



CLAREMONT FORESHORE ENHANCEMENT PLAN



CONTENTS

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INTRODUCTION

This report summarises the concept design for the Claremont Foreshore Enhancement Plan. The Town of Claremont (Principal) instigated the Claremont Foreshore Enhancement Plan in collaboration with the Department of Biodiversity Conservation and Attractions (DBCA) via a Riverbank Grant Funding Partnership. The project area sits between Mrs Herberts Park to the east and the western extent of the Claremont Yacht Club (CYC). The low lying, narrow estuarine beaches are vulnerable to erosion and inundation, which puts foreshore infrastructure at risk and impacts public access and amenity. The Plan aims to enhance access, recreation and amenities on the foreshore while increasing resilience to erosion and inundation. Project objectives include:

- Increase foreshore resilience.
- Enhance the landscape character of the forshore and enrich identity.
- Enhance the environment and provide a more natural interface to the river.
- Protect and encourage wildlife.
- Enhance the amenity for residents and visitors to the foreshore.
- Provide educational signage.

The Whadjuk Noongar people have a long and continuous connection to the Derbarl Yerrigan (Swan River). The whole riverbed is an Aboriginal Heritage Place on mythological grounds under the Aboriginal Heritage Act 1972. The connection is also recognised under the Native Title Act 1993 and the South West Native Title Settlement 2015 Whadjuk People Indigenous Land Use Agreement. The concept report includes cultural protocols for interventions and enhancement of interpretation and engagement with indigenous cultural.



PROJECT AREA PLAN

PROJECT BACKGROUND

KEY POLICIES/STRATEGIES SUMMARY

The following documents have been reviewed in order to inform the opportunities and constraints:

- Foreshore Management Plan for the Swan River Estuary in the Western Suburbs of Perth (Seashore Engineering, 25 May 2016). The foreshore is vulnerable to storm events, shifting mean sea levels and interannual variations in wind direction. The risks are erosion and inundation of the beach and adjacent properties. A combination of retreat, revegetation and re-nourishment is recommended for the project area.
- Freshwater Bay Sand Management Plan (Seashore Engineering, August 2021).
 Sand management is recommended to mitigate existing and potential impacts from erosion and inundation. Transferring sand from deposited areas and importing sand to manage erosion, inundation, and buffer existing sedges is recommended.
- LV136 Tree Canopy (Town of Claremont).
 The Council support the maintenance and preservation of the Town's tree canopy and encourages an increase.
- Street Tree Masterplan 2022 (Town of Claremont). Sets out appropriate species for the Town of Claremont that are attractive, climate sensitive, disease and pest resistant, provide habitat, low maintenance, and are readily available. Avoid "Grandfather" trees (Peppermint, Jarrah, Liquidambar, Red Flowering Gum). Chester Road and Jetty Street have been identified as biodiverse streets with a mix of species. There is some conflict between the species recommended and the desire for an ecologically appropriate local planting palette, and JBA will consider trees outside the masterplan.

- Street and Reserve Tree Management Guidelines 2022 (Town of Claremont 2022).
 Aims to preserve and enhance the Town's urban forest, including habitat provision, streetscape enhancement, climate resilience, and recognition of heritage values.
- Best management practices for foreshore stabilisation (Swan River Trust December 2009). Summarises shore stabilisation techniques and approaches for the foreshore. The project area has been identified as a managed retreat.
- Disability Access and Inclusion Plan 2022-2026 (Town of Claremont). Summarises strategies to improve access and inclusion. This includes improving access to parks and reserves.
- EN310 Environmental Sustainability (Town of Claremont). The Council takes leadership in environmental sustainability through the implementation of a number of actions. These include managing the environment to provide clean accessible water and encourage a greener, native landscape.

PROJECT OBJECTIVES

Key project objectives considered in the Opportunities and Constraints analysis and are:

- Maintain recreation along the foreshore (walking, kayaking, dog-walking).
- Consider continued boat access at Chester Road.
- Improve access and formalise circulation along the foreshore, particularly between Watkins Road, Mrs Herberts Park and Alex Prior Park.
- Maintain supporting infrastructure for amenities - i.e. car parking and toilets.
- Maintain existing sightlines with careful consideration of planting height and obstructions.
- Increase the level of shrubs/trees where sightlines allow.
- Create a more natural interface with the River.
- Enhance the appearance of the beach by reducing the visibility of rubble.
- Reduce mobilisation of sediment within Freshwater Bay through revegetation.
- Incorporate interpretation and signage to describe ecological, heritage, and indigenous culture.
- Consider further activation of the foreshore through the provision of the pontoon.
- Consider the value/functionality of the boat ramp at Chester Road.

ENGAGEMENT SUMMARY

STAKEHOLDERS

- The team has met with the Claremont Yacht Club (CYC) and exchanged additional communication. The CYC wants to consider dredging of accumulated sediment to allow use of Cat 1 pens.
- The team has reached out to Christchurch Grammar School (CCGS).
- The concept was presented to the Claremont Council who were in support.

PUBLIC CONSULTATION

The Town of Claremont's online public consultation returned responses from a broad age range and from residents and non-residents. The three areas considered to be highest priority were:

- Revegetation
- Erosion control
- Wildlife support

Shaded seating, accessibility and bins were other priorities. Comments suggested retaining the 'natural' feel, connection to nature, dog exercise areas were important, and additional trees were supported.

INDIGENOUS KNOWLEDGE HOLDERS

Three Indigenous Knowledge Holders listed within the Department of Planning, Lands and Heritage register for the Town of Claremont area and the Swan River and Swan Coastal Plain attended multiple engagement sessions to discuss interventions and cultural protocols.

Key considerations raised by the traditional knowledge holders include:

- Strong desire to increase opportunities for indigenous cultural engagement on site including interpretation, public art, and spaces for gathering.
- Specific protocols required for breaking ground, including the suggestion that two cutural monitors are on site when ground is broken and soil relocated.
- Concern over soil being imported from off-site.
- Concern over pollution that is entering the river from stormwater run-off at Jetty Road.
- Concern over size of turf areas.
- Concern of any structures within the river.
- Concern over free roaming of cats.

A final meeting held on 14th August 2024 was an opportunity to demonstrate the traditional knowledge holders concerns had been considered. The report responds to the concerns including:

 Aim to use re-located soil and/or sand materials from excavation on the foreshore for re-nourishment where possible.

- Communicate the importance of cultural monitors being present on site during significant ground disturbance.
- Integrate opportunities for interpretation, gathering, and fire ceremonies.
- Consolidate areas of turf and maximising revegetation.
- Recommending filtering of the stormwater drain at Jetty Road.

Additionally, it was noted that a historical ceremonial ground and burial ground exist in the area, both highly culturally sensitive. Furthermore, the limestone ridges and caves to the west of the site also hold cultural significance.

SITE CONTEXT

The project area generally consists of shallow, sandy beaches that rise to the plateau at Victoria Avenue. Victoria Avenue is approximately 7-10 metres above the level of the foreshore. The slope is gradual but has been modified with retaining walls in residential lots. The area to the west of the CYC and to the southeast becomes steep limestone cliffs. The site is within the widely curved bay of Freshwater Bay in the Swan River estuary. 'Freshwater Bay' is named due to the freshwater springs at the base of the cliffs. At the centre of the bay is a shallow sand bank known as Karrakatta.

The foreshore area has been subject to clearing and residential development, resulting in the removal of the natural vegetation and replacement with lawned parks, residential gardens, and exotic species. There is remnant native vegetation on the limestone cliffs to the west, however it is weed infested.

There are relatively few trees in the foreshore reserve, which means limited provision of shade and shelter. It is assumed that tree planting has been limited to retaining resident sightlines. There are palms north of Chester Road, and two coral trees (*Erythrina sykesii*) at the Chester Road carpark. There is a Norfolk Island Pine at Chester Road and Jetty Road. Coral trees are the single species tree along Victoria Avenue. There is little diversity of species in the project area. There are few trees and a limited palette of sedges.

Large areas of turf on the foreshore provide amenities and informal movement/circulation. However, they increase water use and don't align with a natural foreshore approach.

The foreshore provides habitat for the Australian Pelican, Eastern Osprey, Australian Pied Oystercatcher and the Nankeen Night-Herons. These are often seen on the Jetty.

The foreshore is vulnerable to storm events. shifting mean sea levels and inter-annual variations in wind direction. The risks are erosion and inundation of the beach and adjacent properties. Sediment has accumulated at CYC that is prevented from being further transported by the Yacht Club berths and walls, reducing the sediment supply further east between CYC and Chester Road. Sand nourishment occurred between Chester Road carpark and CYC in 1995, 1997, 2000-2001, and 2004. There is ongoing erosion. Most erosion is near hard structures (Chester Road carpark, CYC hardstand, Christchurch Boat ramp). Sand levels have reduced east of Chester Road, revealing construction rubble believed to be the material used for the original sand reclamation.

The slopes and cliffs to the west of CYC are being eroded due to uncontrolled access and trampling of vegetation as the stair finishing halfway down the slope. There is seagrass wracking that leads to odour issues along the foreshore.

Surface run-off, including managed run-off at Alex Prior Park, Water Corporation drains at Jetty Road, unmanaged run-off at Watkins Road (City of Nedlands), Chester Road car park, break in the kerb at Jetty Road, and CYC are all problematic.



South of ClaremontJetty Img: JBA



Foreshore route at Chester Road to Jetty Road Img: JBA



Chester Road to Mrs Herberts Park Img: JBA



Alex Prior Park Img: JBA

SUMMARY OF OPPORTUNITIES AND CONSTRAINTS

	CONSTRAINTS	OPPORTUNITIES/STRATEGIC RESPONSE	PRINCIPLES		
ENVIRONMENT	Minimal native vegetation, species diversity, or landscape character reflecting original condition.	Reinstate endemic shoreline vegetation, improve water quality, provide froreshore stabilisation and habitat. Increase species diversity and local vegetation. Capitalise on the abundant bird life - provide roosting, watering fixtures. Draw on the site's geology to inform the material and planting palettes.	LOCAL, ABUNDANT, BIODIVERSE, NATURALISED CHARACTER		
	Limited tree cover.	Selective planting of new trees whilst considering sightlines.			
	Large areas of turf that increase water use and do not provide a natural edge.	Create focussed turf amenity areas and convert the remainder to vegetation for a more natural edge.			
Time 1	Weed infestation on limestone cliffs.	Weed management in collaboration with CCGS and MLC.			
FORESHORE MANAGEMENT	Issues of erosion, deposition, inundation, exposure of rubble fill on beach is hazardous, risk to infrastructure and private properties. Initial sand nourisment limited success.	Use revegetation and sand replenishment to mitigate inundation and erosion risk. Use deposited and imported sand to replenish the beach. Increase the height of the storm bar. Consider removing or relocating infrastructure within the inundation zone.	RESPONSIVE AND RESILIENT		
	Higher sea levels have created foul smelling swales behind the storm bar that can't drain.	Create swales that drain behind the storm bar.			
	Localised scouring from stormwater run-off. Potential issues with drain invert levels at Jetty Road where there is a risk flow will be restricted.	Manage stormwater run-off.			
HERITAGE AND CULTURE	There is limited interpretation or signage related to the built or cultural heritage.	Enhance the experience of the site with stories and interpretive signage of the built heritage and indigenous cultural heritage.	CELEBRATE LOCAL CHARACTER AND		
	Modifications to the foreshore must mitigate any impacts that may negatively impact the indigenous cultural heritage.	Consider how the function of the Baths could be re-created.	IDENTITY		
MOVEMENT AND ACTIVATION	There are limited foreshore facilities and amenities. Alex Prior park is particularly underutilised and poorly activated.	The beach, Mrs Herberts Park, Chester Park Road, museum, and jetty are popular areas for recreation and provide existing activation nodes. Activation and interest can be further enhanced by providing additional amenities.	ENHANCED AMENITY 8 CONNECTIVITY		
	There is a lack of connectivity to and through the foreshore. There is no continuous accessible route from Victoria Avenue to the foreshore.	Connections and access to and through the foreshore can be enhanced by creating formal and informal pathways, visual cues and wayfinding, inundation-tolerant infrastructure, and improved accessibility. Enhance connection to public transport routes. Enhance cycling infrastructure. Consider the need to provide additional parking if visitor numbers increase.			
LAND USE AND SERVICES	Access to the foreshore is restricted by private property frontages. The narrow foreshore reserve is problematic - much of the reserve is underwater at high tide, leaving minimal land for mitigation	Develop a hierarchy of pedestrian pathway and amenity zones appropriate to different foreshore reserve widths.	APPROPRIATE INFRASTRUCTURE		

STRATEGY

The opportunities and constraints analysis proposed a series of strategic responses and design principles to guide the foreshore enhancement plan. In consultation with specialist sub-consultants, the client, and key stakeholders, a series of strategic interventions are proposed.

The table right summarises key interventions and maps them against relevant project objectives they are designed to deliver outcomes for.

Overleaf (page 6) is the strategic diagram illustrating proposed interventions in the enhancement plan, and proposed staging is described on page 7.

A bioengineered node to reduce sand accumulation in the Cat 1 pens is suggested as an option that would benefit the CYC, by enbling better use of existing pens. It would be constructed by the CYC at their cost. A bioengineered approach can only work to approximately mean sea level (0m AHD). This is likely to be insufficient to resist seasonal movement. Options include:

- Wholly bioengineered (brushwall & replanting) with occasional sand management.
- Partly bioengineered with 2 x short 5-10m low timber panel groynes. Rare sand management.
- Partly hard engineered with 10-15m long groynes. Not desirable. Limited sand managment. Shoreline may sawtooth.

INTERVENTION	NATURALISATION	BIODIVERSITY	EROSION/INUNDATION RESILIENCE	REDUCE SEDIMENT MOBILISATION	IDENTITY AND CHARACTER	INTERPRETATION	ACCESS TO RESERVE	ACCESS TO BEACH	CIRCULATION TO FORESHORE	AMENITY	RECREATION
Potential dredging by CYC to benefit CYC, and use for re-nourishment if suitable			•					•			
Raise level of storm bar locally in necessary areas			•	•							
Revegetation (bands 4-6m wide, 25-30m long)	•	•	•	•	•	•				•	
Bioengineered node at CYC to stop sediment accumulation in Cat 1 pens				•				•			
Foreshore footpath									•	•	•
Stiles over revegetation to maintain continuous planting			•					•		•	•
Bird waterers, roosting etc	•	•			•	•				•	
Boardwalk at Jetty Rd							•	•	•	•	
Extend pipe at Jetty Rd			•							•	
Compliant footpath access to foreshore					•		•			•	•
Seating, cycle infrastructure, lighting, BBQ's, shade structures					•		•			•	•
Wafinding, interpretation, public art					•	•				•	

LOCAL, ABUNDANT, BIODIVERSE

RESPONSIVE & RESILIENT

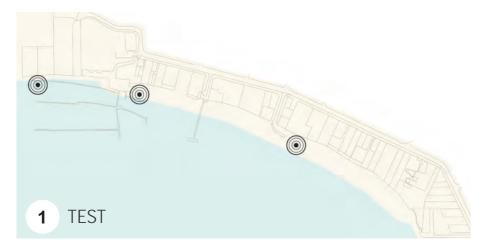
APPROPRIATE INFRASTRUCTURE

NATURALISED RIVER FORESHORE CHARACTER

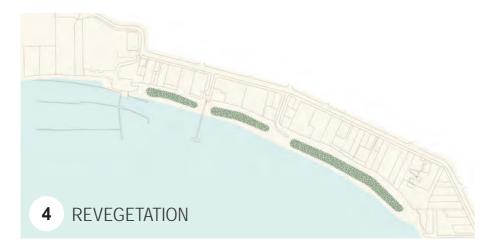
CELEBRATE LOCAL CHARACTER & IDENTITY

FORESHORE PATH **AMENITIES** Nodes with shaded seating, water fountains and Continuous compacted limeston path bins, and other amenities including cycle parking, CONNECTIONS picnic tables, BBQ's, shelters. Compliant concrete paths SAND NOURISHMENT WAYFINDING/INTERPRETATON/ART Options to cover rubble include excavation, a Signage and public art to enhance larger volume of sand nourishment or trailling wayfinding and link to historic and cultural imported material. heritage REVEG + STORM BAR Raised storm bar 200mm to allow for vegetation establishment and foreshore stabilisation. Minimise breaks in vegetation. **REVEG ONLY** Retain nominated turf areas for amenity. All other turf to be removed and replaced with continuous areas of native vegetation minimum 4m wide.

ENHANCE AMENITY & CONNECTIVITY



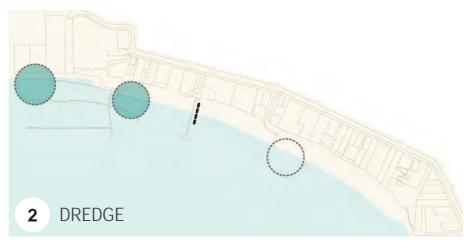
Ground penetrating radar with vacuum extraction an geotechnical assessment of rubble at Chester Road. Testing of sediment at CYC. Requires cultural monitoring.



Revegetate with local species in continuous bands minimum 4m wide, 25m long. Enable connection to water at key points with some breaks and stiles over.



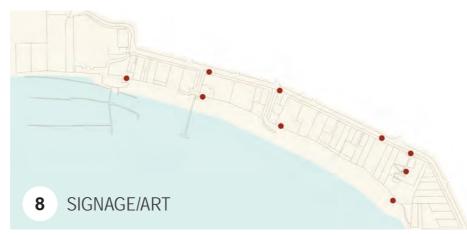
Create key nodes of amenity and infrastructure to improve visitor comfort. Minimise infrastructure within the inundation zone.



Potential to dredge accumulated sediment at CYC (if suitable for re-use). Excavation of rubble at Chester road if viable. Requires cultural monitoring. Extend pipe at Jetty and filter pollutants.



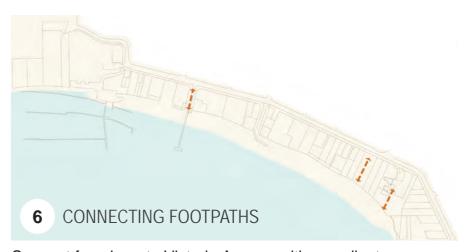
Create continuous limestone foothpath to CYC, and marked route through CYC carpark.



Install wayfinding signage/visual cues to improve connection to the foreshore. Provide interpretation at key nodes and develop a public art strategy to embed cultural and thematic values.



Raise storm bar 200mm to allow for vegetation establishment and foreshore stabilisation. Sand nourishment to Chester Road.

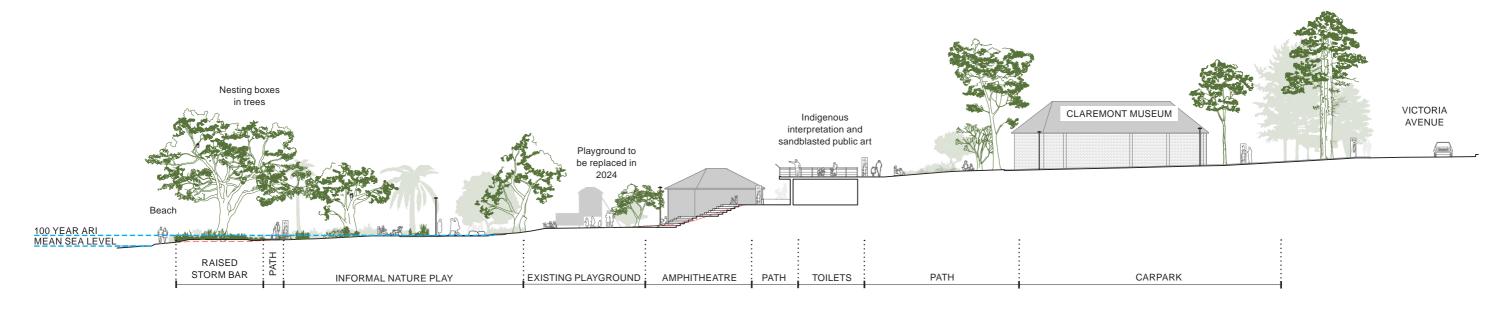


Connect foreshore to Victoria Avenue with compliant access footpaths.

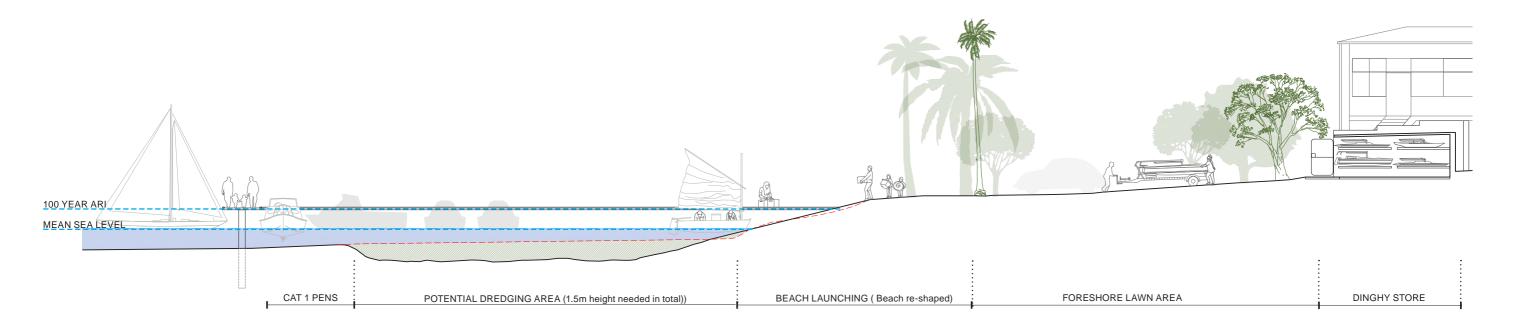




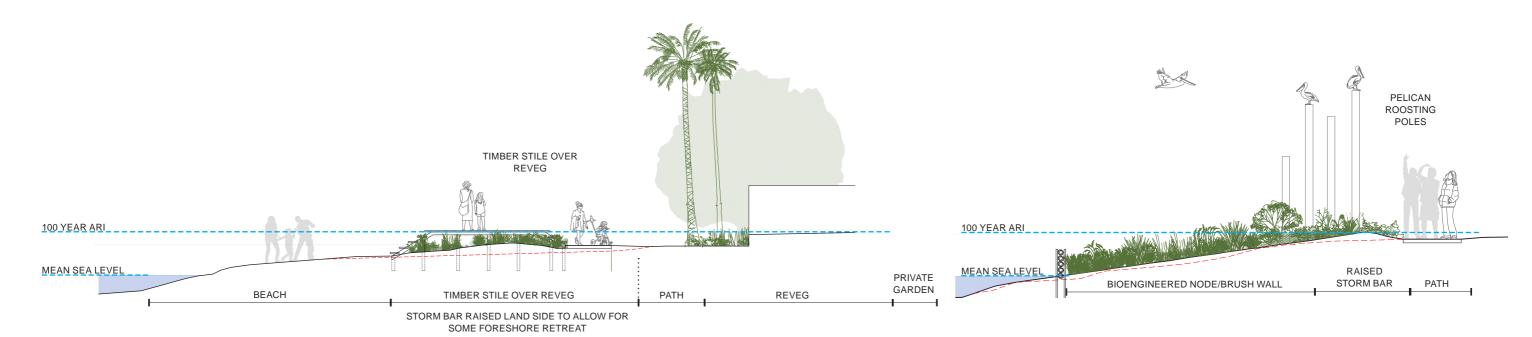




SECTION THROUGH MRS HERBERTS PARK



SECTION THROUGH CLAREMONT YACHT CLUB



SECTION THROUGH STILE

100 YEAR ARI

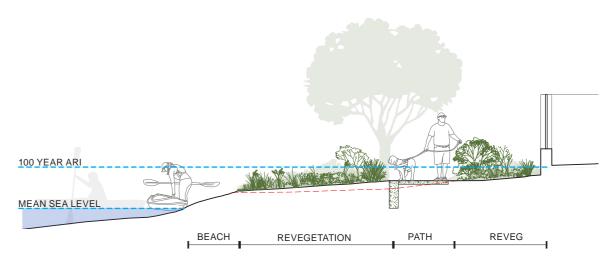
MEAN SEA LEVEL

BEACH RAISED STORM BAR AND REVEGETATION PATH REVEG

LOW REVEGETATION TO PRESERVE
SIGHTLINES

SECTION THROUGH RAISED STORM BAR

SECTION THROUGH BIOENGINEERED NODE



SECTION THROUGH BEACH ACCESS AT CHESTER ROAD

DESIGN RESPONSE - HARDSCAPE AND INFRASTRUCTURE

DESIGN APPROACH

The hardscape look and feel responds to the project objectives to 'naturalise' the foreshore experience. Key considerations include:

- Colours: Tone in with natural, earthy colours, draw on site geology (limestone and dune sand), avoid additional dark colours. Consider pops of colour for furniture as visual cues for key amenity hubs.
- Themes: Natural and foreshore/water themese are proposed.
- Paving: Suggest compacted limestone for foreshore path as a flexible path that is resilient to inundation. Exposed aggregate is suggested for the connecting paths.
- Furniture: Suggest furniture and fixtures that align with a natural aesthetic with some opportunity for pops of colour at busier nodes.
- Due to the ecological sensitivity of the site adjacent to the river, natural materials that don't degenerate and create pollutants are suggested such as timber, steel, and stone.

STILES



Victoria Park HASSELL Img: Max Creasy Patrick Bingham-Hall

BOARDWALKS/DECKS



Laasby Sea Park Img: Labland

PAVING



Limestone gravel paths - Royal Botanic Garden Img: Paul Thomson

BIODIVERSITY FIXTURES



Pelican Roosting Posts Img Auldist Getty Images iStockphoto



Bird waterers at 115 Hamilton Hill Img: Paul McGovern

AMFNITIFS



- Len Packham Playspace Design/Image: Acorn



Picnic Shelter Img: Lizard Log Simon Whitbread

PUBLIC ART AND INTERPRETATION





FURNITURE



Drifter bench Img: streetlife



DESIGN RESPONSE - SOFTSCAPE

PLANT PALETTE

The site is located within the Karrakatta vegetation complex. This complex is predominantly tuart (Eucalyptus gomphocephala), jarrah (Eucalyptus marginata) and marri (Corymbia calophylla). The understorey consists of slender banksia (Banksia attenuata), firewood banksia (Banksia menziesii) and bull banksia (Banksia grandis). In addition, sheoak (Allocasuarina fraseriana) and peppermint (Agonis flexuosa) are found. The design intent is to re-establish the original vegetation complex and naturalise the river edge. The plant palette has been developed using the Karakatta complex as a starting place, and adding species from the adjacent Vasse complex which borders the river elsewhere. An objective of the project is to improve the species diversity of the existing foreshore planting to improve ecological function.

TREE REMOVAL

The plan indicates selective removal of exotic tree species. It may be necessary to remove the coral tree at Chester Road carpark given its susceptibility to the Polyphagus Shothole Borer.

PLANT SELECTION FOR ENVIRONMENTAL CONDITIONS

There is a deep body of saline water in the bay. In winter the water becomes fresh while in spring it is brackish (Swan River System Landscape Description, Swan River Trust 1997). The implication is that any plants within the potential inundation zone must be saline tolerant. Additionally, plants need to be grouped according to typical level of water submersion. The plant palette groups species according to general parkland feature planting and trees, and three levels of planting for water environments including ephemeral, damp, and emergent.

PLANTING LAYOUT

Large areas of turf on the foreshore provide amenities and informal movement/circulation. However, they increase water use and don't align with a natural foreshore approach. The design intent is to retain key areas of turf for recreation in strategic areas and revegetate the remainder. Large areas of planting along the foreshore are proposed in bands of a minimum of five/six metres wide and twenty/thirty metres long. The planting areas need to be sufficiently large to perform as storm buffer.

CPTED

Trees and low level planting up to one metre are proposed typically with some larger shrubs proposed that can be used against walls. This will ensure sightlines are retained. We also suggest downward facing lighting of key pathways and amenity areas for safety.

PROPOSED TREES IN THE FORESHORE

It is proposed to provide additional trees for shade and amenity. Proposed trees have been located to avoid compromising residents views. On higher ground, species proposed include tuart (Eucalyptus gomphocephala, marri (Eucalyptus calophylla, pricklybark (Eucalyptus todtiana), saw tooth Banksia (Banksia prionotes). firewood Banksia (Banksia menziesi). In areas of potential inundation, species proposed include flooded gum (Eucalyptus rudis), Rottnest teatree (Melaleuca lanceolata), saltwater paperbark (Melaleuca cuticularis), swamp paperbark (Melaleuca rhapiophylla), and stout paperbark (Melaleuca preisiana). We recommend further development of the tree selection for resilience to pest and disease.

WEED MANAGEMENT

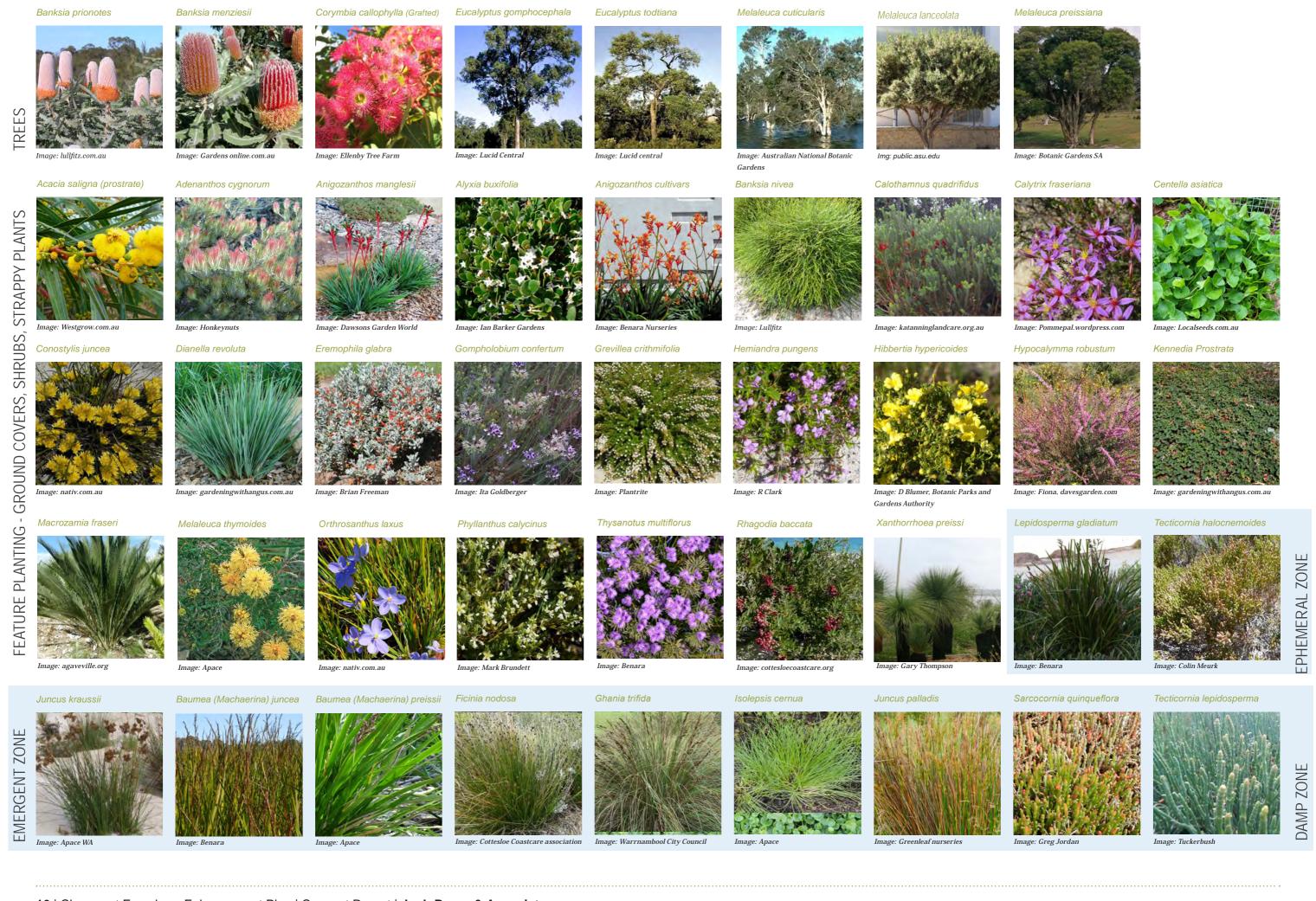
The area to the west of the CYC is heavily weed infested. This area is mostly within the cadastral boundary of CCGS and we suggest working with CCGS and Methodist Ladies College to manage weeds and revegetate.

BIODIVERSITY

We are suggesting a largely local, highly biodiverse plant palette to attract birds and insects. Additional fixtures such as bird waterers, bird nesting boxes, insect hotels, hollow logs are also suggested.

ETHNOBOTANIC

We have selected some local edible species, which can be aligned with interpretation/art/signage to create narratives of their ethnobotanic significance.





JOSH BYRNE & ASSOCIATES

LANDSCAPE • SUSTAINABILITY • COMMUNICATIONS

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