with its function as a destination attracting visitors from across the region, including parkland, access networks, parking, and supporting amenities distributed across the site. These elements are carefully scaled and located to reflect coastal vulnerability timeframes and support long-term public use, with asset planning and adaptation occurring over a 100-year horizon to ensure continued function and safe access.

The broader public open space network plays a critical role in supporting this regional function by providing a diversity of recreation, nature and movement opportunities and forming an interconnected system of spaces that enhances accessibility, disperses visitor activity and balances use across the foreshore. Over time, there are opportunities to incrementally expand or adapt the public open space and associated amenities in response to population growth and demand, with flexibility to adjust the scale and distribution of infrastructure to maintain an appropriate level of service for a regional catchment.

Within this hierarchy, the surf life saving club is an important component of the coastal node, contributing to safety, activation and amenity; however, it operates as part of a broader system of foreshore parkland, accessways and distributed facilities across the adjacent areas of public open space. This wider network complements the surf life saving club by accommodating a range of recreational uses, supporting visitor circulation, and reducing pressure on any single focal point, thereby reinforcing the overall function of the regional beach as a well-distributed, accessible and resilient public coastal destination.

The key elements of the foreshore management plan are therefore:

- Surf life saving club and integration with associated Regional Beach facilities
- Principal shared path
- Beach access paths
- Vegetation management
- Facilities and integration with public open space
- Contingencies

These are shown on the Foreshore Master Plan (Figure 22) and are explained in more detail below.

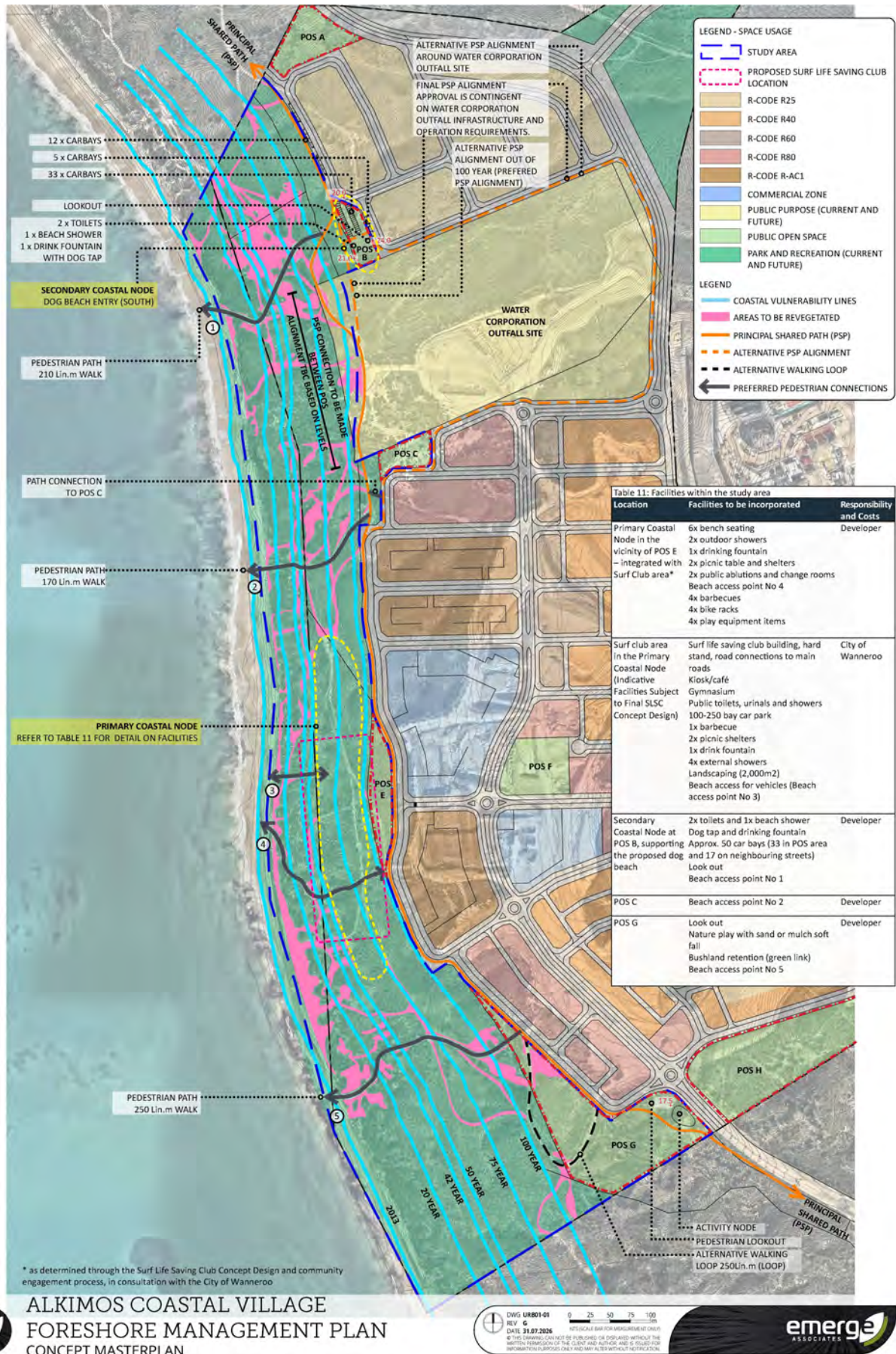


Figure 22: Alkimos Coastal Village Foreshore Master Plan

4.2.1 *Alkimos Surf Life Saving Club and integration with associated Regional Beach facilities*

As stated previously, the detailed design and construction of the Alkimos Surf Life Saving Club is being undertaken independently by the City of Wanneroo. However, it is noted that a key purpose of this plan was to identify a preferred location. Accordingly, the surf life saving club has been considered as a significant element of this plan. Key principles identified as part of this process for the Surf Life Saving Club are:

- The facility should be designed to accommodate the unique functions of a surf club i.e. hardstand, beach access and (peak times) access and provide scope to expand/grow with the future community. It should facilitate the ability to monitor the length of the beach and be positioned in close proximity to the safest part of the beach, providing access to the beach by vehicles.
- Design the facility with consideration of coastal processes and match design life with location as appropriate. It is acceptable for parking to be located closer to the beach, provided triggers/ contingencies are identified for any major asset relocation.
- Work with the landscape levels – not against them. Retain vegetation in the steepest parts to help connect people to the place (and nature) and reduce the need for retaining and earthworks.
- Prioritise pedestrian use – consider that any thoroughfares through the site are for emergency vehicle access only.
- Connect the commercial and residential areas through the public space to improve safety and activation.
- Optimise the position and function of facilities and space for people not necessarily going for surf club activities (eg. swim, walk, taking in the views), and accordingly, carparks can be separated from the surf club.

Additionally given the feedback received through the stakeholder engagement phase, integration of the Developer delivered facilities with the proposed Surf Life Saving Club is recommended, rather than within POSE as this is seen to provide a significantly improved visitor experience and useability of the space and amenities. This approach was supported as it would improve visitor experience and usability while helping protect better-quality vegetation and significant slopes within POSE. The final location of these facilities will be determined through the Surf Life Saving Club Concept Design and community engagement processes, in consultation with the City of Wanneroo.

Preliminary concept design for the Surf Life Saving Club

The City has provided a concept for the Alkimos Surf Life Saving Club (Figure 23). This includes a potential development footprint (red dotted line) and provides an indicative illustration of how the site may be developed, including the possible location of buildings, car parking and open spaces. The final development layout, design and facility mix will be subject to detailed planning, design development and relevant approval processes. Based on the information provided to date, it is anticipated that the development will incorporate some or all of the following facilities:

- | | |
|--|--------------------------------------|
| • Surf life saving club building, hard stand, road connections to main roads | • 100-250 bay car park |
| • Beach access for vehicles | • 1x barbecue |
| • Kiosk/café | • 2x picnic shelters |
| • Gymnasium | • 1x drink fountain |
| • Public toilets, urinals and showers | • 4x external showers |
| | • Landscaping (2,000m ²) |



Figure 23: City of Wanneroo concept for the Alkimos Surf Life Saving Club

Access for the Surf Life Saving Club will be created as part of the subdivisional works and will include construction of the road from Graceful Boulevard along the western edge of the village, undertaken by DevelopmentWA and/or their development partner (from here on referred to as the Developer). There is in-principle agreement between the key stakeholders that this will occur in time to facilitate access to the site when required. The City have advised that construction of the surf life saving club is likely to commence in 2028 and take approximately 18 months.

With regards to the Principal Beach Access Path (Access Path 3) from the surf life saving club to the beach, the City have advised that they will construct it to a minimum width of 4 metres to accommodate vehicle access and surf life saving club operations. The proposed construction materials are likely to be marine-grade concrete, and the path should be orientated to minimise wind erosion, with design measures to prevent undermining at the beach interface (such as extending the path below existing sand levels to account for eroded winter profiles).

Integration of Developer delivered Facilities

In addition to the surf life saving club, the foreshore management plan identifies a number of Developer-delivered facilities associated with the regional beach node. During the engagement phase, stakeholders identified the potential for these facilities to be integrated with the proposed surf life saving club and surrounding community facilities precinct. The final location of the facilities associated with POS E will be determined through the surf life saving club concept design and community engagement processes, in consultation with the City.

The facilities that are identified to be provided by the Developer include:

- 6x bench seating
- 2x outdoor showers
- 1x drinking fountain
- 2x picnic table and shelters
- 2x public ablutions and change rooms
- Beach access point No 4
- 4x barbecues
- 4x bike racks
- 4x play equipment items

With the surf life saving club, likely to precede the delivery of the associated facilities it is recommended that a coordination exercise between the City of Wanneroo and the Developer is undertaken to ensure integration of the various facilities. A general process for this could be as follows:

Confirm scope and responsibilities

- Agree and document the split between:
 - o City of Wanneroo: surf life saving club facility
 - o Developer: public realm and supporting infrastructure (access, ablutions/ change rooms, seating, shelters, play, etc.)
- Identify all physical and servicing interfaces between the two scopes

Prepare integrated concept and detailed design

- Undertake coordinated design of the surf life saving club and surrounding public realm to ensure alignment of levels, access points, utility connections and interfaces
- Agree design standards, specifications and staging assumptions between parties

Establish delivery and staging plan

- Prepare a single, agreed program identifying:
 - o enabling works (subdivision, access, services)
 - o surf life saving club construction timing
 - o delivery of developer infrastructure (amenities and public realm elements)

Notwithstanding the above, either party may, by mutual agreement, deliver elements of the other party's scope of works, subject to agreed scope, specification and timing, with costs reconciled on an agreed basis (e.g. actual or agreed benchmark rates) and maintenance and handover arrangements agreed.

Establish a joint coordination process

- Hold regular project control group meetings to:
 - o monitor program alignment
 - o manage interfaces and risks
 - o agree any scope, timing or delivery changes

Maintenance and Handover

- Coordinate completion and handover of infrastructure to ensure:
 - o surf life saving club is operational upon completion
 - o supporting developer delivered Facilities and access infrastructure is fully functional and integrated and that there is an agreed maintenance term and handover date.

4.2.2 *Principal shared path*

A principal shared path (PSP) will be constructed to provide an appropriate link to the foreshore areas north and south of the study area (Figure 24). The PSP will be located on the western side of the coastal road through the development area including near the commercial centre to limit conflicts that may occur from movement around the surf club, with Conservation Pine Rail Fencing (TS01-7) employed on the westward side. All attempts will be made to minimise any impact of the location of the PSP on vegetation, however, some battering may be required to ensure appropriate surface levels and to meet the City's design requirements.

Due to uncertainty surrounding the future levels and management of the Water Corporation's Public Purpose reserve and the final design of public open space areas, the location of the PSP in this area has yet to be finalised. However, the path will ensure appropriate connection from POS C to POS B, either through the Public Purpose Reserve or to the west using the road reserve on the perimeter of the Public Purpose Reserve.

To the south, the PSP will likely define the edge of the conservation area and local recreation space in POS G, linking to the existing PSP along Graceful Boulevard.

This asset is located outside the 100-year coastal process line, within the development footprint.

The PSP will be constructed in accordance with City of Wanneroo Pathways Policy (2024) which indicates a 3.5m red asphalt shared path with centre and edge line marking and wayfinding signage. The approximate length of the PSP is:

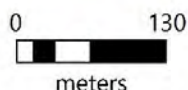
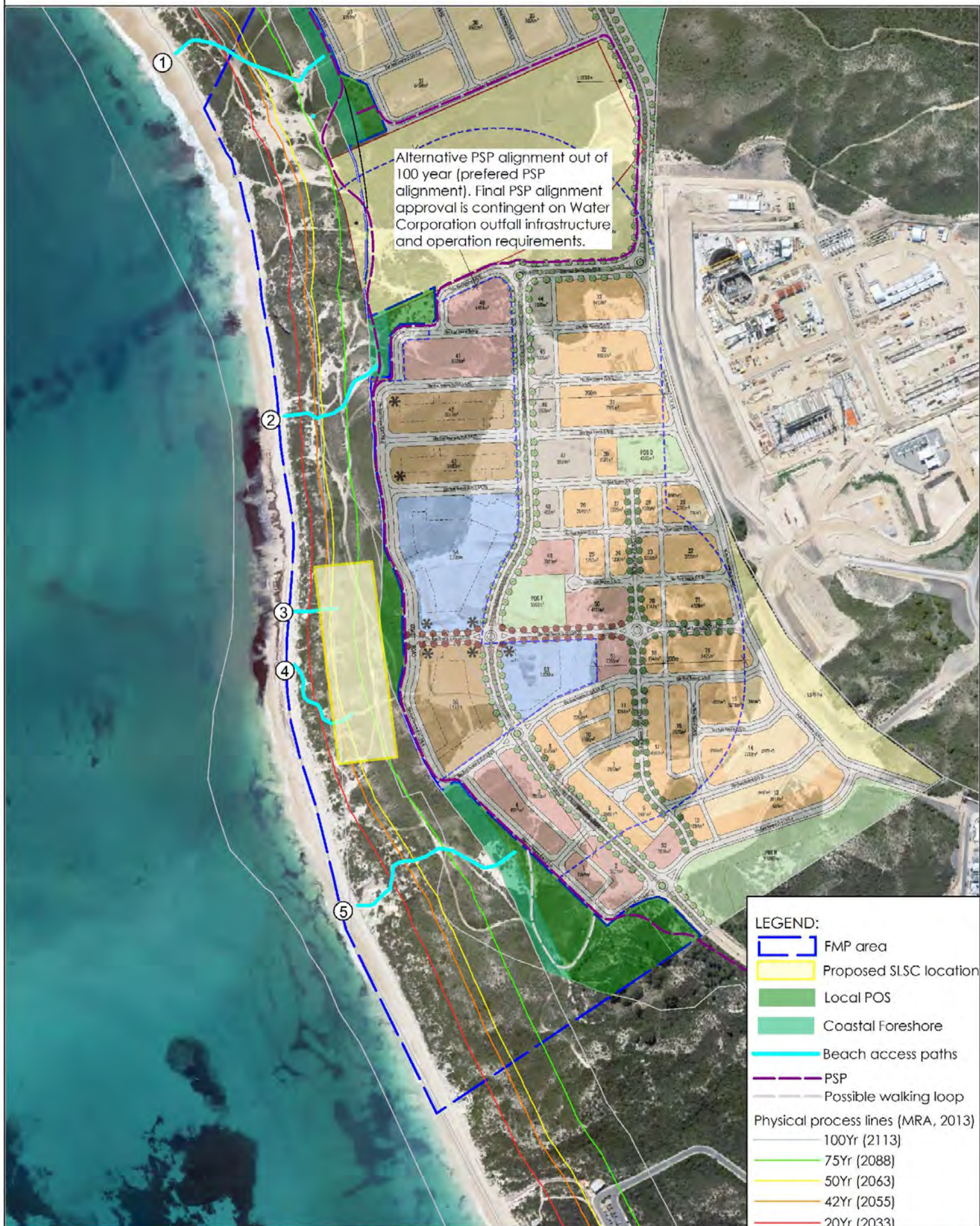
- Path along the beach side – approx. 1.7km
- Additional path around the Water Corporation's Ocean outfall site – approx. 1km

4.2.3 *Beach access paths*

There are a number of paths to the beach that have been created by uncontrolled access. It is proposed that these paths are rationalised so that there are only five defined and fenced paths. This fencing (in accordance with City specification TS01-4) will effectively provide protection for the native vegetation throughout the foreshore and assist with conservation efforts including revegetation of the tracks to be closed.

DevelopmentWA - Alkimos Coastal Village Foreshore Management Plan

Figure 24 - Principal shared path and beach access path network



Scale 1:6,500 @ A4

The proposed location of the beach access paths is shown in Figure 24. These have been located to ensure the termination point at the beach is least likely to be affected by coastal processes, as assessed by MP Rogers and Associates (see Appendix 3), however it is noted that further assessment of shoreline movement will be undertaken as part of detailed design for beach entry points prior to their construction.

The approximate length of each beach access path is:

- Path 1 – 210m
- Path 2 – 170m
- Path 3 – 60m (referred to as a Principal Beach Access Path)
- Path 4 – 125m
- Path 5 – 250m

Each path is to provide for pedestrian access only (1.5m wide) with a sand surface, with the exception of a path at the surf life saving club that will provide for vehicle access (Path 3, noting, the specific location and construction of this path is being undertaken as part of the surf life saving club project). In respect of this path (referred to as the Principal Beach Access Path), the City have advised that they will construct it to a minimum width of 4 metres to accommodate vehicle access and surf life saving club operations.

Each path may require stabilisation at termination points with the PSP, with this being determined as part of future detailed design for each beach entry point prior to their construction.

A sand surface of the path at termination with the beach is preferred to allow for ease of maintenance and management of coastal process impacts. As per the City's requirements, Conservation Pine Rail Fencing (TS01-7) will be used along the principal shared path boundary and in areas where vehicles front the foreshore, while Coastal Foreshore and Beach Access Way Fencing (TS01-4) will be used within internal beach access ways. This will effectively fence all areas of foreshore vegetation to prevent further unauthorised access. 800mm wide gaps will be provided in all fencing used to allow for the movement of macro fauna, especially kangaroos.

Each path is likely to be established at the same time the adjacent area is subdivided and the termination point (the area of public open space) is landscaped – ensuring appropriate entry and access control as well as functionality for beach users. This timing will be confirmed in coordination with the City as the implementation of this plan progresses. As part of this process, should any vegetation clearing be required in the future to establish, modify or upgrade beach access paths, the City and/or Developer may be required to obtain a clearing permit under Part V, Division 2 of the *Environmental Protection Act 1986*, subject to the nature and extent of the clearing proposed. Any such works should be undertaken having regard to the environmental management, rehabilitation and monitoring measures identified within this foreshore management plan.

4.2.4 Vegetation management

It is anticipated there will be limited vegetation required to be cleared to provide the path network as described above. Any vegetation to be cleared, including what is likely to be associated with the City's proposal for the surf life saving club and its associated facilities will be addressed through the processes indicated in this foreshore management plan.

Many of the existing tracks are proposed to be closed and revegetated (Figure 24). This area is currently estimated as 3.77ha, however this includes tracks through the surf club location which may be retained. The size of the ultimate revegetation area will be confirmed via ground

DevelopmentWA - Alkimos Coastal Village Foreshore Management Plan

Figure 25 - Area to be revegetated



* @2026. While Urbaqua has taken care to ensure the accuracy of this product, Urbaqua and client make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. Urbaqua and client cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.
Data source: Landgate, DevelopmentWA Created by: SS Projection: MGA: zone 50.



0 130
meters

Scale 1:6,500 @ A4

urbaqua
land and water solutions

truthing after construction of the surf life saving club and associated facilities, as each path is constructed at the time of adjacent subdivisional works.

The revegetation areas may also be considered by the City as offsets for the clearing required for the surf life saving club.

Revegetation requirements

A Revegetation and Rehabilitation Plan will likely be a condition of the clearing permit for the Alkimos Surf Life Saving Club to guide the implementation, establishment, monitoring and maintenance of rehabilitation works in response to this development. The City will be required to undertake and manage revegetation and rehabilitation activities in accordance with the approved Plan.

Additional revegetation and rehabilitation works will be undertaken by the developer throughout the remainder of the foreshore area in areas that have been cleared as a result of unauthorised access. These revegetated areas will be protected through establishing conservation fencing around the areas defined by the beach access paths. As recommended by Noongar people, this will also include species suitable for black cockatoo foraging and habitat where appropriate.

The proposed methodology for the revegetation that the developer will undertake for the foreshore is as follows:

- **Site preparation:** undertake weed management (spraying and/or hand weeding) prior to planting to reduce competition from invasive species. Remove rubbish and close existing illegal access points. It is likely that this will require very large limestone blocks or other appropriate material that can't be moved until the pattern of access has been broken.
- **Surface stabilisation:** use native branches and/or mulch to provide a microclimate for seedlings and minimize erosion together with coir or coconut fibre matting in particularly unstable or erosion-prone areas. Install windbreak fencing where necessary to support successful establishment and stabilisation of revegetation areas.
- **Plant propagation and seeding:** use tubestock propagated from seeds collected from the local Alkimos Coastal Village area to maintain genetic integrity, together with direct seeding for specific species.
- **Planting strategy:** select species based on vegetation types shown on Figure 12. This includes species known to support local wildlife. A species list, provided by PGV Environmental, is contained in Table 9. Planting should be scheduled for the winter months to take advantage of seasonal rainfall, reducing the need for manual watering. However, some tube stock may be planted with water crystals/tablets to improve survival rates.

Table 9: Species list for revegetation (Source PGV Environmental, 2025, adapted by CoW)

Family	Species
ASPARAGACEAE	<i>Acanthocarpus preissii</i>
CYPERACEAE	<i>Lepidosperma gladiatum</i>
POACEAE	<i>Spinifex longifolius</i>
AIZOACEAE	<i>Carpobrotus virescens</i>
ASTERACEAE	<i>Olearia axillaris</i>
CHENOPODIACEAE	<i>Rhagodia baccata</i> <i>Threlkeldia diffusa</i>
ERICACEAE	<i>Acrotriche cordata</i>
FABACEAE	<i>Acacia cyclops</i>

Family	Species
	<i>Acacia lasiocarpa</i>
	<i>Acacia saligna</i>
	<i>Gastrolobium capitatum</i>
	<i>Hardenbergia comptoniana</i>
GOODENIACEAE	<i>Scaevola crassifolia</i>
LAURACEAE	<i>Cassytha racemosa</i>
MYRTACEAE	<i>Melaleuca systema</i>
NITRARIACEAE	<i>Nitraria billardierei</i>
RHAMNACEAE	<i>Spyridium globulosum</i>
SANTALACEAE	<i>Exocarpos sparteus</i>
SCROPHULARIACEAE	<i>Eremophila glabra</i>
	<i>Myoporum insulare</i>

Revegetation species will be appropriate to the surrounding vegetation complex and agreement on the species list will be obtained with the City for each revegetation area.

Appropriate action will be taken in response to the findings of the monitoring events (see section 5). This is likely to include repairs or maintenance of fencing, weeding, replacement of seedlings and/or modification to maintenance programs as required. The annual monitoring reports will be provided to the City to support early identification of issues and facilitate a smooth handover.

Permanent photo monitoring points and monitoring quadrats are to be established prior to works and retained for the duration of the monitoring period. Monitoring is to be undertaken from consistent locations and include date-stamped photographs, vegetation condition, survival rates, weed cover, erosion and maintenance records. Monitoring results shall be used to demonstrate progress towards completion criteria (see Table 10), with corrective actions implemented where targets are not being met.

Table 10: Completion criteria for revegetation

Issue	Criteria
Vegetation density and diversity	
Planting density	<i>Spinifex longifolia</i> and <i>Spinifex hirsutus</i> planted at a minimum density of 4 plants/m ² . All other species planted at a minimum density of 2 plants/m ² . Higher densities may be required in erosion-prone or dune stabilisation areas to the satisfaction of the City.
Species richness:	At least 70% of the agreed species list will be represented and persisting in the revegetation areas by the end of the maintenance period.
Native vegetation cover	Native vegetation cover shall demonstrate progressive establishment and provide an adequate and reasonable representation of revegetation across the site, as demonstrated through quadrat monitoring and photographic evidence.
Survival rate:	After the first summer (the period of highest mortality), a survival rate of at least 70% of installed tubestock; otherwise, infill planting will be conducted during the following winter.
Direct seeding rate	In areas where direct seeding is utilised, the target application rate is 3 kg per hectare.
Weed cover	
Total weed cover:	To be maintained at less than 10% across the revegetation area.

Issue	Criteria
Eradication of "high priority" weeds:	There is a zero-tolerance (0% cover) target for highly invasive environmental weeds (such as <i>Euphorbia terracina</i> or Carnation Weed) within the management zones.
Stability and erosion	
Bare ground	In stabilised areas, bare sand is not to exceed 20% of the total area once plants have reached maturity (typically by Year 3 to 5).
Erosion events	Zero active erosion (e.g., new rills, gullies, or sand movement) caused by wind or water at the time of completion.
Dune stability	Revegetated dune areas shall remain stable and free from significant wind erosion, blowouts, or destabilisation requiring major remedial works.
Reporting and maintenance	
Quadrat monitoring	Permanent monitoring quadrats and photo monitoring points shall be established prior to works and maintained throughout the monitoring period. Monitoring shall assess species diversity, vegetation cover, vegetation condition, survival rates and weed cover.
Monitoring frequency	Formal monitoring to occur twice annually in Spring and Autumn for the full five-year duration.
Annual reporting	Monitoring reports shall be submitted to the City annually and include monitoring results, photo point records, quadrat data, maintenance undertaken, contingency actions and recommendations for further works.
Documentation	A completion report will be submitted at the end of Year 5, proving that all the above quantitative targets have been met for two consecutive monitoring periods.
Handover requirements	Prior to handover, monitoring data, quadrat assessments, photo monitoring records and supporting evidence shall demonstrate species diversity, vegetation cover, vegetation condition and survival rates to the satisfaction of the City. Vegetation quality shall be demonstrably better than prior to construction.

4.2.5 Facilities and integration with public open space

As previously noted, the design of public open spaces will be undertaken as part of the subdivisional process. It is, however, expected that the design of these spaces will have consideration of the recommendations in this foreshore management plan.

The facilities to be included in the study area are outlined in Table 11 and will be provided in accordance with *City of Wanneroo Local Planning Policy 4.21 Coastal assets*, as shown in Figure 22. This includes preparation and lodgement of an asset management plan and data capture in accordance with A-SPEC requirements at the time of detailed design.

The facilities to be provided in support of the Alkimos Coastal Village regional beach node (see Table 11) would normally be located within the structure plan area at POS E. Through the stakeholder engagement process, an alternative option was identified whereby these facilities could be integrated with the proposed Surf Life Saving Club and surrounding community facilities precinct. Stakeholders recognised that this approach may provide an improved visitor experience and usability of the space and amenities, while facilitating the protection and retention of higher-quality vegetation and significant slopes within POS E. The final location of the facilities associated with POS E will be determined through the Surf Life Saving Club Concept Design and community engagement process, in consultation with the City of Wanneroo.

Table 11: Facilities within the study area

Location	Facilities to be incorporated	Responsibility
Primary Coastal Node in the vicinity of POS E – integrated with Surf Club area or as determined through the surf life saving club concept design and community engagement process, in consultation with the City of Wanneroo	• 6x bench seating • 2x outdoor showers • 1x drinking fountain • 2x picnic table and shelters • 2x public ablutions and change rooms • Beach access point No 4 • 4x barbecues • 4x bike racks • 4x play equipment items	Developer
Surf club area in the Primary Coastal Node	• Surf life saving club building, hard stand, road connections to main roads • Kiosk/café • Gymnasium • Public toilets, urinals and showers • 200-250 bay car park • 1x barbecue • 2x picnic shelters • 1x drink fountain • 4x external showers • Landscaping (2,000m²) • Beach access for vehicles (Beach access point No 3)	City of Wanneroo
Secondary coastal node at POS B, supporting the proposed dog beach	• 2x toilets and 1x beach shower • Dog tap and drinking fountain • Approx. 50 car bays (33 in POS area and 17 on neighbouring streets) • Lookout • Beach access point No 1	Developer
POS C	• Beach access point No 2	Developer
POS G	• Lookout • Nature play with sand or mulch soft fall • Bushland retention (green link) • Beach access point No 5	Developer

With regards to other facilities in the foreshore area, the engagement process identified the opportunity for an osprey tower. However, consultation with the Alkimos Surf Life Saving Club has suggested that this might be in conflict with their need to operate drones, as ospreys have been known to attack small drones.

It is also noted that the Alkimos Coastal Village Local Water Management Strategy prepared by Emerge Associates in 2019 identifies that large parts of each area of public open space will be required for water quality treatment (bioretention areas) and flood protection. It is recommended that the City ensure current best practice stormwater management principles are applied as part of the subdivisional design process to reduce the size of the proposed bioretention areas (noting there is almost no water quality risk in these areas due to the degree of disconnection of impervious surfaces that should be able to be achieved and the low level of pollutants arising from the proposed land uses). It is also recommended that the Developer obtains agreement from the City that flood risk is able to be managed in other areas of the landscape, such as car parks, amphitheatres and natural depressions in the Coastal Foreshore areas.

4.2.6 Contingencies

It is noted that the facilities proposed for POC B, C and G are located outside the 100year coastal process line and accordingly, no contingency is proposed for relocation of any of these facilities.

With regard to the facilities that may be able to be located in the vicinity of the surf life saving club that are the responsibility of the Developer, these should be located beyond the 75year coastal process line or as appropriate to their design life. Should these be subject to coastal processes and recommended for future relocation in a future CHRMAP process by the City with the community, these can be accommodated in the identified Coastal Foreshore areas associated with POS areas C and G (Figure 1).

If planting success falls below 70% in two consecutive monitoring events, contingency measures will be implemented to increase the success rate. This may include re-brushing/re-mulching, ongoing weed management, replanting, fence maintenance as required.

4.3 Other management requirements

Other key issues that require management in the foreshore area include fire, weeds, dieback, fauna protection, dune stabilisation and erosion control, stormwater management and controlled access.

4.3.1 Bushfire management

Bushfire management will be undertaken in accordance with the Alkimos Coastal Village Foreshore Bushfire Management Plan (Urbaqua in preparation). This is likely to include the following recommendations:

- During adjacent construction works, prohibit all high-risk activities (e.g., hot works) within or adjacent to the foreshore reserve during days of Very High or Extreme fire danger and ensure all machinery operating within the reserve is fitted with spark arrestors and carries operational fire extinguishers.
- Maintain access for emergencies via construction of the principal path to a standard that supports emergency vehicle access and ensure all entry points have lockable bollards with keys provided to emergency services.
- Manage vegetation density immediately adjacent to built assets (e.g., the surf life saving club and beach access structures) to maintain a reduced fuel zone as per the fire management schedule.

4.3.2 Weed management

Weed management will include implementation of a weed eradication program at least one season prior to any revegetation planting to reduce the seed bank of invasive species. This is likely to include hand weeding as well as spraying as appropriate.

Total weed cover will be maintained in these areas at less than 10% and all "High Priority" environmental weeds, specifically *Euphorbia terracina* (Geraldton Carnation Weed) will be eradicated. Weed inspections will be conducted quarterly, with a formal assessment completed every April to plan the winter spraying program.

4.3.3 Dieback management

Dieback hygiene protocols will be enforced for all vehicles and heavy machinery entering the foreshore area. Only tubestock, mulch, and soil that have been certified as "Dieback-Free" by accredited suppliers will be used.

4.3.4 Fauna management

Habitat will be protected via conservation fencing and revegetation with species known to support local fauna.

As previously stated, prior to any clearing of vegetation and/or construction works a fauna management plan will be required. This is likely to include:

- Awareness sessions with all key personnel involved in the project as part of mandatory site inductions.
- Limiting speed limits with the site to minimise risk of fauna injury or mortality (20 - 30km/h).
- A fauna spotter with appropriate DBCA licenses will be present during any clearing within the site.
- Where required, a qualified wildlife handler will be called to relocate the fauna.
- Details of a wildlife carer for injured wildlife will be made visible to all site personnel.
- Fencing with 800 mm gaps for wildlife will be installed prior to site works and "No access" signage and revegetation notices will be installed as needed.
- A fauna relocation licence will be obtained from DBCA, and a suitable release site identified. Trapping will occur as required prior to clearing within impact areas and any fauna encountered during clearing will be relocated to nearby conservation areas under licence. Duration and type of trapping program will be determined as required/at a later date.

For works that do not involve vegetation clearing or major construction activities, fauna management measures are still to be implemented where relevant to the scope of works. The extent of management actions should be proportionate to the potential risk to fauna and habitat and may include personnel awareness, access controls, protection of habitat areas, fauna inspections and other measures considered necessary to minimise impacts to native fauna.

4.3.5 Dune stabilisation and erosion control

Dune stabilisation and erosion control will be implemented where any works are proposed as required. This includes the tracks proposed to be closed and is likely to include brushing, mulch and/or coir matting in high risk areas. This may be extended to address the likelihood of wind-born dust impacts to ensure vegetation is not impacted by dust (sand).

As previously stated, dust management and monitoring for works associated with the surf life saving club will be undertaken in accordance with the City's *Local Planning Policy 4.18: Earthworks and Sand Drift*.

4.3.6 Stormwater management

As no impermeable surfaces are proposed to be constructed within the foreshore area, no formal stormwater management is required. Consideration will be given to erosion control in areas in proximity to the principal shared path where slopes may generate significant erosive

forces. This may include rock pitching and/or directing water into vegetated areas, consistent with water sensitive urban design techniques.

With regards to the surf life saving club, best practice water sensitive design techniques should be employed to minimise constructed impervious surfaces, direct runoff to vegetated areas and appropriately address flood risk in accordance with State Planning Policy 2.9 Water and the Planning for Water Guidelines (WAPC, 2025). This includes management of the water cycle including connection to sewer and access to sufficient water for irrigation of public open space.

4.3.7 Access

Access will be controlled through establishing a conservation fence around all areas of vegetation to be retained. Paths to be closed will be blocked with large natural impediments (boulders, rock, logs etc). Signage will be placed at the start of beach access paths clearly indicating that pedestrians must stay on the paths and that vehicle entry is prohibited. Monthly inspections will be undertaken of all fenced, and any repairs undertaken immediately to prevent trampling of sensitive revegetation zones.

Suitable temporary pedestrian access and/or vehicle/emergency access will be delivered in suitable locations to allow safe access to the beach during construction works and to prevent unauthorised access to the Foreshore Reserve, if appropriate. In these instances, paths and access ways should align with existing tracks to minimise additional clearing. Where temporary access to the beach has been provided adequate Safety signage and Beach Emergency Number (BEN) Signage will be provided.

4.4 Strategies and actions

Having consideration of the objectives and outcomes of the Foreshore Management Plan as well as the above elements, the following strategies and actions will be implemented.

4.4.1 Objective 1: Integrate natural and cultural heritage into the foreshore design

Strategies and actions

1. Prioritise a nature-based approach to design and management of the foreshore area

- a. Minimise the need to clear good quality vegetation and revegetate degraded areas where possible. Collect seed prior to clearing, for propagation and planting in future landscape/ revegetation areas to ensure local native species are used.
- b. Plant locally native trees near publicly accessible areas for shade and natural cooling.
- c. Use materials appropriate for coastal environments that minimise visual and environmental impacts.

2. Recognise and celebrate Aboriginal cultural heritage

- a. Use Noongar language (nomenclature) throughout the foreshore area and integrate Noongar narratives into the design of facilities and any public art program.

- b. Research and acknowledge shared history, including profiles like Monop and historical events such as shipwrecks or trading posts. This could include education about the Aboriginal cultural sand ceremony.
- c. Employ Cultural Heritage Monitors during any ground disturbance and implement Aboriginal employment strategies for the project including consideration of Noongar Rangers to assist with ongoing maintenance and management.
- d. Seek to establish an ongoing relationship between local Aboriginal knowledge holders with groups working within the foreshore such as the Alkimos Surf Life Saving Club.

4.4.2 Objective 2: Create an inclusive, family-friendly destination for community connection

Strategies and actions

3. Ensure the foreshore is a welcoming and inclusive space for all.

- a. Ensure design of the proposed facilities prioritises pedestrians and cyclists over cars.
- b. Provide access to the beach and water for Elders and people with disabilities, alongside adequate seating and shade.
- c. Ensure integrated access between the foreshore and the commercial centre.
- d. Identify a place for universal access – potentially a portion of a path or boardwalk to a view point.

4. Create a family friendly and community focused location

- a. Incorporate facilities in the foreshore area in accordance with City of Wanneroo Local Planning Policy 4.21. Balance needs and use with maintenance requirements.
- b. Recognise the functions of different areas within and adjacent to the foreshore and provide separation where conflicts may arise.
- c. Employ Crime Prevention Through Environmental Design (CPTED) principles – particularly for toilets and paths. Provide lighting for safety, security and passive surveillance, noting areas for wildlife.

4.4.3 Objective 3: Ensure safe, resilient, and protected foreshore environments

Strategies and actions:

5. Ensure the facilities in the foreshore area provide safety and shelter, protecting users from both weather and future climate impacts.

- a. Locate infrastructure outside the coastal process hazard line appropriate to the design life of the infrastructure/asset. Identify triggers for future responsive action.
- b. Provide shelter from weather without changing the topography.
- c. Manage risk of erosion and sedimentation as well as sand drift during construction.
- d. Manage site preparation and construction activities to minimise risks to people and the environment.

4.4.4 *Objective 4: Foster a lively and accessible hub of activity*

Strategies and actions:

6. Ensure the foreshore area is a dynamic and attractive regional destination

- a. Provide a good civic space that is adequate for large groups of people and large community events.
- b. Introduce attractions for a diverse population and experience. This could include a café, event capability (infrastructure for food trucks, music events, markets etc such as power, water, lighting, hard space, CCTV), terracing/lookout points and seating for sunsets.
- c. Support unique elements for all seasons - consider sauna/hot showers, a covered playground, places for all ages and artwork. Consider accommodating other sport /events, e.g. beach volleyball, basketball etc
- d. Include great landscaping that reflects the local identity.
- e. Consider the integration of developer-funded facilities with the surf life saving club infrastructure through the concept design process, having regard to opportunities to improve visitor experience and usability of the space, while facilitating the protection and retention of higher-quality vegetation.

7. Provide appropriate access by pedestrians, active transport and vehicles to the foreshore area.

- a. Provide bike racks, end of trip facilities and charging points for e-rideables.
- b. Consider paths for prams and wheelchairs.
- c. Consider a Kiss n drop associated with the surf life saving club.
- d. Outside of foreshore study area, provide sufficient areas for car parking and seek to ensure on-street parking in the commercial area can also be used by Regional Beach users.
- e. Integrate a principal shared access path within the movement network to enhance local and regional connectivity, accessibility and transport choice.
- f. Ensure appropriate road access and utility servicing is available to support the development and operation of the Surf Life Saving Club and associated Regional Beach facilities.

Implementation of these actions is outlined in the next section.

5 IMPLEMENTATION

5.1 Implementation schedule and reporting

Implementation of the Foreshore Management Plan will occur in accordance with the response, timing, responsibility and completion criteria outlined in Table 12.

Implementation of this plan is likely to occur in stages aligned to the subdivisional process of delivering the Alkimos Coastal Village. The timing of activities to be undertaken in the study area, such as construction of the PSP, erection of conservation fencing to define the coastal path network, closure of existing tracks and revegetation, and delivery of public open space and associated facilities, will be determined by the Developer in collaboration with the City of Wanneroo, but will likely occur when the subdivisional works is being undertaken for the adjacent stage/area. This will ensure that the final design of facilities and infrastructure outside the foreshore reserve is reviewed and approved by the City of Wanneroo.

A suggested delivery process for each stage and/or element could be as follows:

City of Wanneroo (e.g. Surf Life Saving Club):

- Site Selection – Identify preferred SLSC location (Section 4.2.1).
- Stakeholder Engagement – Collaborate with Surf Life Saving WA, Water Corporation, Aboriginal knowledge holders, etc. (refer to potential stakeholders at Section 1.4)
- Design, Integration of Developer Delivered Facilities and Cultural Input – Integrate cultural heritage, engage Noongar knowledge holders, embed narratives/art (Sections 3.8 and 4.2.1).
- Environmental/Clearing Approvals/ Cultural Management – Obtain clearing permits, prepare Revegetation and Rehabilitation Plan, prepare Fauna Management Plan, cultural heritage and manage UXO risk (Sections 3.6.5, 3.7.1, 3.8 and 3.10).
- Construction – Build SLSC, beach access, car parks, landscaping (Section 5.1).
- Monitoring & Reporting – Monitor vegetation, fencing, fauna, and report annually (Section 5.2).

Developer (e.g. Foreshore/ Public Open Space):

- Subdivision Planning – Plan subdivision and foreshore reserve creation (Sections 1.2 and 2.5).
- Stakeholder Engagement – Engage City, State agencies, Aboriginal knowledge holders (refer to potential stakeholders at Section 1.4).
- Integration with Surf Life Saving Club and Open Space – Integrate natural/cultural heritage, public open space, facilities (Sections 4.1, 4.2.5).
- Environmental/ Clearing Approvals/ Cultural Management – Obtain (where necessary) clearing permits, prepare Revegetation and Rehabilitation Plan, prepare Fauna Management Plan, cultural heritage and manage UXO risk (Sections 3.6.5, 3.7.1, 3.8 and 3.10).
- Implementation – Construct paths, fencing, revegetation, facilities (Section 5.1).
- Monitoring, Reporting and Handover to City – Monitor vegetation, fencing, fauna, and report annually (Sections 5.1 and 5.2).

Due to the uncertainty regarding timing for implementation and the lack of agreed detail regarding the Surf Life Saving Club and design of local public open spaces, no life cycle/indicative asset management costs are able to be given at this time. These will be provided as part of detailed design associated with subdivisional works.

An annual report will be provided to the City that outlines the progress of implementation and the findings of the monitoring program (see below), as well as the likely activities for the following year(s).

The Developer will work with the City to establish a schedule for handover, which is likely to be reflective of the staged nature of the implementation. A report will be prepared prior to handover that will demonstrate how the implementation of this foreshore management plan has been undertaken in accordance with City's Local Planning Policy 4.21 Coastal Assets Policy and Local Planning Policy 4.3 Public Open Space. All approved Asset Data and As Constructed Drawings (A-SPECS) will also be submitted to the City for inclusion in the City's Asset Register. All assets will be handed over in a condition that is acceptable to the City and installed to the City's satisfaction (as per approved drawings).

All survey, spatial and photographic data associated with implementation of this foreshore management plan will be provided in accordance with EPA IBSA requirements and City of Wanneroo standards. Spatial data will be supplied in compatible GIS formats and coordinate systems (GDA2020 Zone 50), together with appropriate metadata, supporting documentation and georeferenced photographs to support future management, monitoring and record keeping.

Once an area of the foreshore has been handed over, the Developer will no longer be responsible for monitoring or maintenance of this area.

5.2 Monitoring

The Developer or the City of Wanneroo (as the case may be) will undertake monitoring of the site for the duration of the management period (not less than 5 years as per SPP 2.6), including (but not limited to):

- Having Whadjuk Traditional Owners present during ground disturbing works.
- Monthly inspection of fencing and signage to prevent disturbance of vegetation and limit unauthorised access.
- Inspection of closed tracks monthly to ensure changes in community behaviour and use. Appropriate action is to be undertaken to rectify any ongoing unauthorised access.
- Annual inspection of vegetation for the presence or spread of weeds, pests and/or disease, accumulated dust on leaves, and to ensure landforms have been effectively stabilised to minimise dust emissions. Monitor complaints received from surrounding community members.
- Annual monitoring of infill planting with rectification undertaken if density is determined to be less than objective.
- After major rainfall events assessment of site and surrounding area for evidence of erosion from stormwater, sand drift into infrastructure or the erosion of infrastructure.
- During construction, daily checks of installed fencing and monitoring of potential impacts on fauna and vegetation with rectification as required.

Where monitoring requires a pre-development baseline, this will be established as required. Monitoring will occur during construction and 5-years post construction as indicated via the monitoring and handover reports.

Where a monitoring event identifies that the completion criteria are not being met, the appropriate contingency actions will be undertaken.

Effective monitoring actions will include the establishment of photo monitoring points (marked with a survey peg) for each stage of the implementation prior to commencement of works in (or adjacent to) the foreshore area. Monitoring may be undertaken in a staged manner across the foreshore area, aligned to the subdivisional process. This will be agreed with the City as noted above.

The Developer will also work with the City to document any complaints received regarding activities within the foreshore area, together with the response to the complaint.

The above activities and progress on the delivery of the actions in Table 12 will be summarised in an annual report to the City.

It is anticipated that the City will undertake the above actions as part of the construction of the surf life saving club and the amenities it includes.

In addition, the City has an ongoing coastal monitoring program to assess seasonal and long term changes along the coastline to assist with the management and protection of the coastal environment into the future. This program includes 6 monthly manual photographic monitoring, 6 monthly coastal surveys, analysis of aerial imagery, capture of local wave data, remote monitoring cameras and 6 monthly reporting. The beach area adjacent to the surf life saving club is included within this coastal monitoring program.

Further information on the coastal monitoring program and 6 monthly monitoring reports since 2022 are available on the City's website at www.wanneroo.wa.gov.au/coastalmonitoring.

Table 12: Implementation plan

Objective, strategy and action	Implementation/ response	Timing	Responsibility	Completion criteria
Objective 1: Integrate natural and cultural heritage into the foreshore design				
1. Prioritise a nature-based approach to design and management of the foreshore area				
a. Minimise the need to clear good or better quality vegetation and revegetate degraded areas where possible. Collect seed prior to clearing, for propagation and planting in future landscape/ revegetation areas to ensure local native species are used.	Areas to be rehabilitated identified on Figure 24. Locate foreshore management plan facilities including the surf club and associated facilities in areas of degraded vegetation where possible. Prepare and submit a clearing permit application to DWER for vegetation clearing and implement all conditions of the granted clearing permit, including any required rehabilitation and revegetation works. Design POS, path network and facilities to protect good quality vegetation.	With each stage of subdivision. SLSC Design/ Facility Design	Developer CoW/ Developer	Table 10. Determined by CoW/ Developer in conjunction with DWER.
b. Plant locally native trees near publicly accessible areas for shade and natural cooling.	Considered as part of detailed design for the surf club.	SLSC Design	CoW	Determined by CoW.
c. Use materials appropriate for coastal environments that minimise visual and environmental impacts.	Considered as part of detailed design of public open space and path network	Subdivision	Developer	Design in accordance with LPP 4.3 & 4.21.
2. Recognise and celebrate Aboriginal cultural heritage				
a. Use Noongar language (nomenclature) throughout the foreshore area and integrate Noongar narratives into the design of facilities and any public art program.	Considered as part of detailed design for the surf club. Considered as part of detailed design of public open space and path network	SLSC Design Subdivision	CoW Developer	Determined by CoW. Design in accordance with LPP 4.3 & 4.21.
b. Research and acknowledge shared history, including profiles like Monop and historical events such as shipwrecks or trading posts. This could include education about the Aboriginal cultural sand ceremony.	Considered as part of detailed design for the surf club. Considered as part of detailed design of public open space and path network	SLSC Design Subdivision	CoW Developer	Determined by CoW. Design in accordance with LPP 4.3 & 4.21.

Objective, strategy and action	Implementation/ response	Timing	Responsibility	Completion criteria
c. Employ Cultural Heritage Monitors during any ground disturbance and implement Aboriginal employment strategies for the project including consideration of Noongar Rangers to assist with ongoing maintenance and management.	Undertaken during construction of the surf club. Undertaken during construction of public open space and path network	SLSC Design Subdivision	CoW Developer	Monitors are identified and used where required.
d. Seek to establish an ongoing relationship between local Aboriginal knowledge holders with groups working within the foreshore such as the Alkimos Surf Life Saving Club.	Facilitate introductions between community groups and local Aboriginal Knowledge holders	After occupation of SLSC	CoW	Relationship established.
Objective 2: Create an inclusive, family-friendly destination for community connection				
3. Ensure the foreshore is a welcoming and inclusive space for all.				
a. Ensure design of the proposed facilities prioritises pedestrians and cyclists over cars.	Considered as part of detailed design for the surf club.	SLSC Design	CoW	Determined by CoW.
b. Provide access to the beach and water for Elders and people with disabilities, alongside adequate seating and shade.		Subdivision	Developer	Design in accordance with LPP 4.3 & 4.21, approved by CoW.
c. Ensure integrated access between the foreshore and the commercial centre.	Considered as part of detailed design of public open space and path network			
d. Identify a place for universal access – potentially a portion of a path or boardwalk to a view point.				
4. Create a family friendly and community focused location				
a. Incorporate facilities in the foreshore area in accordance with City of Wanneroo Local Planning Policy 4.21. Balance needs and use with maintenance requirements.	Include facilities listed in Table 1110.	Delivery of SLSC and staged subdivision	CoW and Developer	Design in accordance with LPP 4.3 & 4.21, approved by CoW.
b. Recognise the functions of different areas within and adjacent to the foreshore and provide separation where conflicts may arise.	Conservation fencing to be provided around all areas of vegetation to be retained. Community activity concentrated at defined coastal nodes. PSP located to minimise conflict with vehicles.	Subdivision	Developer	Design in accordance with LPP 4.3 & 4.21, approved by CoW.
c. Employ Crime Prevention Through Environmental Design (CPTED) principles – particularly for toilets and paths. Provide lighting for safety, security and passive surveillance, noting areas for wildlife.	Considered as part of detailed design for the surf club.	SLSC Design	CoW	Determined by CoW.
	Considered as part of detailed design of public open space and path network	Subdivision	Developer	Design in accordance with LPP 4.3 & 4.21, approved by CoW.

Objective, strategy and action	Implementation/ response	Timing	Responsibility	Completion criteria
Objective 3: Ensure safe, resilient, and protected foreshore environments				
5. Ensure the facilities in the foreshore area provide safety and shelter, protecting users from both weather and future climate impacts.				
a. Locate infrastructure outside the coastal process hazard line appropriate to the design life of the infrastructure/asset. Identify triggers for future responsive action.	Considered as part of detailed design for the surf club.	SLSC Design	CoW	Determined by CoW.
b. Provide shelter from weather without changing the topography.	Considered as part of detailed design of public open space and path network	Subdivision	Developer	Design in accordance with LPP 4.3 & 4.21, approved by CoW.
c. Manage risk of erosion and sedimentation as well as sand drift during construction.	Install erosion control structures in high risk areas.	Design phases.	CoW and Developer.	Design in accordance with LPP 4.4.
	Implement sediment and erosion control measures during subdivisional and development works. Require safety and site inductions during construction phases.	Construction phases.	CoW and Developer.	Approved sediment and erosion control plan.
d. Manage site preparation and construction activities to minimise risks to people and the environment.	Where development involves ground disturbance, engage a suitably qualified specialist to undertake investigations and, where required, identify and safely remove any unexploded ordnance (UXO) prior to the commencement of vegetation clearing or construction works.	Prior to site clearing.	CoW and Developer.	Determined by CoW.
Objective 4: Foster a lively and accessible hub of activity				
6. Ensure the foreshore area is a dynamic and attractive regional destination				
a. Provide a good civic space that is adequate for large groups of people and large community events.	Considered as part of detailed design for the surf club.	SLSC Design	CoW	Determined by CoW.
b. Introduce attractions for a diverse population and experience. This could include a café, event capability (infrastructure for food trucks, music events, markets etc such as power, water, lighting, hard space, CCTV), terracing/lookout points and seating for sunsets.	Considered as part of detailed design of public open space and path network	Subdivision	Developer	Design in accordance with LPP 4.3 & 4.21, approved by CoW.
c. Support unique elements for all seasons - consider sauna/hot showers, a covered playground, places for	Consider as part of programming for the coastal node.	After construction of	CoW	Determined by CoW.

Objective, strategy and action	Implementation/ response	Timing	Responsibility	Completion criteria
all ages and artwork. Consider accommodating other sport /events, e.g. beach volleyball, basketball etc		SLSC and associated facilities and open space.		
d. Include great landscaping that reflects the local identity.	Considered as part of detailed design for the surf club. Considered as part of detailed design of public open space and path network	SLSC Design Subdivision	CoW Developer	Determined by CoW. Design in accordance with LPP 4.3 & 4.21, approved by CoW.
e. Consider the integration of developer-funded facilities with the surf life saving club infrastructure through the concept design and community engagement processes to improve visitor experience and usability of the space, while facilitating the protection and retention of higher-quality vegetation.	Considered as part of detailed design for the surf club. Considered as part of detailed design of public open space and path network	SLSC Design Subdivision	CoW and Developer Developer	Determined by CoW. Design in accordance with LPP 4.3 & 4.21, approved by CoW.
7. Provide appropriate access by pedestrians, active transport and vehicles to the foreshore area.				
a. Provide bike racks, end of trip facilities and charging points for e-rideables.	Considered as part of detailed design for the surf club.	SLSC Design	CoW	Determined by CoW.
b. Consider paths for prams and wheelchairs.	Considered as part of detailed design of public open space and path network	Subdivision	Developer	Design in accordance with LPP 4.3 & 4.21, approved by CoW.
c. Consider a Kiss n drop associated with the surf life saving club.				
d. Outside of foreshore study area, provide sufficient areas for car parking and seek to ensure on-street parking in the commercial area can also be used by Regional Beach users.	Considered as part of delivery of adjacent subdivision works.	As part of staged subdivision	Developer	Determined by CoW
e. Integrate a principal shared access path within the movement network to enhance local and regional connectivity, accessibility and transport choice.	Provide a Principal Beach Access Path for the use of pedestrians and cyclists.	Construction phases.	Developer	Main Roads WA Supplement to Austroads Guide to Road Design Part 6A – Paths for Walking and Cycling.
f. Ensure appropriate road access and utility servicing is available to support the development and operation of the Surf Life Saving Club and associated Regional Beach facilities.	Provide road access and utility infrastructure to support the Surf Life Saving Club and associated Regional Beach facilities.	Subdivision	Developer	Determined by CoW and relevant servicing authorities.

6 REFERENCES

- City of Wanneroo (CoW), 2007, *Alkimos-Eglinton District Structure Plan*, Wanneroo.
https://www.wanneroo.wa.gov.au/downloads/file/458/alkimos_eglinton_district_structure_plan_-_part_1_and_2
- CoW, 2018, City of Wanneroo Coastal Hazard Risk Management & Adaptation Plan. See
https://www.wanneroo.wa.gov.au/downloads/download/458/coastal_hazard_risk_management_and_adaptation_plan
- Douglas Partners, 2025, Report on Geotechnical Inspection Coastal Limestone Hazard Assessment Mindarie to Two Rocks, WA. Prepared for City of Wanneroo, Project 231687.00, 8 April 2025
- Emerge Associates, 2019, Local Water Management Strategy: Alkimos Coastal Village, Prepared for LandCorp, June 2019.
<https://www.wanneroo.wa.gov.au/consultations/downloads/625f82210184a.pdf>
- Essential Environmental, 2014, Alkimos Coastal Node LSP - Coastal Hazard Risk Management & Adaptation Plan,
<https://www.wanneroo.wa.gov.au/consultations/downloads/57621be0d178e.pdf>
- Karrda Pty Ltd, 2024, Cultural Heritage Management Plan for Alkimos Coastal Village, prepared for DevelopmentWA, 2024.
- Keighery, B., 1994, *Bushland plant survey. A guide to plant community survey for the community*, Nedlands, Western Australia: Wildflower Society of Western Australia.
- McArthur, W. M., 1991, Reference soils of south-western Australia. Department of Agriculture. State Printing Division, Department of Services, Perth, Western Australia.
- MP Rogers and Associates, 2013, *Alkimos Coastal Processes Assessment*.
<https://www.wanneroo.wa.gov.au/consultations/downloads/57621bc3d6ce1.pdf>
- PGV Environmental, 2024, Alkimos Coastal Node – Foreshore Reserve Vegetation Assessment. Report prepared for Development WA.
- PGV Environmental, 2018, Alkimos Coastal Node Vegetation Review and Black Cockatoo Habitat Assessment. Unpublished report prepared for LandCorp.
- RPS, 2019, Environmental Assessment Report, Alkimos coastal village local structure plan.
<https://www.wanneroo.wa.gov.au/consultations/downloads/625f82210184a.pdf>
- Stul T, Gozzard JR, Eliot IG and Eliot MJ (2015) Coastal Sediment Cells for the Vlamingh Region between Cape Naturaliste and Moore River, Western Australia. Report prepared by Seashore Engineering Pty Ltd and Geological Survey of Western Australia for the Western Australian Department of Transport, Fremantle.
- Trudgen, M. E., 1990, A report on the flora and vegetation of the Alkimos area and conservation issues affecting it. Unpublished report for LandCorp.
- Western Australian Planning Commission, 2013. *State Planning Policy 2.6, State Coastal Planning Policy*. Government of Western Australia, Perth.

<https://www.wa.gov.au/government/publications/state-planning-policy-26-coastal-planning>

Western Australian Planning Commission, 2021a. *State Planning Policy 2.8: Planning for Water (draft)*. Government of Western Australia, Perth.

Western Australian Planning Commission, 2025. *State Planning Policy 2.9 Water and Planning for Water Guidelines*. Government of Western Australia, Perth.
<https://www.planning.wa.gov.au/state-planning-policy-2.9-water>

APPENDIX 1: ALKIMOS COASTAL NODE – FORESHORE RESERVE VEGETATION ASSESSMENT (PGV ENVIRONMENTAL, 2024)

1 December 2025

Damien Guidici

DevelopmentWA

Locked Bag 5

Perth Business Centre

PERTH WA 6849

Dear Damien,

RE: Alkimos Coastal Node – Foreshore Reserve Vegetation Assessment

Following is our assessment of the vegetation in the Alkimos Coastal Node Foreshore Reserve.

1 Background

Several flora and vegetation surveys have been undertaken on the Alkimos Coastal Node development site over the years. The most recent survey was undertaken by Ecologia in 2016. However, the 2016 survey did not include the foreshore reserve area (Reserve P040341 15450).

Planning for development of the Alkimos Coastal Node is progressing and a Foreshore Management Plan (FMP) is being prepared by DevelopmentWA. To assist the preparation of the FMP, DevelopmentWA commissioned PGV Environmental to map the vegetation types and condition within the Foreshore Reserve.

2 Survey

Dr Paul van der Moezel of PGV Environmental undertook an initial survey on 26 November 2024 to map the vegetation types and condition within the Foreshore Reserve. A follow-up survey of an expanded area was undertaken on 7 November 2025. The surveys included walking the foreshore reserve from north to south and recording the vegetation types and condition.

Plant species were opportunistically recorded during the survey, however the timing of the survey in early and late November meant that a comprehensive spring survey was not possible.

3 Results

3.1 Vegetation Types

Six vegetation types were recorded on the site. Descriptions of the vegetation types are provided in Table 5. A map of the vegetation types is included on Figure 1 (Attached).

Where possible, the terminology for describing vegetation types was matched with similar vegetation types described by Ecologia in their 2016 survey.

3.2 Vegetation Condition

Most of the vegetation was rated in Very Good condition. Some areas at the eastern end of the Foreshore Reserve and closer to degraded inland areas were rated in Good to Completely Degraded condition. Common weed species included *Bromus diandrus*, *Avena fatua*, *Lagurus ovatus*, *Trachyandra divaricata*, *Pelargonium capitatum* and *Euphorbia terracina*.

Plate 1 shows an area of Completely Degraded vegetation at the confluence of several tracks at the northern end of the site.

Plate 1: Completely Degraded vegetation at the northern end of the site.



3.3 Flora

A total of 38 plant species were recorded during the vegetation survey. The total includes 21 native and 17 non-native species. None of the species has conservation significance as a Threatened or Priority species.

Table 6: Vegetation Type on the Sites

Vegetation Type	Description	Photograph
ScOaAp <i>Scaevola crassifolia</i>/<i>Olearia axillaris</i>/<i>Acanthocarpus preissii</i> Closed Low Heath	This is the dominant vegetation type in the reserve. <i>Scaevola crassifolia</i> is around 0.4m high and up to 95% cover in most places. <i>Olearia axillaris</i> is taller, at around 0.8-1m, but less common with an average of 10% cover. Other common native species include <i>Acanthocarpus preissii</i>, <i>Tetragona decumbens</i>, <i>Exocarpos sparteus</i> and <i>Lepidosperma gladiatum</i>.	
ScOaSI <i>Scaevola crassifolia</i>/<i>Olearia axillaris</i> Open Low Heath over <i>Spinifex longifolius</i> Grassland	Occurs close to the beach on the primary dunes or the seaward face of secondary dunes. Similar to ScOaAp but with a less dense shrub cover and <i>Spinifex longifolius</i> is common. Other common native species include <i>Carpobrotus virescens</i> and <i>Threlkeldia diffusa</i>.	

Vegetation Type	Description	Photograph
Sclm <i>Scaevola crassifolia</i> Open Low Heath over <i>Lomandra maritima</i> Closed Herbland	One stand of this vegetation type occurred at the northern end of the site. The vegetation is very low, around 0.3m high. <i>Lomandra maritima</i> was very common and <i>Olearia axillaris</i> was absent. Other native species recorded in this vegetation type included <i>Gastrolobium capitatum</i>, <i>Acrotriche cordata</i>, <i>Cassytha racemosa</i> and <i>Acanthocarpus preissii</i>.	
Lg <i>Lepidosperma gladiatum</i> Closed Sedgeland	<i>Lepidosperma gladiatum</i> Closed Sedgeland occurred in a narrow and moderately deep swale between the primary and secondary dunes near the centre of the site. <i>Lepidosperma gladiatum</i> sedges were up to 1m high with around 70% cover. Other native species present included <i>Spyridium globulosum</i>, <i>Scaevola crassifolia</i>, <i>Cassytha racemosa</i> and <i>Hardenbergia comptoniana</i>.	

Vegetation Type	Description	Photograph
OaLm <i>Olearia axillaris</i> Open Low Heath over <i>Lomandra maritima</i> Closed Herbland	This vegetation type occurred in one small area at the southern end of the site. <i>Olearia axillaris</i> was sparse and up to 0.7m high over a moderately dense cover of <i>Lomandra maritima</i> . <i>Scaevola crassifolia</i> was absent.	
MsOaLm <i>Melaleuca systema</i> / <i>Olearia axillaris</i> / <i>Acanthocarpus preissii</i> Open Low Heath	Occurs at the eastern end of the site on the lower slopes of dunes. Similar to the OaLm vegetation type but with <i>Melaleuca systema</i> a dominant shrub species to 0.5m.	

Please contact me if you require any clarification of this assessment.

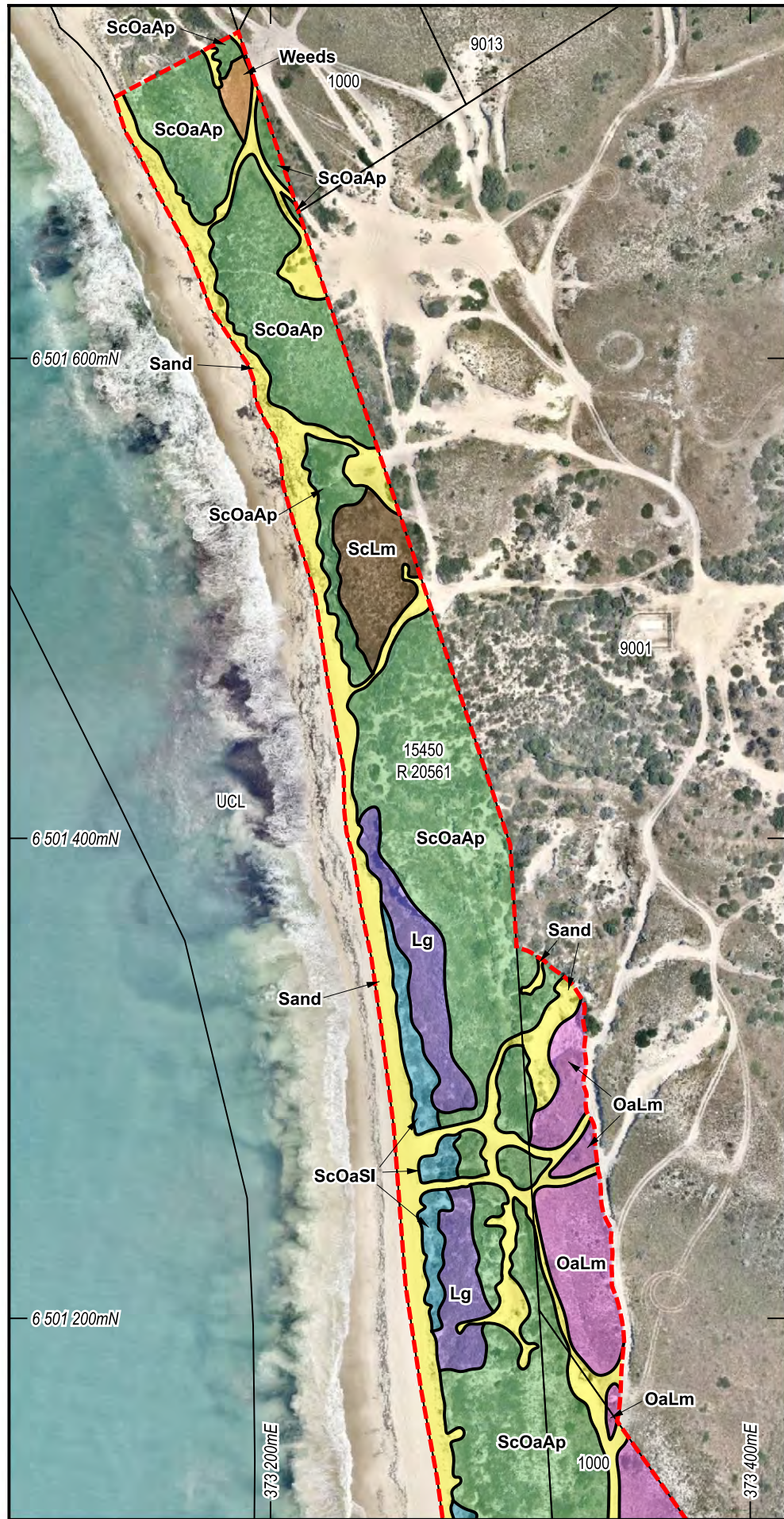
Yours sincerely

A handwritten signature in blue ink, appearing to read 'P. van der Moezel', is positioned above the printed name.

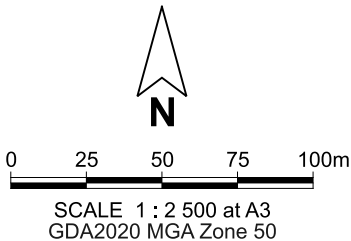
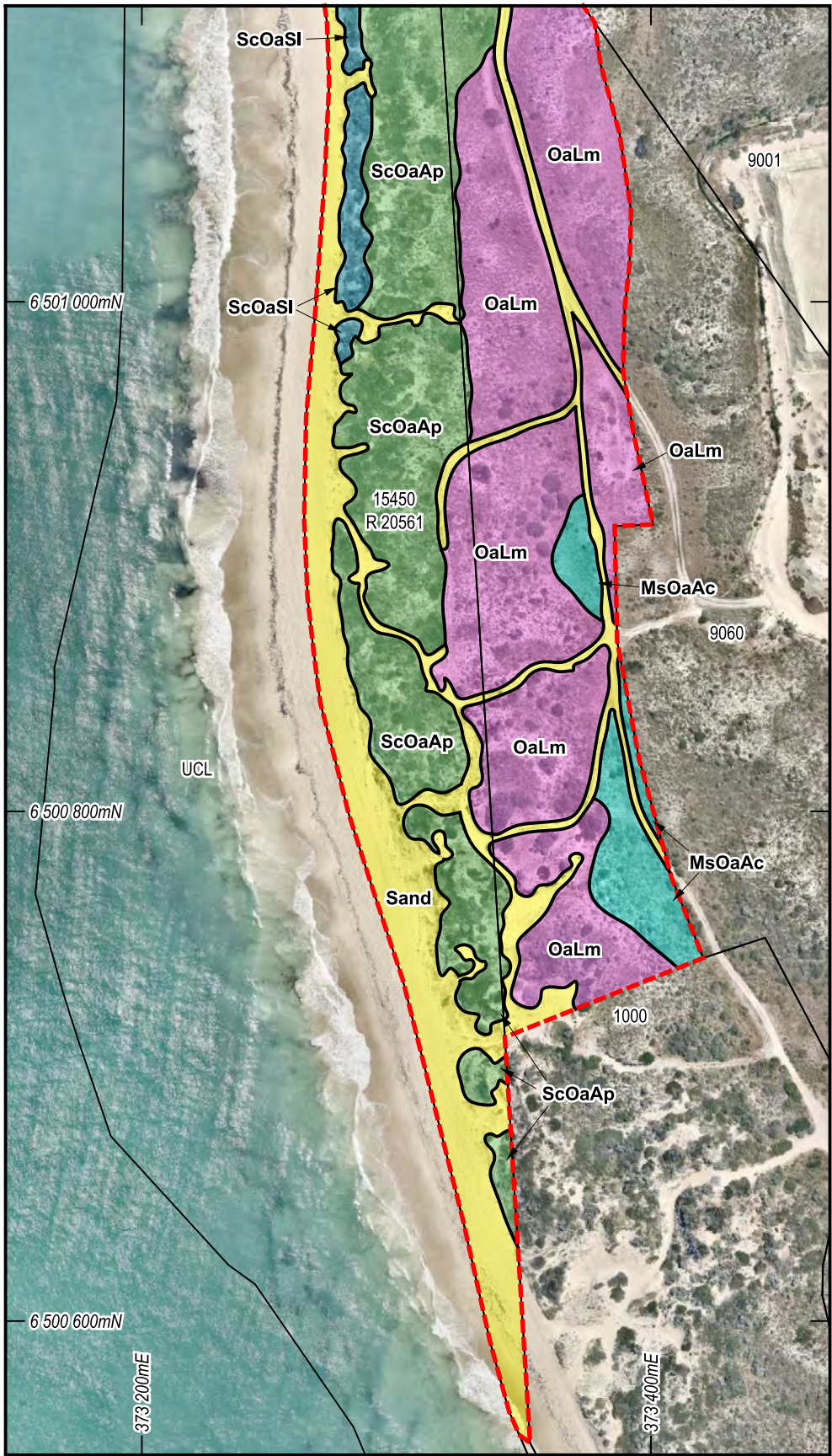
Paul van der Moezel
Managing Director

Attachment 1: Figure 1 Vegetation Types
Attachment 2: Figure 2 Vegetation Condition
Attachment 3: Flora List

PINPOINT CARTOGRAPHICS (08) 9562 7136 10325_072_pvdnm-101.dgn



See below left for continuation



- Legend**
- Site Boundary
 - Cadastral Boundary
 - Vegetation Type Boundary
 - Lg** Vegetation Type

- Vegetation Types**
- ScOaAp**
Scaevola crassifolia/Olearia axillaris/ Acanthocarpus preissii Closed Low Heath
 - ScOaSI**
Scaevola crassifolia/Olearia axillaris Open Low Heath over *Spinifex longifolius* Grassland
 - ScLm**
Scaevola crassifolia Open Low Heath over *Lomandra maritima* Closed Herbland
 - Lg**
Lepidosperma gladiatum Closed Sedgeland
 - OaLm**
Olearia axillaris Open Low Heath over *Lomandra maritima* Closed Herbland
 - MsOaAc**
Melaleuca systena/Olearia axillaris/ Acanthocarpus preissii Open Low Heath
 - Sand**
 - Weeds**

CADASTRAL SOURCE: Landgate, November 2024.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown October 2024.

		DevelopmentWA ALKIMOS COASTAL NODE ALKIMOS FORESHORE RESERVE	
Drawn: P. van der Moezel	Date: 2 Dec 2025	VEGETATION TYPES	
Job: 10325 Rpt: --	Revision: A		

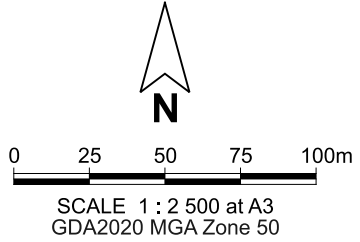
Figure 1

PINPOINT CARTOGRAPHICS (08) 9562 7136 10325_072_pvd-m-402.dgn



See above right for continuation

See below left for continuation



- Legend**
- Site Boundary
 - Cadastral Boundary
 - Vegetation Condition Boundary
 - G** Vegetation Condition
- Vegetation Condition**
- Very Good
 - Good
 - Degraded
 - Completely Degraded
 - Sand

Vegetation Condition
(SOURCE: Bush Forever, Govt. of W.A., 2000)

P - Pristine
Pristine or nearly so, no obvious signs of disturbance.

Ex - Excellent
Vegetation structure intact, disturbance affecting individual species and weeds are non aggressive species.

VG - Very Good
Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.

G - Good
Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.

D - Degraded
Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.

CD - Completely Degraded
The structure of the vegetation is no longer intact and the areas is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora composing weed or crop species with isolated native trees or shrubs.

CI - Cleared
No native vegetation remaining.

CADASTRAL SOURCE: Landgate, November 2024.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown October 2024.

		DevelopmentWA ALKIMOS COASTAL NODE ALKIMOS FORESHORE RESERVE	
Drawn: P. van der Moezel	Date: 2 Dec 2025	VEGETATION CONDITION	
Job: 10325 Rpt: --	Revision: A		

Figure 2

**PRELIMINARY SPECIES LIST – Alkimos Coastal
Node Foreshore Reserve**

MONOCOTYLEDONS

ASPARAGACEAE

Acanthocarpus preissii

ASPHODELACEAE

**Trachyandra divaricata*

CYPERACEAE

**Isolepis marginata*

Lepidosperma gladiatum

POACEAE

**Ammophila arenaria*

**Avena fatua*

**Bromus diandrus*

**Ehrharta calycina*

**Lagurus ovatus*

Spinifex longifolius

**Vulpia myuros*

DICOTYLEDONS

AIZOACEAE

Carpobrotus virescens

**Tetragonia decumbens*

ASTERACEAE

Olearia axillaris

**Sonchus oleraceus*

BRASSICACEAE

**Cakile maritima*

CHENOPODIACEAE

Rhagodia baccata

Threlkeldia diffusa

CRASSULACEAE

**Crassula glomerata*

ERICACEAE

Acrotriche cordata

EUPHORBIACEAE

**Euphorbia paralias*

**Euphorbia peplus*

**Euphorbia terracina*

FABACEAE

Acacia cyclops

Acacia lasiocarpa

Acacia saligna

Gastrolobium capitatum

Hardenbergia comptoniana

**Trifolium campestre*

GERANIACEAE

**Pelargonium capitatum*

GOODENIACEAE

Scaevola crassifolia

LAURACEAE

Cassytha racemosa

MYRTACEAE

Melaleuca systema

NITRARIACEAE

Nitraria billardiarei

RHAMNACEAE

Spyridium globulosum

SANTALACEAE

Exocarpos sparteus

SCROPHULARIACEAE

Eremophila glabra

Myoporum insulare

APPENDIX 2: ALKIMOS FORESHORE ELDER ENGAGEMENT: SUMMARY

Alkimos Foreshore Elder Engagement: Summary



Location

The Alkimos Foreshore is located on Yued and Whadjuk Country following cultural boundaries, however, under Native Title is located on Whadjuk Noongar Boodjar. Noongar people know Alkimos as a cultural boundary and a place where Noongar people moved through the area during their travels, East West or North South following the Waugyl Dreaming Tracks. Knowing this the Elders recognise the need for Yued and Whadjuk Elders to come together to share their knowledge with the broader community.

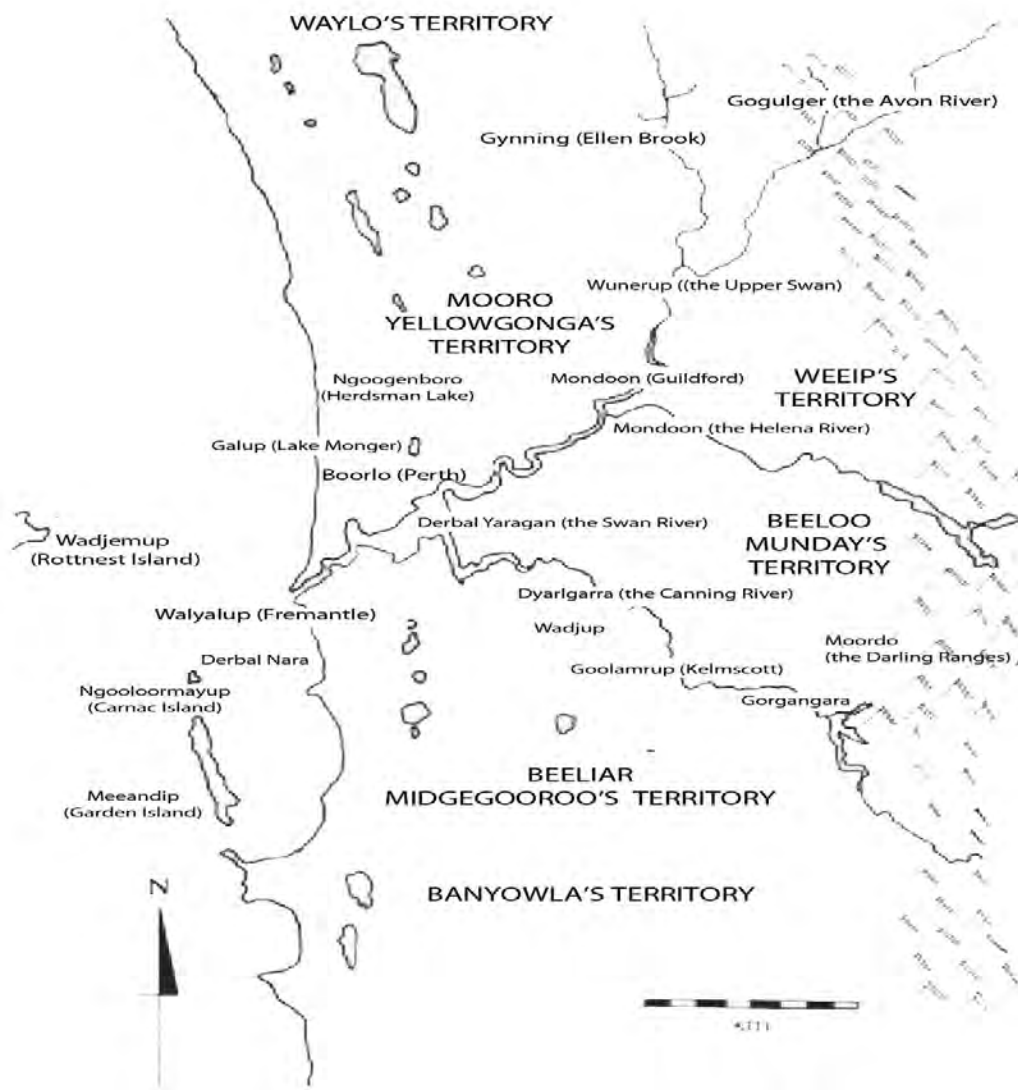


Fig. 1. Lyons Map cited in Green. (1984, *Broken Spears*)

Story

Waugyl Dreaming

The sand dunes at Alkimos Foreshore is part of a larger dreaming story that is about creation. Noongar people believe that the Waugyl created the sand dunes as it travelled up and down the coast. Dr Noel Nannup a Noongar Elder also iterates the sense of Dreaming the coast and its connection to the Waugyl and Blackmore Reach located on the southern side of the Derbarl Yerrigan (Swan River) opposite Crawley Bay. The Dreaming track made by the Waugyl travels south and north of the Derbarl Yerrigan, passing through Alkimos Foreshore. Dr Nannup also talks about the significance of this story in relation to the Alkimos Foreshore however is not willing to share the story until such time as the City of Wanneroo make a commitment to Noongar knowledge holders about the area. In the meantime, it is said that the story travels past Alkimos and heads far north linking all of the Aboriginal communities who live on the coast to Noongar people through their shared Dreaming track.

Mammung (Whale) and Karda (Goana) Story

Dr Noel Nannup also iterates that there is a couple of other Dreaming stories that relate to this area. The Mammung (whale) story and the Kaarda (Goanna) story. Dr Nannup can share these stories at a later date in the development and hopes that the City of Wanneroo will come back to him to engage further to develop the Cultural Context for the Alkimos Foreshore.

Flora and Fauna

The Elders were very clear about maintaining existing flora as well as providing some form of protection for existing fauna. The foreshore plants are relational with Noongar spirituality, healing and ceremony, and has linkages to the notion of 'connection to country', whilst adhering to Noongar values and values systems that is inclusive of all living things. This means that the flora and fauna may have a relationship with some Noongar people in the form of totems, kinship systems and other Noongar value systems that is Noongar spirituality.

Mamaan Maambakoort

As well as this there is Noongar connection to the ocean. 'Mamaan Mambakoort' is the name that Noongar people give to the ocean waves. The term means 'man's beating heart' because the sound of the waves is like the heartbeat of man. This is a significant form of respect for the ocean and all that reside in the ocean. There is more to this story, however, once again the Elder who passed this knowledge on requested that the idea be held tight until such time as he is ready to work with the City of Wanneroo or with the Surf Life Saving Club. This example is another demonstration of knowledge shared that is a morsel of what is to come should the City of Wanneroo and the Surf Life Saving Club wish to work with the knowledge holders that Karrda share with Development WA.

Connection to Country

Country Speaks, therefore the stories that the knowledge holders maintain will offer educational value for the broader community about the richness and diversity of Noongar culture, heritage, and people. In Noongar culture ‘connection to country’ posits a spiritual belief that all things are connected, each to the other, and that one thing is no less important than another. This philosophy assists in ‘caring for country’ principles that the Elders are keen to explore in relation to ongoing maintenance of the sand dunes, vegetation and fauna that inhabit the area, now and into the future.

Right People Right Place

Karrda’s philosophy follows the governance process of Noongar culture and Right People Right Place principles embedded in Noongar protocols, values and value systems. This form of cultural understanding means there can be a deep and meaningful engagement process once the project begins to develop through early engagement with the Right people who hold knowledge of place.

Shade and Accessibility

The Elders also asked for shade and seating for those who are less agile and for disability. They also requested beach buggies that can get them to the beach itself so that they too can enjoy the pleasures that Mamaan Mambakoort has to offer.

Nomenclature

Noongar language has a lot of language around the ocean and sand dunes, therefore the Elder reference group have reiterated their desire to use Noongar language wherever possible throughout the development.

Recommendations

The Elder Reference group have some recommendations that they would like to make in relation to the Alkimos Foreshore. It is recommended that the City of Wanneroo consider the following:

1. **Engagement** - Engage with this Elder group as early as is possible because the knowledge that they hold can develop a deep and meaningful cultural context and place narrative that is relational with ‘sense of place’ methodology.
2. **Governance** - Follow cultural governance processes, Elders First, Right People Right Place principles when engaging with Noongar people.
3. **Inclusivity** - Include Yued and Whadjuk knowledge holders in future engagements because Alkimos is a cultural boundary.
4. **Cultural Context** - Tell the story of Place. Let the land speak.
5. **Environment** - Plant tuart trees so that endemic species within the area remains visible and assists in shade development, as well as natural cooling and heating processes.

6. **Risk Mitigation** - Ask the Surf Life Saving Club to build above the existing vegetation that inhabits the dunes to protect species and maintain consistency within the sand dunes and mitigate risk of damage to existing flora and fauna.
7. **Accessibility** - to the beach for Elders, seniors, and people with disability to be considered when developing pathways.
8. **Seating** - Provide adequate seating for those who require more time sitting.
9. **Nomenclature** – use of Noongar language throughout the development.
10. **History** - The Elders recommend that the history of the area is a shared one, therefore research some of the more significant events that have occurred in the area i.e., trading post, shipwrecks, and the story of William Warrell to be included in the cultural context for the area.
11. **Acknowledgement** - Noongar profiles such as Monop should be researched and remembered in some way. It is said that Monop inhabited the area. Monop was a dancer therefore there is some suggestion that further research into Monop will assist in developing the cultural concept and place narrative in a creative way yet maintain the relationship with Monop.
12. **Public Art Program** - It is recommended that the public art program be inclusive of this Noongar Reference group to help guide the narrative and to assist the artists to translate, represent and present their story accurately.
13. **Ground Disturbance** – engage Cultural Heritage Monitors during ground disturbance.
14. **Employment** – employ Aboriginal employment strategies for Noongar people to be able to participate in the development.

APPENDIX 3: PATH ACCESS ASSESSMENT BY MP ROGERS AND ASSOCIATES

m p rogers & associates pl

Suite 1, 128 Main Street
Osborne Park 6017 Western Australia

w: www.coastsandports.com.au

Wed 24 September 2025

Difference in Coastal Hazard Lines

Different assessments of the required coastal erosion hazard allowances have been complete for this section of coastline. This includes the assessment completed to inform the planning for the development in 2013 as well as the assessment completed in 2015 to inform the City's CHRMAP.

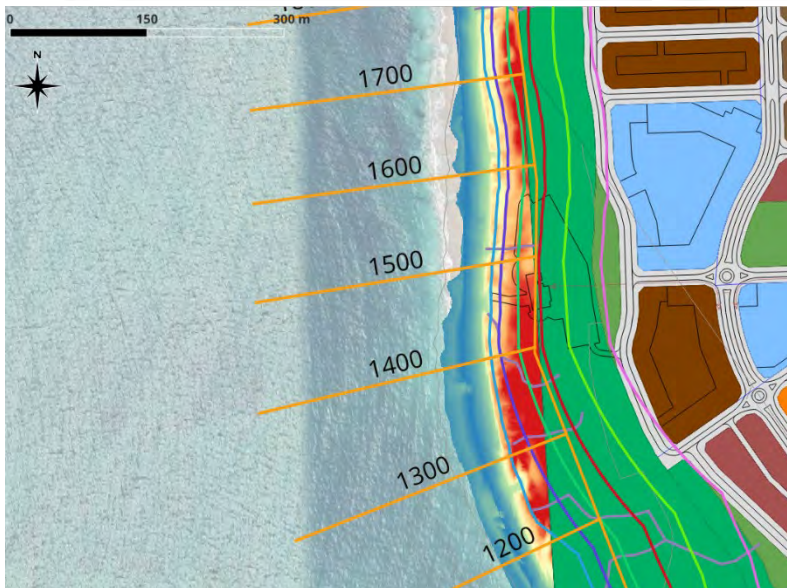
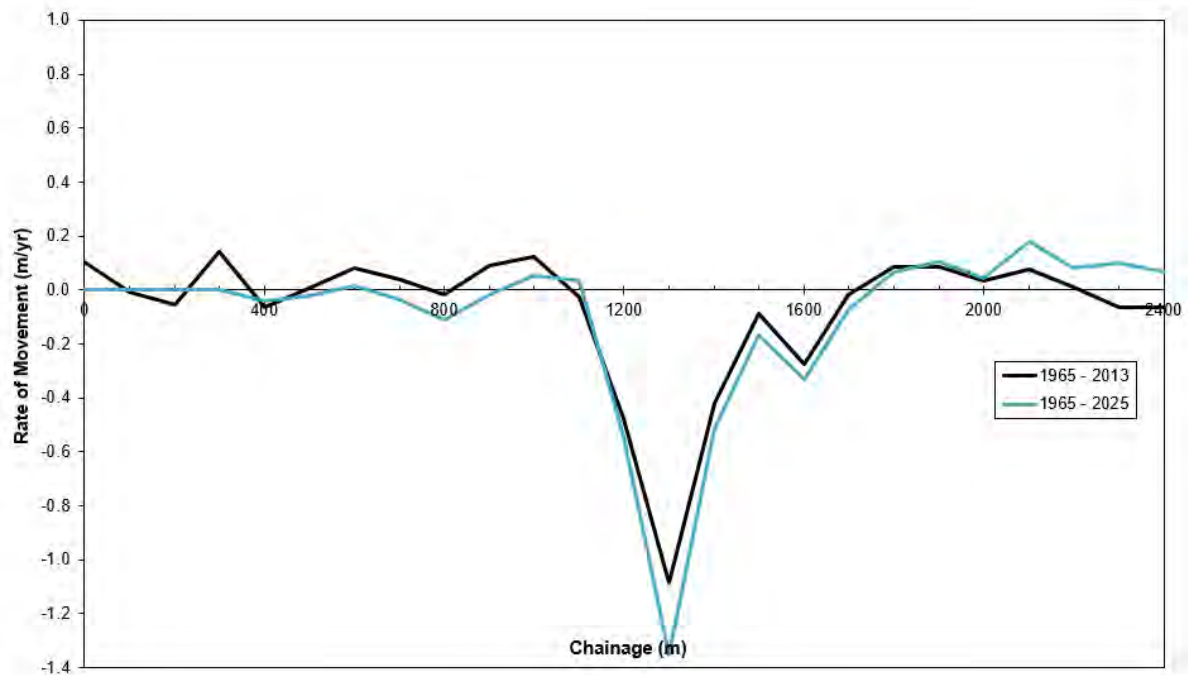
In general, the methodology for both assessments was completed in accordance with the requirement of Schedule One of SPP2.6 at the time. The exception to this is the fact that the City's 2015 CHRMAP assessment was based on a 105 year planning horizon (2015 to 2120), which was in excess of SPP2.6 requirements (which only requires consideration of a 100 year planning horizon). Differences in the assessment results therefore arise out of this difference in planning horizons, as allowances for S2 and S3 are both time dependant, with larger allowances resulting for a 105 year period than for a 100 year period. Slight differences also arise out of the changes to the shoreline position that occurred between 2013 and 2015.

Review of shoreline Movement Trends

A shoreline movement analysis was completed for the section of foreshore fronting the Alkimos Coastal Village to investigate whether there has been any observed short-term change to the long-term trends. From our high-level review, the following points can be made:

- In recent years, there has been no change to the long-term shoreline trend shown in the attached figure. Most of the foreshore is stable, with spatial fluctuations between a net erosion or accretion rate of less than 0.2 m/year. This is considered to result in a relatively stable shoreline fronting the proposed development.
- As shown in the shoreline movement rate plot below, the long-term trend for chainages between 1,100 m and 1,800 m also remains consistent when recent events are considered. The foreshore is eroding at varying rates, with the highest rate occurring at chainage 1,300 m, at approximately 1.4 m/year. This is considered important, as this location has been identified as the proposed site of the surf club and associated infrastructure (refer to the figure below).

Consequently, appropriate consideration is required when planning pathways and other supporting infrastructure for the surf club within this section of the foreshore.



Coastal Pathway Assessment

The general approach was to:

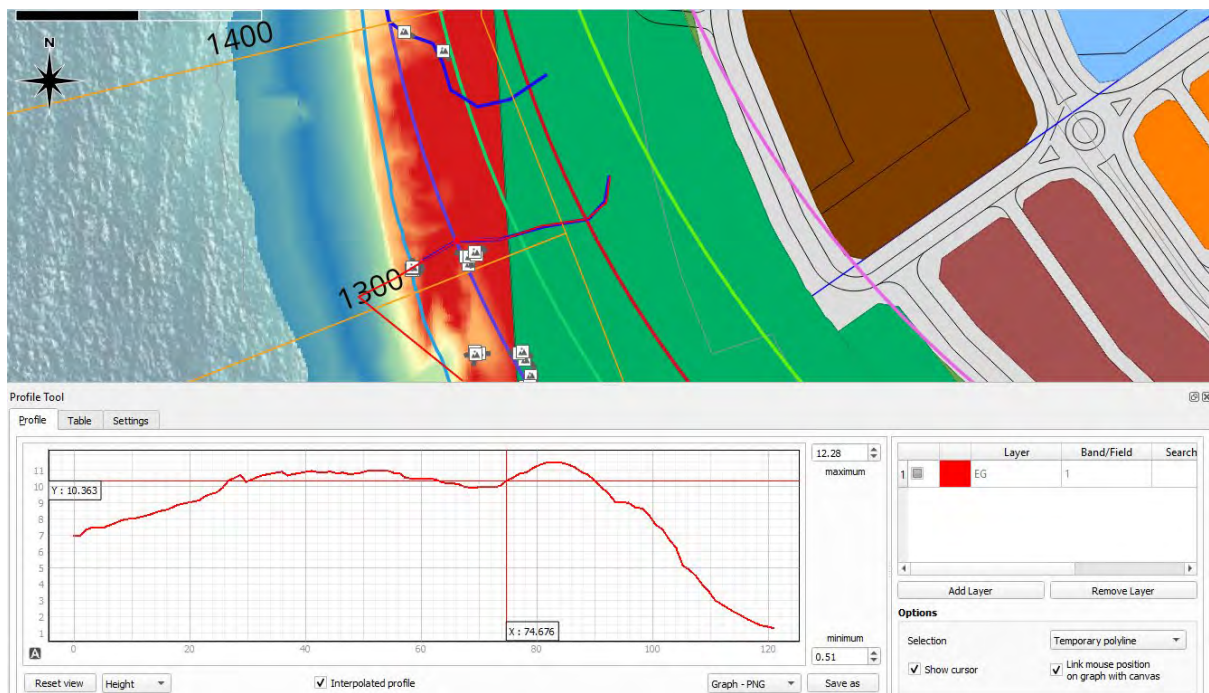
- Undertake a desktop review of each pathway, considering the land survey, coastal hazard lines (refer figure below), and shoreline movement trends. This included understanding the general grade of the path as well as reviewing the

elevation of the 2030 coastal hazard line, which was considered a probabilistic foreshore position in the near future (especially in areas subject to erosional trends).

- Following this, MRA conducted a site inspection to review each pathway and identify other potential pathways, considering:
 - o The beach access point;
 - o The 2030 coastal hazard line (elevation and accessibility);
 - o The area directly behind the dune;
 - o Any restricting features (rocks and clearing); and
 - o Path width.

All data is captured in GIS file, including plans, surveys, photographs, hazard lines, etc.

Example Path 3



For the pathway assessment, a naming convention was developed (refer to the figure below). Paths were numbered sequentially from 1 to 10, south to north.

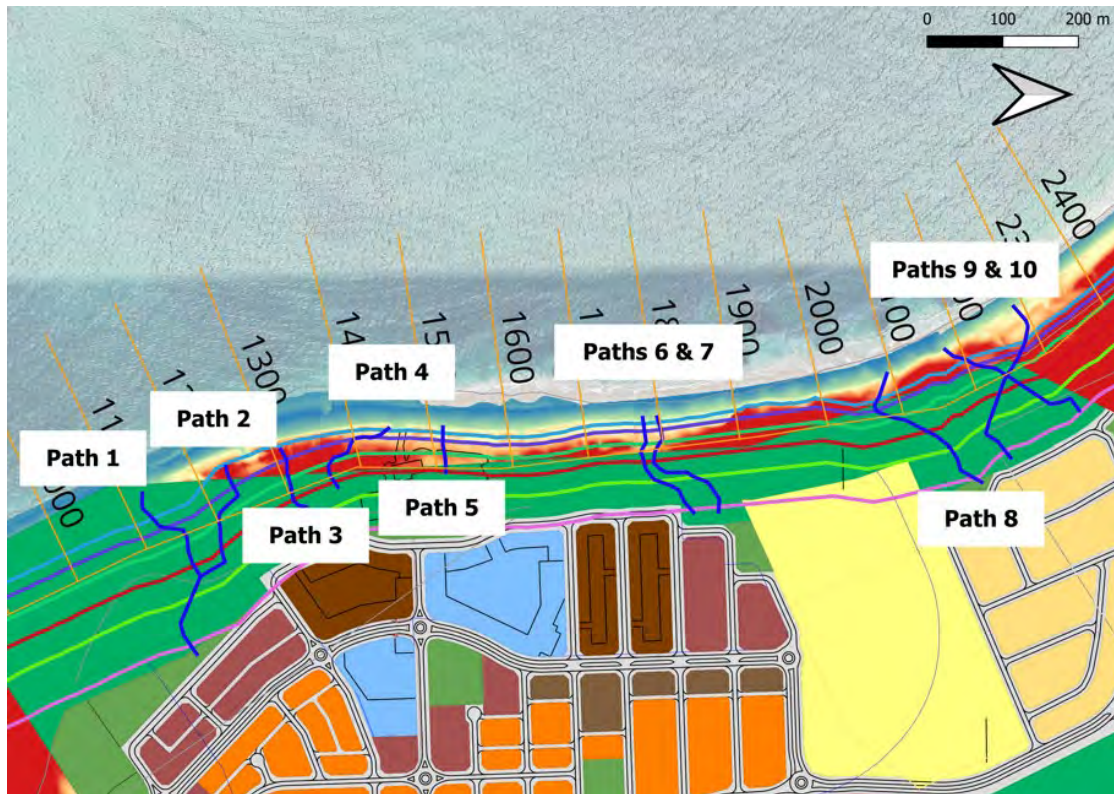
Based on our review of the coastline and relevant data, the following are considered the preferred paths for the development:

- Path 1
- Path 4
- Path 6
- Path 10

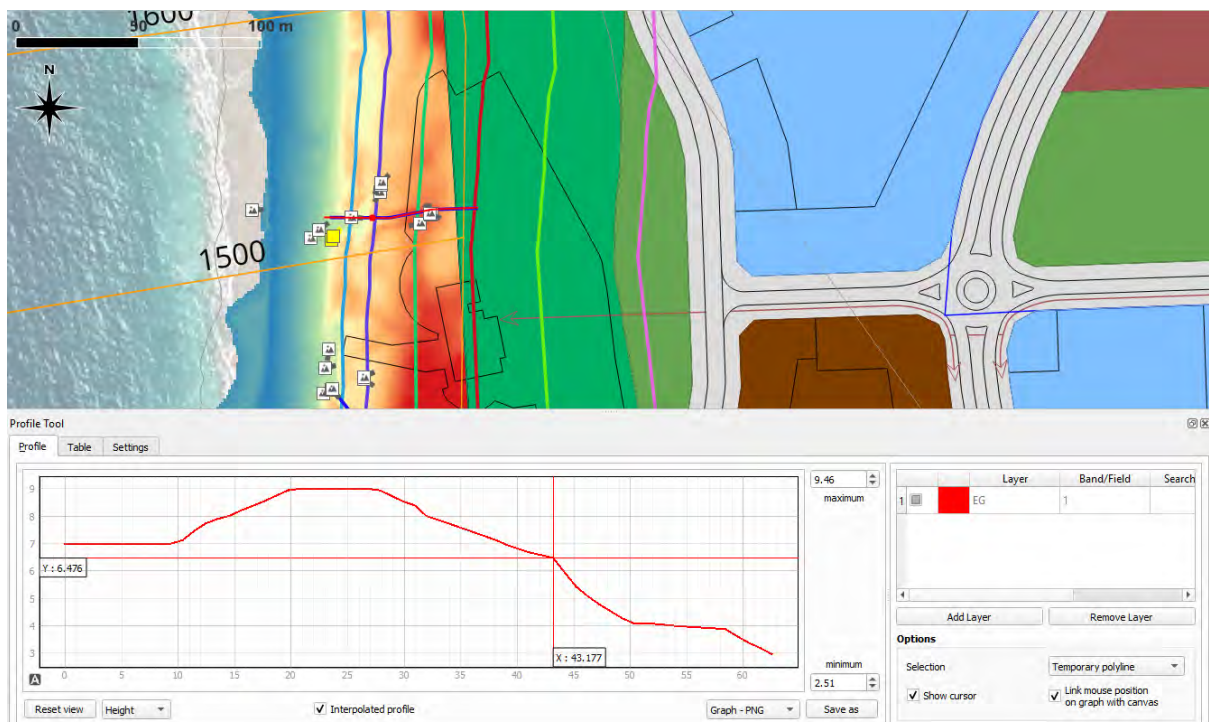
This is based on the following:

- It is expected that two coastal access paths are not needed from the same access point (ie a preferred path will be recommended between Paths 1 and 2, Paths 6 and 7, and Paths 9 and 10). The preferred options were:
 - o Path 1 – Preferred between Paths 1 and 2, and **considered viable** due to its gradual grade from the foreshore and its relative position away from the section of foreshore experiencing erosion.
 - o Path 6 – Preferred between Paths 6 and 7, and **considered viable** due to its direct approach from the development, reducing groundwork requirements and minimising the walking distance for the public.
 - o Path 10 – Preferred between Paths 9 and 10, and **considered viable** mainly due to orientation but also gradual grade. Path 9 is aligned southwest to northeast, directly facing the prevailing wind direction along the Perth coastline, and is therefore expected to be heavily impacted by windblown erosion and aeolian sand transport. In addition, the beach access at Path 9 is located on top of limestone rock, meaning stair access or significant works would be required.
- Of the remaining paths, the following is noted:
 - o Path 3 – **Not viable** unless extensive groundworks are undertaken to reduce the grade or cut through the foredune. It is also located within the section of foreshore experiencing erosion.
 - o Path 4 – **Considered viable** however as it runs parallel to the coastal hazard lines and is within the section of foreshore experiencing erosion, it requires careful consideration.
 - o Path 5 – **Considered viable** however groundworks would be required to reduce the grade or cut through the foredune. It is also located within a section of the foreshore experiencing erosion and therefore requires careful consideration.
 - o Path 8 – **Considered viable** however it is directly opposite Path 10's access location, which is more favourable due to its orientation. This path also provides access to a section of foreshore with extensive limestone rock. The beach here appears perched and may not be suitable for access at all times of the year.
- Additional path locations were investigated using land surveys and onsite observations. No other viable options were identified due to the topography of the foredune in this section of the foreshore.

- Most of the paths deemed appropriate (i.e. Paths 1, 7, 8, and 10) are existing 4WD access tracks, already facilitating foreshore access. These are therefore considered suitable for both general pedestrian use and vehicle/machinery access. Paths 4 and 5 could also be constructed to allow vehicle and machinery access, but this would require significant groundworks to widen the paths.



Path 5 Height shown is relative to the 2030 hazard line.





Client: DevelopmentWA

Report	Version	Prepared by	Reviewed by	Submitted to Client	
				Copies	Date
Draft	V1	SSh	HBr	Electronic	14 February 2026
Final draft	V2	SSh	HBr	Electronic	6 March 2026
Final	V6	SSh	HBr	Electronic	2 July 2026
Final	V7	SSh	HBr	Electronic	20 July 2026
Final for community consultation	V8	SSh	HBr	Electronic	21 September 2026

Urbaqua

land & water solutions

Suite 4/226 Carr Place

p: 08 9328 4663 | f: 08 6316 1431

e: info@urbaqua.org.au

www.urbaqua.org.au