ORDINARY COUNCIL MEETING

22 February 2022

Attachment Booklet – February 2022 - Masterplans

ATTACHMENT: CEO02

Port Denison Foreshore Concept Design Report, Extended Entry Statement Masterplan & Irwin River Walking Trail Amenity Upgrades Masterplan

Attachment 1
Port Denison Foreshore Masterplan Concept Design Report

Attachment 2
Irwin River Walking Trail Amenity Upgrades Masterplan

Attachment 3
Extended Entry Statement Masterplan

Attachment 4
Community Feedback

JOSH BYRNE & ASSOCIATES

SHIRE OF IRWIN
DONGARA-PORT DENISON
A BRILLIANT BLEND

PORT DENISON FORESHORE MASTERPLAN
CONCEPT DESIGN REPORT

DOCUMENT CONTROL

PROJECT NO. 1811

This document may only be used for the purpose for which it was commissioned in accordance with the Terms of Engagement.

Document Status

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This document has been prepared by Josh Byrne & Associates for the Shire of Irwin, to provide a written explanation of the design intent and the key features of the Port Denison Foreshore Concept Design.

Please Note:

- The photographic images in this report have been included as indicative only of the style and feel of the project.
- It is anticipated that many items in the Port Denison Foreshore Concept Design will be custom designed or artist created and as such, imagery of these items is not available.

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1.0 INTRODUCTION

The Port Denison Foreshore, in the township of Port Denison, is located 350km north of Perth, Western Australia. The sister town to Dongara, Port Denison is known for its relaxed lifestyle, scenic beaches, water-based activities and fishing history and industry making the foreshore a popular destination for the locals and visitors and is a valued community asset.

This report sets out Josh Byrne and Associates (JBA) Port Denison Foreshore Masterplan design. It has been prepared as a result of extensive engagement with the Shire and a public engagement process. The masterplan includes enhancements to the foreshore from Grannies Beach in the north to the Obelisk in the South. Five key precincts have been identified within the foreshore - Grannies Beach, Foreshore Park, Foreshore Core, the Boat Ramp and the Obelisk. Each precinct has its own existing character and features and the masterplan seeks to enhance this. The masterplan aims to improve access to and enjoyment of the foreshore by the community and attract visitors to contribute to the local economy.

1.1 BACKGROUND

The Port Denison Foreshore Masterplan project commenced in 2012 and an initial Port Denison Foreshore Masterplan was prepared by RPS in 2013. In 2016 the masterplan was revised to reflect feedback from the funding bodies indicating the need to demonstrate the project's economic viability and long term sustainability. In 2018, the Shire undertook community consultation and Shire workshops to reconsider the masterplan in the light of community feedback. In early 2018 the Shire of Irwin commissioned Josh Byrne & Associates (JBA) to develop concept designs for all five precincts of the Port Denison Foreshore at a more detailed level. JBA's work was informed by the findings and outcomes of the original RPS masterplan together with the evolving aspirations of the Shire and community. JBA worked closely with Shire staff through a series of site visits and meetings ensuring the foreshore vision was further developed within the concept designs. In March 2021, JBA presented the Foreshore Masterplan Concept designs at the Shire of Irwin's Public Consultation event. Considerable feedback was received from the community, which has informed the design in it's development. JBA has also engaged with the Wattandee tribe to understand the importance of the area to the Wattandee and how cultural references can be incorporated into the design.



Remains of the original jetty structure at Port Denison

1.2 EXECUTIVE SUMMARY

This document sets out JBA's design for the Port Denison Foreshore Masterplan. It is the result of detailed engagement with the Shire and community consultation. The Shire and community identified a number of objectives, from which JBA defined a number of design principles:

A CONNECTED PLACE - Create places that are walkable and have strong connections to re-engage the the community with the foreshore, beach and natural environment

A DISTINCT PLACE - Recognise and enhance expression of cultural heritage, meet the needs of the community, and create diverse spaces. Strengthen the unique character of the foreshore precincts. Emphasise themes related to maritime history, fishing, Indigenous History, biodiversity and the natural environment, and its long history as a seaside holiday destination.

AN ACCESSIBLE PLACE - Create welcoming, legible, and intuitive spaces for people of all ages and abilities. Incorporate flexible space that can be adapted for temporary and transitional uses. Provide high quality, continuous walking and cycling routes and establish pedestrian priority

A PLACE TO VISIT - Create places of interest and enhance existing assets and environments to attract visitors. Create a civic heart to bring the community together.

The concept design is developed from design principles and incorporates the distinct characters of each of the five key precincts:

- Grannies Beach Precinct
- Foreshore Park Precinct
- Foreshore Core Precinct
- Boat Ramp Precinct
- Obelisk Precinct

The document describes the background to the design process including public engagement feedback, the design methodology, and concept proposals for each of the precincts. Each of the precincts has a different emphasis based on its existing character. The community's priorities for development are currently Grannies Beach and the Foreshore Core Playground.



1.3 PUBLIC ENGAGEMENT

JBA's foreshore masterplan was presented at the public engagement event on the 4th March 2021. Key feedback included:

GENERAL

- Need for more caravan parking
- Playground and Grannies Beach a priority
- There isn't currently much for teenagers to do
- Lack of indigenous interpretation

GRANNIES BEACH

- Concern over continuous erosion of beach
- Amenity upgrades essential, it is the main swimming beach (used for swimming lessons also) but has no amenities and is too small
- Needs toilets/changerooms, seating, shade, bigger playground
- Road safety issues due to proximity to roundabout and lots of boat movement. Roundabout is confusing and dangerous with too many exits
- Preference for a natural shorelin or terracing to the beach
- Increased parking including pull-in for the bus
- Support for wheelchair access and matting

FORESHORE PARK

- Some suggestion of replacing the playground that was removed
- New plans for Fishermans museum

FORESHORE CORE

- Maintain views
- Playground - would like swings, nature play elements
- Interpret and remember Fishermans Hall
- Majority prefer pavilion on site of existing shelter sheds not William Street axis
- Prefer to be able to park adjacent to Pavilion
- Swimming area in the harbour seen as for visitors as locals don't swim in the harbour except to the south where some small children paddle.

BOAT RAMP

- Some felt more parking was needed but others felt additional parking was only needed occasionally on peak events and people could walk from adjacent parking areas
- Need dual boat ramps (2xlaunch and 2xreceive)
- Require wash pad

OBELISK

- Concern over floating restaurant (detracts from Obelisk, low tide issues)
- Most people feel the private lot development will detract significantly from the Obelisk
- Location of Visitors Centre questioned (sensitiveness to the Obelisk and not central to town)
- Difficult to caravans to manouvre
- Play area well used - this area particularly used by families with young children
- More integration of historical interpretation (Recognise first landing place at break in reef at end of Herbert Street)
- Concern over levels and road around Obelisk, and increase in parking to this sensitive site
- Incorporate shipwreck plaques along promenade below Obelisk

The community feedback has helped to inform revisions to the masterplan design and identification of priorities for the staging of the work by the Shire.



Obelisk and Fishermans memorial

2.0 ANALYSIS

The following analysis diagrams formed the basis from which the concept design is developed. Key points include:

- Context and Use - Existing use of the foreshore is predominantly recreation, beach access, and civic events. Previous Civic use of the Fisherman's Hall ended with its demolition. Recreational events are focused on the Foreshore Park area with its larger areas of lawn and parking. There are already a number of well used playgrounds on the Foreshore as indicated that are approach end of life. Parking at existing locations is required. There are strong winds from the south-easterly direction in the afternoon/evening that discourage use of the foreshore. There is a lack of lighting that limits use of the Foreshore in the evening.
- Character and Heritage - There are a number of key existing features including the Old Jetty, the site of the Fishermans Hall, the Obelisk and Fishermans Memorial, the historic Fig trees, the Shipwreck walk and plaques, remnant dunes, and beaches. The Fishermans Hall building has now been demolished and the plaques along the Shipwreck walk removed. Grannies Beach is the main swimming beach for locals and is used for swimming lessons. Space is heavily restricted and there are issues with road safety, parking and lack of amenities (shade, seating, toilets). There is a coffee van, and it is a popular spot. The foreshore park area is an existing open space already used for major events. The foreshore core lies spatially at the heart of the foreshore but is currently lacking a focus. It has historical links to civic use (Fishremans Hall) and activity (Old Jetty was main water access, and William Street was designed as a main street). The boat ramp precinct is well used and often overcrowded especially on event days and holidays. The Obelisk and Fisherman's memorial is a sensitive site for remembrance and is historically significant. There was a second obelisk now in ruins after being demolished to make way for the breakwater in 1974. Two obelisks were built in 1869 and had lights place on top to guide ships into harbour. The topography changes significantly at this southern end of the foreshore to rise to a hill where the Obelisk stands. There are extensive 360° views from this point.
- There is a footpath that runs the extent of the foreshore from north to south. There are a number of beach access points, many of which must be retained. Key beach access areas include the Grannies, the Foreshore Core, and the Boat Ramp. There is some concern over conflict between pedestrians and cars/boat trailers at the Obelisk, boat ramp, and Grannies Beach. There is currently no formal pedestrian crossing between the foreshore core and the shops/bars on the other side of Point Leander Drive.

2.1 CONTEXT AND USES

LEGEND:

- Recreation and beach access
- Areas for seasonal events and passive recreation
- Playgrounds
- Built form
- Parking

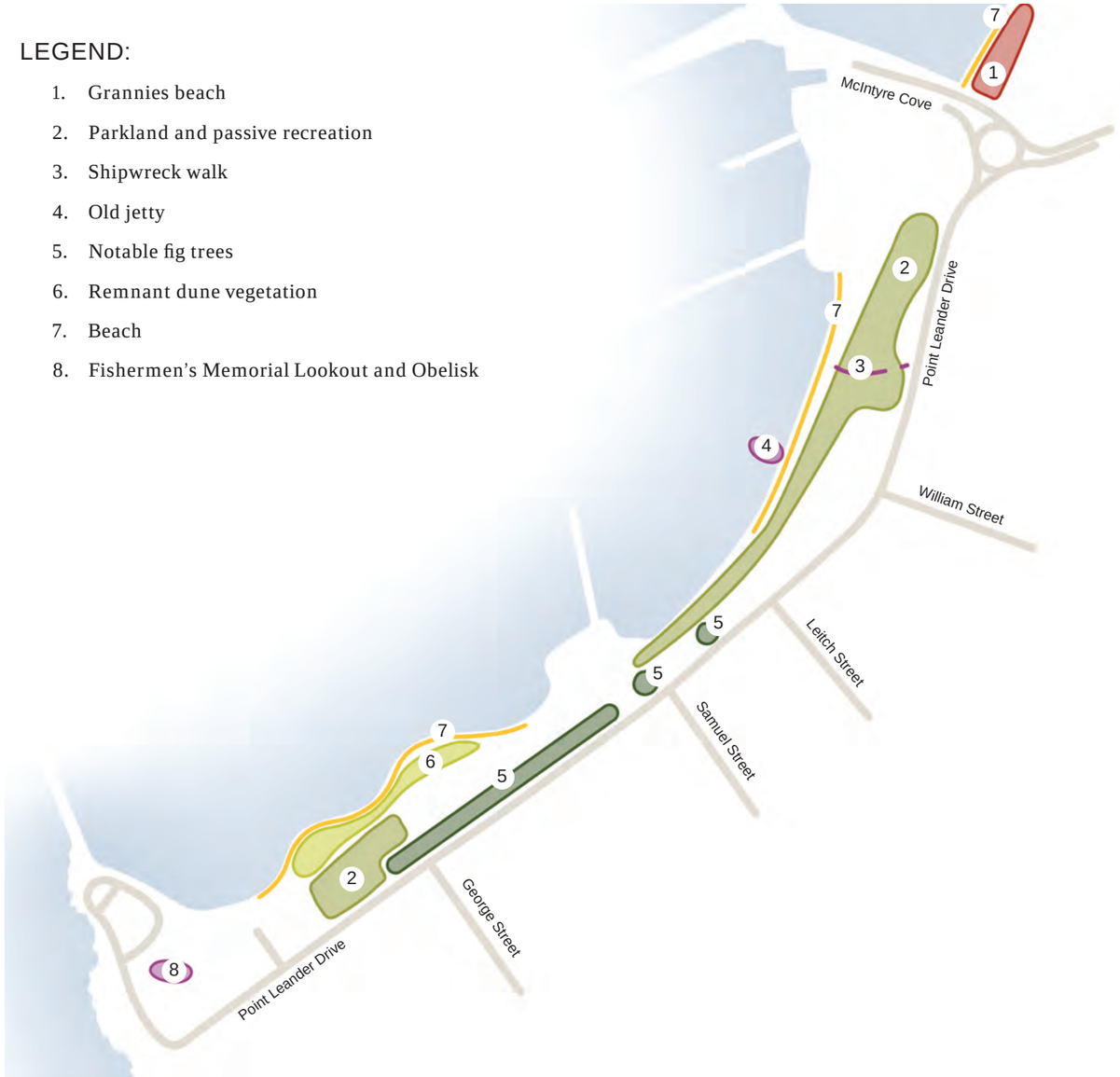
1. Grannies beach
2. Accommodation
3. Geraldton Fishermen's Co-operative
4. Fishermen's Hall
5. Shade structures and toilets
6. Commercial / retail
7. Boat ramp and trailer parking
8. Fishermen's Memorial Lookout and Obelisk



2.2 CHARACTER AND HERITAGE

LEGEND:

1. Grannies beach
2. Parkland and passive recreation
3. Shipwreck walk
4. Old jetty
5. Notable fig trees
6. Remnant dune vegetation
7. Beach
8. Fishermen's Memorial Lookout and Obelisk



2.3 ACCESS AND CONNECTIONS

LEGEND:

- Pedestrian footpath
- Pedestrian crossing over boat ramp
- Shared pedestrian and vehicle path
- Vehicle parking
- Vehicle access for boat launching
- Public access to beach
- views
- Formal pedestrian crossing
- Informal pedestrian crossing
- Fishermen's Memorial Lookout and Obelisk



3.0 DESIGN METHODOLOGY

3.1 PROJECT ASPIRATIONS

The Shire of Irwin have developed a number of objectives, in consultation with the community, to guide development of the masterplan:

- Retain the 'sense of place' for residents of Port Denison/Dongara - a relaxed coastal town on a Rivermouth with strong connections to maritime history, fishing, coastal sports, and the natural environment.
- Recognise and strengthen the character and unique qualities of the Foreshore
- Prioritise pedestrian access to the foreshore by providing connections to all the precincts and across Point Leander Drive
- Establishment of a healthy place by encouraging walking and inclusion of passive recreation and key activity areas along the foreshore
- Recognition and consideration of cultural and historical context and values of the foreshore such as the use of the foreshore by aboriginal people, shipwreck history and the history and role of the obelisk
- Provision of a civic space for events
- Encourage visitors and respond to community needs

3.2 CONCEPT DESIGN VISION

The overarching concept design vision for the foreshore is based on the characteristics of the natural topography, dunes and coastal forms, of the coast and the Irwin River Estuary, and the subsequent human intervention and their impact on the natural environment. Key features of the design are curves and low mounds representing the natural character of the coastal and estuary environment. Amenities and built forms are expressed as linear forms and shapes as human interventions within the landscape.

3.3 DESIGN PRINCIPLES

The design process adopted for the development of the concept design includes consideration of the Port Denison Foreshore Masterplan document, the objectives developed with the Shire and a set of design principles. The principles developed for the foreshore concept design are:

A CONNECTED PLACE

- Create places that are walkable and with strong connection to each other, their respective precincts, and Port Denison township
- Re-engage the interaction of the community with the foreshore and beach
- Reinforce the connection to the environment while addressing the impact of human activity and urbanisation

A DISTINCT PLACE

- Recognise and strengthen the expression of the cultural heritage
- Create places that are welcoming to all community members
- Ensure the foreshore serves the needs of the community well into the future
- Create diverse spaces for visitors and locals to meet and celebrate
- Strengthen the unique character of each of the foreshore precincts, while presenting the foreshore as a unified whole.
- Emphasise themes related to maritime history, fishing, Indigenous history, biodiversity and the natural environment, and its long history as a seaside holiday destination.

AN ACCESSIBLE PLACE

- Create welcoming spaces for people of all ages and abilities
- Create spaces that are familiar, legible and intuitive for users
- Incorporate flexible space that can be adapted for temporary and transitional uses
- Provide a pedestrian priority environment where people come first
- Provide high quality, continuous walking and well connected cycling routes

A PLACE TO VISIT

- Create places of interest to attract visitors
- Enhance existing features and environments to attract visitors and the local community. Recognise that the beach and key open spaces are the feature elements and attractions to the foreshore
- Create a civic heart to bring the community together
- Enhance the foreshore as a place of passive recreation
- Highlight the natural environment and biodiversity of the foreshore



Esperance waterfront, beach side path Img: Peter Bennetts



Iidabashi Plano, interpretation in paving Img: Tadamasa Iguchi

3.4 DESIGN STRATEGIES

AMENITY AND SAFETY

Improving amenity and ensuring the safety of users were key factors in the development of the concept design:

- Reduce the impact of parking areas on the foreshore
- Provide shade and shelter
- Improve amenities (WC facilities, seating, drinking fountains, bins, cycle parking)
- Ensure clear sight lines are maintained and integrate lighting according to the Crime Prevention Through Environmental Design (CPTED) principles to discourage anti-social behaviour through passive surveillance
- Eliminate or minimise conflict of use between pedestrians and vehicles through legibility of pathways to enhance the experience of users along the foreshore. Prioritise pedestrian access to and throughout the foreshore.

ACTIVATION

Engagement with the foreshore will be enhanced by:

- Feature lighting to extend periods of use
- Integration of picnic and BBQ amenities and lockable hub for events
- Create opportunities for gathering by establishing a new civic space for events
- Incorporate activities relating to the existing character and community needs for each precinct

CULTURE AND HERITAGE

The foreshore's unique qualities and 'sense of place' will be retained whilst creating new places of interest. This will be achieved by:

- Recognising the rich history of Port Denison with interpretation opportunities along the foreshore at key points including the Obelisk, Old Jetty, Fishermans Hall. Opportunities include interpretive signage and integration into paving patterns and public art
- Use key themes identified (maritime history, fishing, Indigenous History, biodiversity and the natural environment, and its long history as a seaside holiday destination) to inform material and planting palette, furniture and structure design



Lighting Img: Alison Cartwright

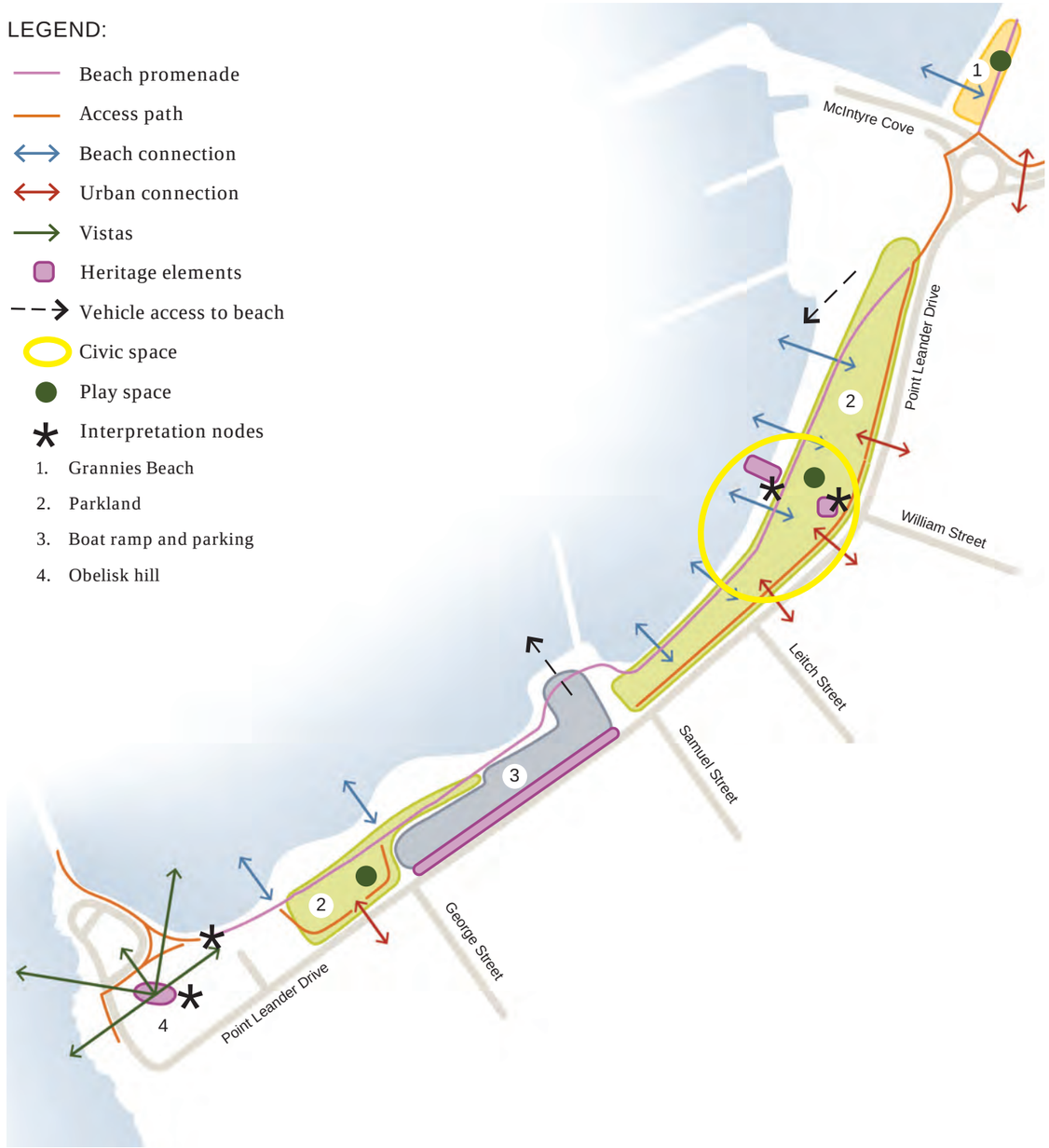


Seating + shade Img: Suzie Balek

LEGEND:

- Beach promenade
- Access path
- Beach connection
- Urban connection
- Vistas
- Heritage elements
- Vehicle access to beach
- Civic space
- Play space
- Interpretation nodes

1. Grannies Beach
2. Parkland
3. Boat ramp and parking
4. Obelisk hill



LANDSCAPE QUALITIES

The landscape character, history and identity of the foreshore is enhanced through key site-specific features and interventions. This will be achieved by:

- Enhance key vistas to the foreshore and key features including the William Street axis, the Obelisk viewing area
- Establish new landscape features (including a playspace) while strengthening the existing coastal character and heritage
- Retain and restore remnant dune vegetation and control weed infestation
- Retain and enhance foreshore 'promenade' as key linking pathway
- Retain heritage significant fig trees and foreshore trees
- Develop a local species planting palette and material palette that reflects the local environment
- Enhance access to the water

MOVEMENT AND ACCESS

The accessibility and wayfinding along the foreshore will be improved through a series of interwoven connections or 'journeys'. This will be achieved by:

- Establish key arrivals points and develop a clear wayfinding strategy for pedestrians and vehicles
- Providing inter-connecting and distinctive accessible paths for pedestrians along the foreshore to encourage self-exploration and discovery
- Provide a continuous foreshore promenade
- Provide new pedestrian crossings across Point Leander Drive to improve pedestrian connection
- Provide parking options for cars, boat trailers, buses, caravans
- Improve universal access
- Improve boat access, parking and amenities at the boat ramp

ENVIRONMENT

The Port Denison Foreshore Concept Design presents the opportunity to integrate Environmentally Sustainable Design (ESD) and Water Sensitive Urban Design (WSUD) principles to the foreshore to ensure that the impact on the environment is well considered. The measures adopted are as follows:

- Address local environmental concerns, including coastal erosion, native revegetation planting and habitat establishment
- Implementation of on-site stormwater capture and treatment in vegetated swales
- Introduction of planting areas with a variety of shrubs and trees to enhance biodiversity of the foreshore
- Coastal revegetation, and native planting palette
- Weed management (including Sicilian Sea Lavendar, Couch, and Kikuyu)
- Use of locally available materials
- Use of LED lighting and intelligent technology to minimise power usage
- Use of Photovoltaic cells (PV) on available structures to supply energy for lighting and power

INFRASTRUCTURE

Provision of electrical and communications services to the foreshore was considered in this design stage to enhance the amenity of the foreshore that is future-proofed and serves the needs of the Shire and the community. The services considered are as follows:

- Provide lighting to key areas of the foreshore (whilst considering ecological impacts of light pollution)
- Provide power outlets stations to areas of the parkland and civic space catering for organised events and seasonal festivals
- Integrate USB charging stations and Wi-Fi connection
- Provide potable water supply for drink fountains and dog bowls
- Reduction of lawn areas and supplement the parkland with drought tolerant and coastal plant species. Application of hydrozoning to better manage water demand for the parkland. Introduction of planting areas that require no irrigation installed such as Water Sensitive Urban Design (WSUD) features and 'at source' stormwater controls.
- Implementation of drip and subsurface irrigation systems to reduce water loss through evaporation and environmental exposure
- Initial consideration of coastal erosion strategies (further investigations by a coastal engineer will be required)



WSUD vegetated stormwater swales Img: Wraight + Associates



Integration of Photovoltaics for lighting Img: Ross Pottinger

4.0 CONCEPT OVERVIEW

4.1 CONCEPT DESIGN

The concept design is developed from the vision and incorporates the distinct characteristics of each of the five precincts. Key features include:

1. GRANNIES BEACH

- A new retaining wall, stairs and ramp access to the beach
- Enhnaced lawn area, playspace, space for food/organised events
- Enhanced amenities (shade, seating, WCs, parking)
- Pathways to connect to the foreshore and the residential areas

2. FORESHORE PARK

- Retain and enhance lawn area for events
- Planting to introduce texture, biodiversity, shade and screening
- The beach promenade will link the all foreshore precincts

3. FORESHORE CORE

- A civic space, pavilion, all ages and abilities playspace, improved ablution facilities, shade shelters and picnic areas.
- Extend the park through foreshore reclamation
- Access stairs to the water
- Historic and cultural interpretation elements of Old Jetty, Fishermans Hall

4. BOAT RAMP

- Provision of improved amenities and shade shelter.
- Planting to screen vehicles and parking from the parkland

5. OBELISK

- Playspace, shade shelters and picnic facilities
- Beach access for small boats and parking rationalised
- Improve access, interpretation, and setting of Obelisk
- Historic and cultural interpretation opportunities of shipwreck walk and landing place



4.2 GRANNIES BEACH PRECINCT

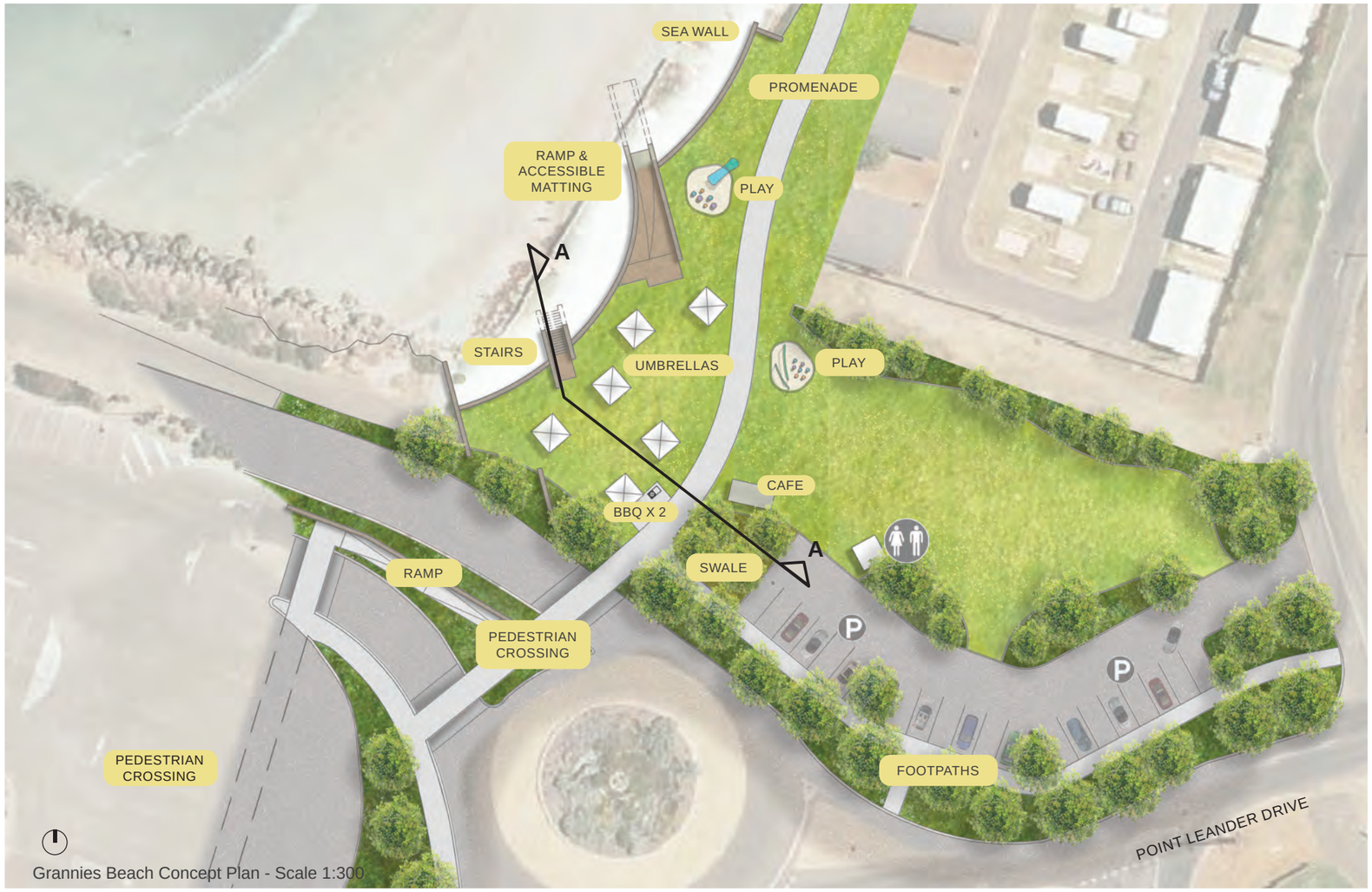
KEY AIMS:

- Retain the low-key aspect of the beach which is the unique character cherished by the local community
- Provide improved amenities and access to make the beach a more functional and practical space and to enhance the experience to beach-goers. The beack needs to cater for swimming lessons
- Implement measures to protect the beach against erosion caused by natural coastal process

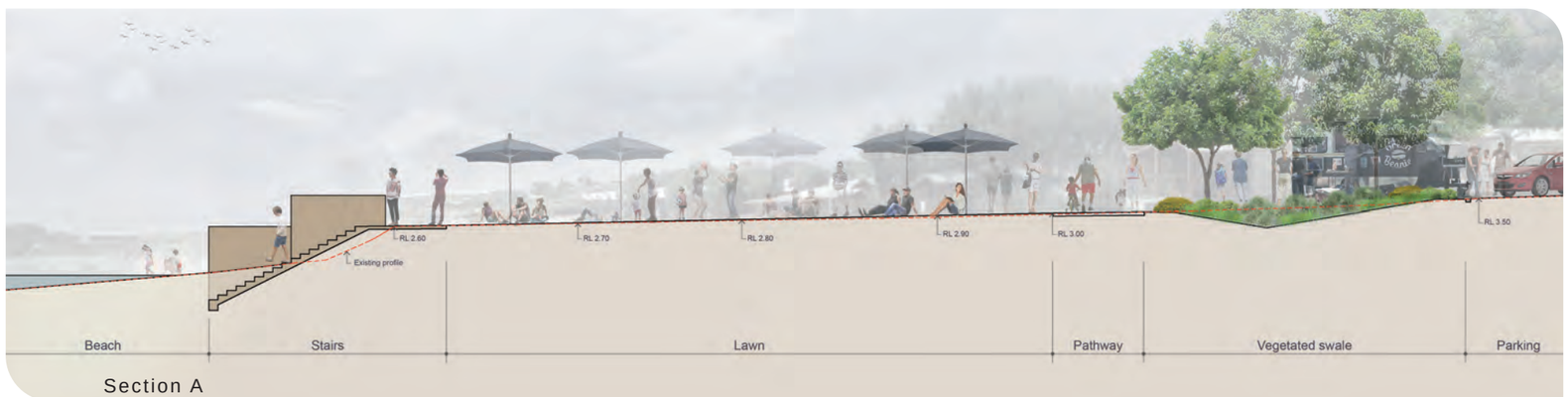
KEY NOTES:

- Transform the primary pathway into a beach promenade linking Grannies Beach to the foreshore to the south
- Provide an accessible route to Port Denison foreshore
- Consolidate the lawn and shade areas for which the beach is known for
- Integrate playspaces for toddlers and the younger age groups within the landscape
- Provide improved access to the beach with wider stairs and ramp that are integrated within the design
- Reconfigure the existing carpark and providing a safer entry and exit point off Ocean Drive and closing the access point adjoining the roundabout. Potentially include bus pull-in
- Provide multi-use spaces for food trucks and organised events
- Provision for a future toilet/changeroom facility
- Provide connection to the adjoining residential areas
- Provision for service and emergency vehicle access
- Consolidate signage
- Improve pedestrian links to Rec centre
- Include public art or playground design elements that reference the Wattandee cultural history and are linked to the foreshore. This could include reference to the fur seals, Ngooyambiddee (Pelicans), Warradha (Eagle hawks), Kakkainyoo (Osprey), Eerinyittee (Sparrow Hawk).

The Shire is currently in dialogue with Big 4 to reclaim the southernmost cabins of the caravan park to increase the amenity area at Grannies. The Shire is also considering removal of the roundabout. Following these negotiations, the design may be further developed, but the design strategy will still be aligned to the key aims and notes outlined above.



Grannies Beach Concept Plan - Scale 1:300



Section A



Prominent beach promenade Img; Andrew Lloyd



Universal and access to the beach Img: Peter Bennetts



Smaller scale playspaces



Stair access to water Img: Simon Wood

4.3 FORESHORE PARK PRECINCT

KEY AIMS:

- Retain a relatively large and continuous span of lawn that is used for events and passive recreation by the community
- Implement hydrozoning measures and introduce planting areas to reduce irrigation requirements
- Provide safe access to the beach for both beach-goers and water-based recreation activities such as fishing and water sports
- Provide shade, shelter and picnic areas
- Provide a buffer between the parkland and Point Leander Drive

KEY NOTES:

- Consolidate pathways and widen foreshore path to form a promenade
- Provide pathways linking the parking bays and connect to the existing road-side path towards Grannies Beach
- Introduce planting areas and shade trees, retain notable existing trees (fig trees and Norfolk Island pine)
- Provide beach-side shade structures and picnic facilities
- Retain areas of lawn for passive recreation and events
- Integrate road-side planting and stormwater swale within the landscape
- Formalise beach access for vehicles
- Provide a dedicated foreshore access for event and emergency vehicles
- Provide parking for boat trailer on the beach - 50m length
- Proposed overflow event parking area
- Potential for public art as key marker, could move with the wind
- Provision for future connection to Fisherman's museum



Artwork Img: Roger D'Souza



Img: Sam Noonan



Foreshore Park Precinct - Concept Plan - Scale 1:500

4.4 FORESHORE CORE PRECINCT

KEY AIMS:

- Provide improved connection to Port Denison township's commercial and residential areas
- Provide improved amenities and a revitalised civic core
- Create diverse activities and recreation spaces
- Integrate opportunities to re-connect the foreshore to the water
- Implement measures to protect sections of the foreshore against erosion caused by the natural coastal process

KEY NOTES:

- Widen the primary path on the beach side to form a promenade
- Provide pathways linking the parking bays and areas of the foreshore parkland
- Provide a pavilion and civic space with forecourt for organised activities and events
- Provide a playspace for all-ages based on a crayfishing theme that has a strong connection to place
- Replace ablution facilities
- Provide shade structures and picnic facilities
- Integrate road-side planting and stormwater swales within the landscape
- Retain notable existing trees including the fig trees and Norfolk Island pine trees
- Introduce planting areas and shade trees
- Provide direct access to the ocean
- Reclaim part of the foreshore as part of the parkland (original shoreline)
- Provide interpretive elements for the former Fishermans Hall, and the Old Jetty. The Old Jetty is the site of the main water access to Port Denison.
- Create floating pontoon swimming area
- Evidence of the old tram system has been uncovered on the William Street axis. Further archeological investigation is recommended and potential inclusion of interpretive landscape elements.



Foreshore Core Precinct - Concept Plan - Scale 1:500

FORESHORE CORE PLAYGROUND

Design considerations/features include:

- The cray fishing theme is a place-based concept and will be unique to Port Denison. The playground is split over three levels, integrating with the natural topography of the site.
- The cray fishing boat is a central feature - it is a multilevel structure split in two, with the highest level providing views over the foreshore. It includes a wheelchair accessible base level with a ‘capstan’ spinner and ‘cray pot tipper’ rocker.
- The wake of the boat becomes a rippling soft fall area and is wheelchair accessible.
- An accessible and playful jetty extends out of a rock embankment. Surrounding it are a series of low-key, nature play items, including rock boulders, timber steppers, balancing logs and hidden rock lobsters.
- There are three large ‘cray pots’ suspended above ground by climbing nets hidden below in the sand areas. There are also small ‘cray pots’ and kitesurfer rockers scattered around the fringe.
- A giant, all-directions basket swing is framed by the original footprint of the Fishermans Hall. A rubber soft fall path to the swing allows universal access.
- The playground can be fenced and gated if required.

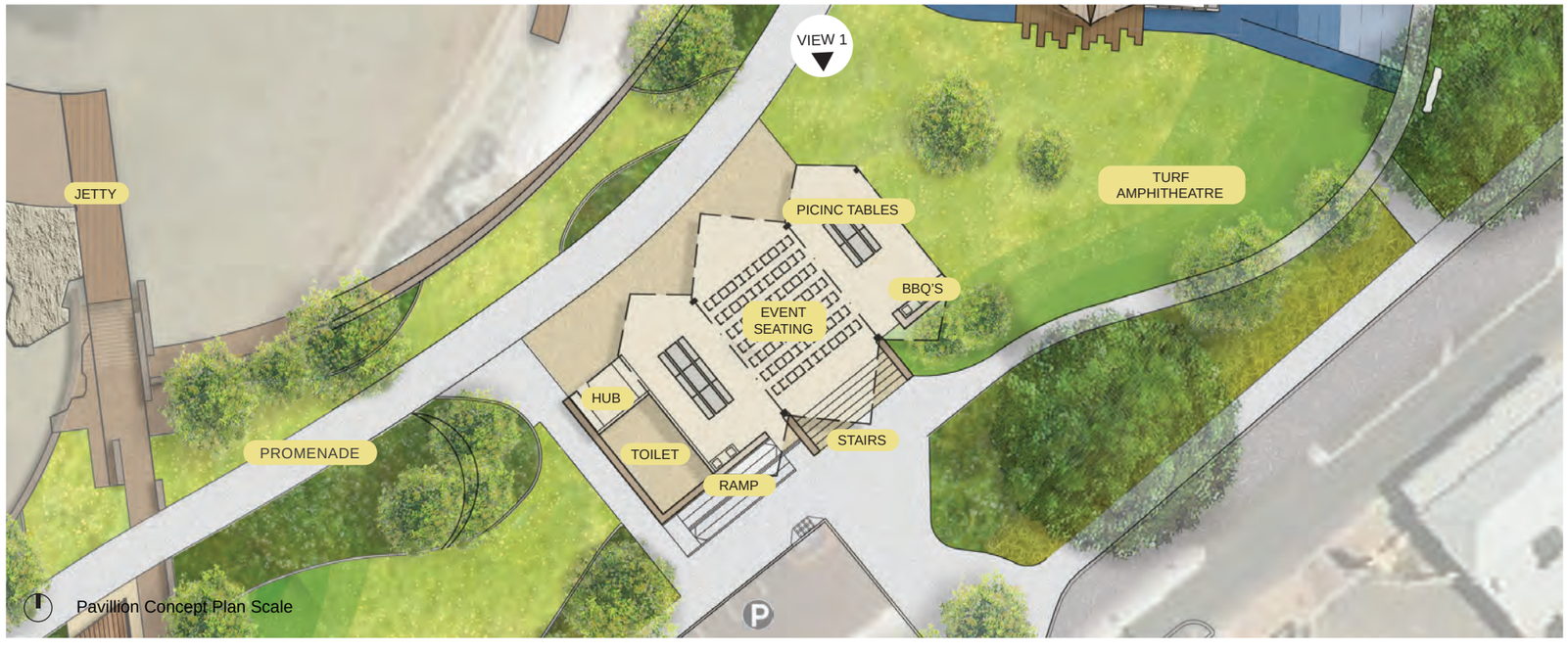




FORESHORE CORE PAVILION

Key design considerations include:

- Pavillion design inspired by the original Fisherman's Hall building (gabled ended, timber frame, corrugated iron clad). Timber reclaimed from the Fisherman's Hall will be integrated into the pavilion or furniture.
- Limestone walls were inspired by the local limestone cliffs.
- Protection from southern wind through screening and vegetation.
- Provision of large picnic/BBQ areas for several different groups or events.
- Provision of a lockable hub with amenities to cater for functions and larger gatherings.
- Amphitheatre turf area connecting the playspace to the pavilion for informal events.
- Additional hardstanding area in front and behind the pavilion for events (marquees, markets).
- Framing of view of the ocean and pontoons through pavilion gable.
- Level and universal access to pathways surrounding points of interest.
- Open middle pavilion to host citizenship ceremonies with framed views of the ocean.
- Direct access from parking to pavilion
- Options for the pavilion location were provided to the Shire and the community. The preferred location was on the site of the existing shelter sheds south of the William Street axis. It doesn't impact existing views, it is close to parking, and the pavilion can connect to the playground on the northern side and shelter from winds on the southern edge.
- Detailed design to include public art elements and interpretation of the Wattandee history, including Wattandee names for the area.
- Existing toilets to be replaced with toilets integrated into the new pavilion





Concept Imagery Form and Materials


Luuwitt Img: Skylab


Fishermans Hall Img: Irwin History.org.au


Marrickville Library Img: Tom Roe


Img: Danica Kus


Imge: Joan Guillamat

4.5 BOAT RAMP PRECINCT

KEY AIMS:

- Retain the existing boat ramp access, parking and ablution facility
- Retain the iconic fig trees
- Ensure safe pedestrian access across the boat ramp area

KEY NOTES:

- Widen the primary path on the beach side to from a promenade
- Retain notable existing trees including the fig trees and Norfolk Island pine trees
- Integrate planting and stormwater swale within the parking area
- Introduce planting areas and shade trees
- Provide pathway access to the beach
- Provide shade structures and picnic facilities



Precedent Coastal gardens Img: Peter Bennetts



4.6 OBELISK PRECINCT

KEY AIMS:

- Provide improved amenities and shade
- Provide additional parking for cars, caravans and boat trailers
- Enhance the interpretation of the cultural and historical heritage of Port Denison
- Provide a setting that promotes self-exploration and discovery

KEY NOTES:

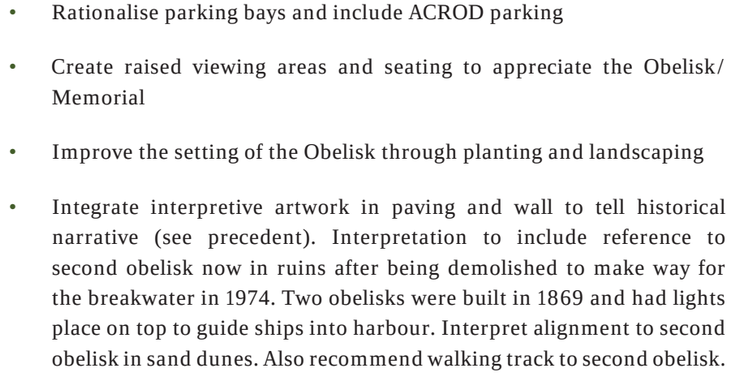
- Widen the primary path on the beach side to form a continuous promenade up to Grannies Beach
- Provide pathways linking the parking bays to the foreshore parkland
- Provide a small scale playspace
- Provide pedestrian access to the beach
- Retain notable existing trees including the fig trees and Norfolk Island pine trees
- Provide shade structures and picnic facilities
- Integrate planting and stormwater swale within the carpark
- Introduce planting areas and shade trees
- Re-configure car parking arrangements to be on-street
- Provide additional parking for caravans and boat trailers
- Formalise beach access for vehicles
- Provision for future cafe
- Integrate interpretive signage and integrated public art landscape elements to describe Port Denisons urban development, maritime history, memorial elements
- Re-create shipwreck walk along promenade integrating existing plaques and seating



OBELISK

KEY DESIGN CONSIDERATIONS INCLUDE:

- Improve pedestrian and vehicular access and circulation around the Obelisk
- Rationalise parking bays and include ACROD parking
- Create raised viewing areas and seating to appreciate the Obelisk/ Memorial
- Improve the setting of the Obelisk through planting and landscaping
- Integrate interpretive artwork in paving and wall to tell historical narrative (see precedent). Interpretation to include reference to second obelisk now in ruins after being demolished to make way for the breakwater in 1974. Two obelisks were built in 1869 and had lights place on top to guide ships into harbour. Interpret alignment to second obelisk in sand dunes. Also recommend walking track to second obelisk.
- Working with existing levels to minimise extent of cut and fill
- Protect from South-western winds with planting and retaining walls
- Universal access to pathways surrounding the obelisk
- Low walls act as safety barriers to roadway and provide seating around Obelisk with opportunities to integrate historical interpretation



Discreet wayfinding signage Img: HTA Landscape





Precedent Art and historical interpretation on paving



Precedent Viewing platform Img Craig Maldonado



Precedent Access pathway



Integrated interpretation Img: Andrew Lloyd

6.0 SUGGESTED PLANT SCHEDULE

The Irwin River Estuary Weed Management Plan (2013) summarised vegetation communities adjacent to the site. While they did not survey the project area, it can be assumed that the dune communities identified in the study continue to the south to include Port Denison Foreshore. These vegetation communities include:

– *Acacia rostellifera* open heath

– *Atriplex cinera* open low heath

– *Spinifex longfolius* grassland western dunes

It is proposed to use communities from these species to revegetate the dune areas and form the basis of the plant palette for WSUD swales and feature planting.

Feature tree species can be drawn from the local vegetation communities as well as the Ficus species for which there is a precedent in Port Denison. Additional trees from the Dongara Dunes have been selected from the publication Trees and Shrubs for the Midlands and Northern Wheatbelt (NACC 2015).

It is recommended that where exotic species have historical significance, for example Moreton Bay Fig and Norfolk Island Pines, they be preserved.

Eucalyptus loxophleba (York gum)



York Gum Image Florabase Img: B.R Maslin S.J Patrick

Ficus macrophylla



Ficus Macrophylla Img:JBA

Eucalyptus erythycorys (illyarrie)



Eucalyptus erythrocorys Img: Jim Barrow

Eucalyptus baudiniana



Eucalyptus baudinana Img: euclid

Eucalyptus obtusiflora



Eucalyptus Obtusiflora Img: Alice Newton

Eucalyptus decipiens



Eucalyptus Decipiens Img: Honkey Nuts.com

Eucalyptus accedens



Eucalyptus accedens Img: Honkey Nuts.com

Banksia prionotes



Banksia prionotes Img: Adam Robinson

Acacia cyclops



mage Credit: katanninglandcare.org

Acacia rostellifora



Image Credit: John Baas

Acanthocarpus preissii



Image Credit: nativ.com.au

Atriplex amnicola



Image Credit: State of Western Australia

Atriplex cinerea



Image Credit: plantthis.com.au

Carpobrotus virescens



Image Credit: Lullfitz.com.au

Casaurina obesa



Image Credit: vhd.heritage.vic.gov.au

Clematis linearifolia



Image Credit: northqueenslandplants.

Convolvulus remotus



Image Credit: Melissa Doherty

Dianella revoluta



Image Credit: Simontheplantman.com

Enchylaena tomentosa



Image Credit: Arthur Chapman

Eucalyptus Camaldulensis



Image Credit: Katanninglandcare.org.au

Ficinia nodosa



Image Credit: Cottesloecoastcare.org

Ficus macrophylla



Ficus Macrophylla (Moreton Bay Fig)

Hardenbergia



Image Credit: waggaflora.com

Hibbertia subvaginata-



Image Credit: Ellenbrook bushland

Lepidosperma



Image Credit: Lullfitz.com.au

Melaleuca cardiophylla-



Image Credit: Geoff Derrin

Melaleuca huegelii



Image Credit: Brian Freeman

Melaleuca lanceolata



Image Credit: nativeshop.com.au

Myoporum montanum



Image Credit: diversitynativeseeds.com

Myoporum tetrandrum



Image Credit: M. Kealley

Pittosporum



Image Credit: Robert Powell

Nitraria billardierei



Image Credit: William Archer

Rhagodia baccata



Image Credit: Cottesloecoastcare.org

Rhagodia preissii



Image Credit: Westgrow.com.au

Santalum acuminatum-



Image Credit: wtlandcare.org

Scaevola crassifolia -



Image Credit: R. Clark

Scaevola thesioides



Image Credit: Porteuspark.org.au

Spyridium globulosum



Image Credit: Cambridgecoastcare.com.

Samolus repens



Image Credit: Trees for life (SA)

Suaeda australis



Image Credit: friendsofwilliamstown.

Templetonia retusa



Image Credit nativ.com.au

Tricoryne elatior



Image Credit: Frasercoastplants

7.0 OPC

7.1 GRANNIES BEACH

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL
1.00	**PRELIMINARY, SITE WORKS & DEMOLITIONS**				
1.01	Mobilisation, demolition, earthworks and fine grading (allowance)	5,400	m2	$10.00	$54,000.00
	PRELIMINARY, SITE WORKS & DEMOLITIONS TOTAL				**$54,000.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	Paving Type 1 - Bitumen carpark on compacted subgrade	696	m2	$50.00	$34,800.00
2.02	Paving Type 2 - 100mm thick grey concrete	648	m2	$80.00	$51,840.00
2.03	Paving Type 5 - 300mm depth washed white sand (playspace)	50	m2	$30.00	$1,500.00
	HARDWORKS - SURFACE TREATMENTS TOTAL				**$88,140.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Edging Type 1 - Flush kerb (carpark)	186	lin.m	$70.00	$13,020.00
3.02	Edging Type 2 - Concrete garden kerb	141	lin.m	$70.00	$9,870.00
3.03	Wall Type 1 - Sea Wall	94	lin.m	$3,500.00	$329,000.00
3.04	Wall Type 2 - General retaining walls	31	lin.m	$1,200.00	$37,200.00
3.05	Wall Type 3 - Freestanding walls	7	lin.m	$1,200.00	$8,400.00
3.06	Stairs - including handrails, kickrails and tactiles	11	m2	$2,500.00	$27,500.00
3.07	Ramps - including handrails, kickrails and tactiles	63	m2	$2,000.00	$126,000.00
3.08	Bench seats	2	items	$2,500.00	$5,000.00
3.09	Dual bin enclosure (waste and recycling)	1	items	$350.00	$350.00
3.10	Drink fountains	1	items	$7,000.00	$7,000.00
3.11	Bicycle parking racks	3	items	$2,000.00	$6,000.00
3.12	Signage (Entry, directional and interpretative)	1	allowance	$4,000.00	$4,000.00
3.13	Playspace with sculptural element	1	allowance	$180,000.00	$180,000.00
3.14	Double BBQ	2	each	$12,000.00	$24,000.00
3.15	Shade Structure (Large)	2	each	$20,000.00	$40,000.00
3.16	Toilet Block	1	each	$40,000.00	$40,000.00
3.17	Accessible Matting	1	allowance		$10,000.00
	HARDWORKS - INFRASTRUCTURE TOTAL				**$867,340.00**
4.00	**SOFTWORKS**				
4.01	Tubestock planting, 4 per m2	1,678	m2	$12.00	$20,136.00
4.02	Swale planting, 4 per m2 (140L pots)	94	m2	$24.00	$2,256.00
4.03	Trees - 100L	42	each	$430.00	$18,060.00
4.04	Soil Conditioner - 25mm thick	1,772	m2	$6.00	$10,632.00
4.05	Mulch	1,772	m2	$10.00	$17,720.00
4.06	Roll on turf	1,069	m2	$15.00	$16,035.00
4.07	Repair to existing turf areas (20% allowance)	198	m2	$15.00	$2,970.00
	SOFTWORKS TOTAL				**$87,809.00**
5.00	**LIGHTING AND ELECTRICAL**				
5.01	Light posts and associated electrical work (allowance for 1 post per 25m)		item		$24,000.00
5.02	Lighting to built structures		item		$2,000.00
5.03	Conduits, trenching, cabling, cabinets and switchboards, etc	1	item		$78,300.00
	LIGHTING AND ELECTRICAL TOTAL				**$104,300.00**

Sub Total Construction		**$1,201,589.00**
Contingency	30%	**$360,476.70**
Sub total Exc GST		**$1,562,065.70**
GST	10%	**$156,206.57**
TOTAL inc GST		**$1,718,272.27**

7.2 FORESHORE PARK

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL
1.00	**PRELIMINARY, SITE WORKS & DEMOLITIONS**				
1.01	Mobilisation, demolition, earthworks and fine grading (allowance)	12,000	m2	$10.00	$120,000.00
	PRELIMINARY, SITE WORKS & DEMOLITIONS TOTAL				**$120,000.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	Paving Type 2 - 100mm thick grey concrete	975	m2	$80.00	$78,000.00
2.02	Paving Type 3 - 150mm thick trafficable grey concrete	12	m2	$120.00	$1,440.00
	HARDWORKS - SURFACE TREATMENTS TOTAL				**$79,440.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Edging Type 2 - Concrete garden kerb	512	lin.m	$70.00	$35,840.00
3.02	Wall Type 2 - General retaining walls	28	lin.m	$1,200.00	$33,600.00
3.03	Bridges over swales	69	m2	$1,500.00	$103,500.00
3.04	Custom shelter - 4.5 x 4.5m	5	items	$40,000.00	$200,000.00
3.05	Picnic table settings	5	items	$5,000.00	$25,000.00
3.06	Bench seats	2	items	$2,500.00	$5,000.00
3.07	Double barbeques	3	items	$12,000.00	$36,000.00
3.08	Dual bin enclosure (waste and recycling)	2	items	$350.00	$700.00
3.09	Signage (Entry, directional and interpretative)	1	allowance	$2,000.00	$2,000.00
	HARDWORKS - INFRASTRUCTURE TOTAL				**$441,640.00**
4.00	**SOFTWORKS**				
4.01	Tubestock planting, 4 per m2	2,639	m2	$12.00	$31,668.00
4.02	Feature planting (140L), 4 per m2	236	m2	$24.00	$5,664.00
4.03	Swale planting (140L) 4 per m2	371	m2	$24.00	$8,904.00
4.04	Trees - 100L	90	each	$450.00	$40,500.00
4.05	Soil Conditioner - 25mm thick	3,246	m2	$6.00	$19,476.00
4.06	Mulch	3,246	m2	$10.00	$32,460.00
4.07	Roll on turf	1,146	m2	$15.00	$17,190.00
4.08	Repair to existing turf areas (10% allowance)	605	m2	$15.00	$9,081.00
	SOFTWORKS TOTAL				**$164,943.00**
5.00	**LIGHTING AND ELECTRICAL**				
5.01	Light posts and associated electrical work (allowance for 1 post per 25m)		item		$96,000.00
5.02	Lighting to built structures		item		$4,000.00
5.03	Conduits, trenching, cabling, cabinets and switchboards, etc		item		$142,900.00
	LIGHTING AND ELECTRICAL TOTAL				**$242,900.00**

Sub Total Construction		**$1,048,923.00**
Contingency	30%	**$314,676.90**
Sub total Exc GST		**$1,363,599.90**
GST	10%	**$136,359.99**
TOTAL inc GST		**$1,499,959.89**

7.3 FORESHORE CORE

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL
1.00	**PRELIMINARY, SITE WORKS & DEMOLITIONS**				
1.01	Mobilisation, demolition, earthworks and fine grading (allowance)	11,000	m2	$10.00	$110,000.00
1.02	Fill required along the beach sea wall average 1m deep)	2,600	m3	$8.00	$20,800.00
	PRELIMINARY, SITE WORKS & DEMOLITIONS TOTAL				**$130,800.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	Paving Type 2 - 100mm thick grey concrete	1065	m2	$80.00	$85,200.00
2.02	Paving Type 4 - 100mm thick insitu exposed aggregate concrete	850	m2	$140.00	$119,000.00
2.03	Paving Type 5 - 300mm depth washed white sand (playspace)	810	m2	$30.00	$24,300.00
2.04	Paving Type 6 - Rubber soft fall	270	m2	$200.00	$54,000.00
	HARDWORKS - SURFACE TREATMENTS TOTAL				**$282,500.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Edging Type 2 - Concrete garden kerb	405	lin.m	$70.00	$28,350.00
3.02	Wall Type 1 - Sea Walls	220	lin.m	$3,500.00	$770,000.00
3.03	Wall Type 2 - General retaining walls	85	lin.m	$1,200.00	$102,000.00
3.04	Wall Type 3 - Freestanding walls	34	lin.m	$1,200.00	$40,800.00
3.05	Bridges over swales	15	m2	$1,500.00	$22,500.00
3.06	Stairs - including handrails, kickrails and tactiles	40	m2	$2,500.00	$100,000.00
3.07	Ramp - including handrails, kickrails and tactiles	30	m2	$2,500.00	$75,000.00
3.08	Custom shelter - 4.5 x 4.5m	3	items	$30,000.00	$90,000.00
3.09	Pavilion and toilet	1	items	$550,000.00	$550,000.00
3.10	Picnic table settings	10	items	$5,000.00	$50,000.00
3.11	Bench seats	3	items	$2,500.00	$7,500.00
3.12	Double barbeques	5	items	$12,000.00	$60,000.00
3.13	Dual bin enclosure (waste and recycling)	3	items	$350.00	$1,050.00
3.14	Drink fountains	2	items	$7,000.00	$14,000.00
3.15	Bicycle parking racks	4	items	$1,000.00	$4,000.00
3.16	Signage (Entry, directional and interpretative)	1	allowance	$5,000.00	$5,000.00
3.17	Public Art Allowance (Integrated or stand alone)	1	allowance	$50,000.00	$50,000.00
3.18	Playspace	1	allowance	$900,000.00	$900,000.00
3.19	Jetty/Pontoon and floating pool	1	allowance	$1,200,000.00	$1,200,000.00
3.20	Upgrades to Existing jetty	1	allowance	$200,000.00	$200,000.00
	HARDWORKS - INFRASTRUCTURE TOTAL				**$4,270,200.00**
4.00	**SOFTWORKS**				
4.01	Tubestock planting, 4 per m2	1,985	m2	$12.00	$23,820.00
4.02	Feature planting, 4 per m2	290	m2	$24.00	$6,960.00
4.03	Swale planting, 4 per m2	410	m2	$15.00	$6,150.00
4.04	Trees - 100L	120	each	$450.00	$54,000.00
4.05	Soil Conditioner - 25mm thick	2,685	m2	$6.00	$16,110.00
4.06	Mulch	2,685	m2	$10.00	$26,850.00
4.07	Roll on turf	3,680	m2	$15.00	$55,200.00
	SOFTWORKS TOTAL				**$189,090.00**
5.00	**LIGHTING AND ELECTRICAL**				
5.01	Light posts and associated electrical work (allowance for 1 post per 25m)		item		$88,000.00
5.02	Feature Lighting to built structures		item		$50,000.00
5.02	Conduits, trenching, cabling, cabinets and switchboards, etc		item		$129,400.00
5.03	Power, USB to shelters		item		$20,000.00
	LIGHTING AND ELECTRICAL TOTAL				**$287,400.00**

Sub Total Construction			**$5,159,990.00**
Contingency	30%		**$1,547,997.00**
Sub total Exc GST			**$6,707,987.00**
GST	10%		**$670,798.70**
TOTAL inc GST			**$7,378,785.70**

7.4 BOAT RAMP

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL
1.00	**PRELIMINARY, SITE WORKS & DEMOLITIONS**				
1.01	Mobilisation, demolition, earthworks and fine grading (allowance)	2,000	m2	$10.00	$20,000.00
	PRELIMINARY, SITE WORKS & DEMOLITIONS TOTAL				**$20,000.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	Paving Type 2 - 100mm thick grey concrete	597	m2	$80.00	$47,760.00
	HARDWORKS - SURFACE TREATMENTS TOTAL				**$47,760.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Edging Type 2 - Concrete garden kerb	173	lin.m	$70.00	$12,110.00
3.02	Custom shelter - 4.5 x 4.5m	3	items	$40,000.00	$120,000.00
3.03	Picnic table settings	3	items	$5,000.00	$15,000.00
3.04	Bench seats	2	items	$2,500.00	$5,000.00
3.05	Dual bin enclosure (waste and recycling)	1	items	$350.00	$350.00
3.06	Signage (Entry, directional and interpretative)	1	allowance	$2,000.00	$2,000.00
	HARDWORKS - INFRASTRUCTURE TOTAL				**$154,460.00**
4.00	**SOFTWORKS**				
4.01	Tubestock planting, 4 per m2	615	m2	$15.00	$9,225.00
4.02	Trees - 100L	26	each	$450.00	$11,700.00
4.03	Soil Conditioner - 25mm thick	615	m2	$6.00	$3,690.00
4.04	Mulch	615	m2	$10.00	$6,150.00
4.05	Repair to existing turf areas (10% allowance)	73	m2	$15.00	$1,096.50
	SOFTWORKS TOTAL				**$31,861.50**
5.00	**LIGHTING AND ELECTRICAL**				
5.01	Light posts and associated electrical work (allowance for 1 post per 25m)		item		$72,000.00
5.02	Lighting to built structures		item		$6,000.00
5.03	Conduits, trenching, cabling, cabinets and switchboards, etc		item		$119,900.00
	LIGHTING AND ELECTRICAL TOTAL				**$197,900.00**

Sub Total Construction			**$451,981.50**
Contingency	30%		**$135,594.45**
Sub total Exc GST			**$587,575.95**
GST	10%		**$58,757.60**
TOTAL inc GST			**$646,333.55**

7.5 GRANNIES BEACH

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL
1.00	**PRELIMINARY, SITE WORKS & DEMOLITIONS**				
1.01	Mobilisation, demolition, earthworks and fine grading (allowance)	3,500	m2	$10.00	$35,000.00
	PRELIMINARY, SITE WORKS & DEMOLITIONS TOTAL				**$35,000.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	Paving Type 2 - 100mm thick grey concrete	1574	m2	$80.00	$125,920.00
2.02	Paving Type 3 - 150mm thick trafficable grey concrete	80	m2	$120.00	$9,600.00
2.03	Paving Type 5 - 300mm depth washed white sand (playspace)	87	m2	$30.00	$2,610.00
2.03	Paving Type 1 - Bitumen carpark on compacted subgrade	1970	m2	$50.00	$98,500.00
	HARDWORKS - SURFACE TREATMENTS TOTAL				**$236,630.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Edging Type 2 - Concrete garden kerb	280	lin.m	$70.00	$19,600.00
3.02	Custom shelter - 4.5 x 4.5m	3	items	$40,000.00	$120,000.00
3.03	Picnic table settings	3	items	$5,000.00	$15,000.00
3.04	Bench seats	2	items	$2,500.00	$5,000.00
3.05	Double barbeques	1	items	$10,000.00	$10,000.00
3.06	Dual bin enclosure (waste and recycling)	1	items	$350.00	$350.00
3.07	Drink fountains	1	items	$7,000.00	$7,000.00
3.08	Bicycle parking racks	2	items	$1,000.00	$2,000.00
3.09	Signage (Entry, directional and interpretative)	1	allowance	$5,000.00	$5,000.00
3.10	Public Artwork	1	allowance	$50,000.00	$50,000.00
3.11	Playspace	1	allowance	$200,000.00	$200,000.00
3.12	Viewing platform with seating	1	allowance	$80,000.00	$80,000.00
	HARDWORKS - INFRASTRUCTURE TOTAL				**$513,950.00**
4.00	**SOFTWORKS**				
4.01	Tubestock planting, 4 per m2	2,828	m2	$12.00	$33,936.00
4.02	Swale/Feature planting (140L), 4 per m2	58	each	$24.00	$1,392.00
4.03	Trees - 100L	85	each	$450.00	$38,250.00
4.04	Soil Conditioner - 25mm thick	2,886	m2	$6.00	$17,316.00
4.05	Mulch	2,886	m2	$10.00	$28,860.00
4.06	Repair to existing turf areas (10% allowance)	127	m2	$15.00	$1,905.00
	SOFTWORKS TOTAL				**$121,659.00**
5.00	**LIGHTING AND ELECTRICAL**				
5.01	Light posts and associated electrical work (allowance for 1 post per 25m)		item		$128,000.00
5.02	Conduits, trenching, cabling, cabinets and switchboards, etc		item		$116,750.00
	LIGHTING AND ELECTRICAL TOTAL				**$244,750.00**
	Sub Total Construction				**$1,151,989.00**
	Contingency		30%		**$345,596.70**
	Sub total Exc GST				**$1,497,585.70**
	GST		10%		**$149,758.57**
	TOTAL inc GST				**$1,647,344.27**

7.6 FORESHORE SUMMARY

ITEM	DESCRIPTION	TOTAL
1.00	**GRANNIES BEACH**	
1.01	Preliminary, site works and demolitions	$54,000.00
1.02	Hardworks - Surface Treatments	$88,140.00
1.03	Hardworks - Infrastructure (includes sea wall)	$867,340.00
1.04	Softworks	$87,809.00
1.05	Lighting and Electrical	$104,300.00
	GRANNIES BEACH TOTAL	**$1,201,589.00**
2.00	**FORESHORE PARK PRECINCT**	
2.01	Preliminary, site works and demolitions	$120,000.00
2.02	Hardworks - Surface Treatments	$79,440.00
2.03	Hardworks - Infrastructure	$441,640.00
2.04	Softworks	$164,943.00
2.05	Lighting and Electrical	$242,900.00
	FORESHORE PARK PRECINCT TOTAL	**$1,048,923.00**
3.00	**FORESHORE CORE PRECINCT**	
3.01	Preliminary, site works and demolitions	$130,800.00
3.02	Hardworks - Surface Treatments	$282,500.00
3.03	Hardworks - Infrastructure (includes sea wall)	$4,270,200.00
3.04	Softworks	$189,090.00
3.05	Lighting and Electrical	$287,400.00
	FORESHORE CORE PRECINCT TOTAL	**$5,159,990.00**
4.00	**BOAT RAMP PRECINCT**	
4.01	Preliminary, site works and demolitions	$20,000.00
4.02	Hardworks - Surface Treatments	$47,760.00
4.03	Hardworks - Infrastructure	$154,460.00
4.04	Softworks	$31,861.50
4.05	Lighting and Electrical	$197,900.00
	BOAT RAMP PRECINCT TOTAL	**$451,981.50**
5.00	**OBELISK PRECINCT**	
5.01	Preliminary, site works and demolitions	$35,000.00
5.02	Hardworks - Surface Treatments	$236,630.00
5.03	Hardworks - Infrastructure	$513,950.00
5.04	Softworks	$121,659.00
5.05	Lighting and Electrical	$244,750.00
	OBELISK PRECINCT TOTAL	**$1,151,989.00**
	Sub Total Construction	**$9,014,472.50**
	Contingency 30%	**$2,704,341.75**
	Sub total Exc GST	**$11,718,814.25**
	GST 10%	**$1,171,881.43**
	TOTAL inc GST	**$12,890,695.68**

8.0 REFERENCES

Cover Page Port Denison Foreshore

Photo: Jen Lorrimar-Shanks / Josh Byrne & Associates

Page 4, Figure 1 Port Denison Foreshore

Photo: Ian Pexton / Josh Byrne & Associates

Pages 6, Figure 2 Obelisk and Fishermans memorial

Photo: Jen Lorrimar-Shanks/Josh Byrne & Associates

Page 9, Figure 3 Esperance waterfront

Photo: Peter Bennetts

Source: *www.landezine.com/index.php/2017/03/esperance-waterfront/*

Page 9, Figure 4 Iidabashi Plano

Photo: Tadamasa Iguchi

Source: *www.landezine.com/index.php/2011/12/iidabashi-plano-by-earthscape/*

Page 15, Figure 5 The Edge Park

Photo: Alison Cartwright

Source: *www.landezine.com/index.php/2011/11/the-edge-park-landscape-architecture/*

Page 14, Figure 6 Docklands Park- Stage 1

Photo: Suzie Blake

Source: *www.landezine.com/index.php/2016/08/docklands-city-park-melbourne-stage-1-by-mala-studio/*

Page 16, Figure 7 CentrePort Redevelopment Master Plan

Photo: Wraight + Associates

Source: *blog.waal.co.nz/wsud/*

Page 17, Figure 8 Southport Broadwater Parklands

Photo: Ross Pottinger

Source: *www.landezine.com/index.php/2013/04/southport-broadwater-parklands-by-aecom-design-and-planning/*

Page 26, Figure 17 Elwood Foreshore

Photo: Andrew Lloyd

Source: *www.landezine.com/index.php/2011/04/elwood-foreshore-by-aspect-studios/*

Page 26, Figure 18 Esperance waterfront

Photo: Peter Bennetts

Source: *www.landezine.com/index.php/2017/03/esperance-waterfront/*

Page 26, Figure 19 Evans Boat Harbour

Photo: Simon Wood

Source: *www.landezine.com/index.php/2011/09/tweeds-landscape-architecture/*

Page 27, Figure 20, 21 Esperance waterfront

Photo: Peter Bennetts

Source: *www.landezine.com/index.php/2017/03/esperance-waterfront/*

Page 27, Figure 22 Jubilee Gardens

Photographer: West 8

Source: *www.landezine.com/index.php/2015/02/jubilee-gardens-by-west-8/*

Page 27, Figure 23 Koombana Beach

Photo: Vincent Chan Kun Wa

Page 28, Figure 24 AVIC Park

Photo: YIYU design

Source: *www.landezine.com/index.php/2017/04/avic-park-hongdu-nanchang-by-yiyu-design/*

Page 28, Figure 25 Yallingup Foreshore Playspace

Photo: Morgan Gillham / Josh Byrne & Associates

Page 28, Figure 26 Ian Potter Children's WILD PLAY

Photo: Brett Boardman

Source: *www.landezine.com/index.php/2017/12/ian-potter-childrens-wild-play-by-aspect-studios/*

Page 28, Figure 27 Vistula Boulevards

Photo: RSAK

Source: *www.landezine.com/index.php/2018/02/vistula-boulevards-by-rs-architektura-krajobrazu/*

Page 28, Figure 28 Henley Square

Photo: Sam Noonan

Source: *www.landezine.com/index.php/2018/01/henley-square-by-tcl-troppo-architects/*

Page 29, Figure 29 On the Way to The Sea

Photo: Derman Verbakel

Source: *www.landezine.com/index.php/2013/01/on-the-way-to-the-sea-by-derman-verbakel-architecture/*

Page 29, Figure 30 Elwood Foreshore

Photo: Andrew Lloyd

Source: *www.landezine.com/index.php/2011/04/elwood-foreshore-by-aspect-studios/*

Page 29, Figure 31 Henley Square

Photo: Sam Noonan

Source: *www.landezine.com/index.php/2018/01/henley-square-by-tcl-troppo-architects/*

Page 29, Figure 32 Perth Stadium

Photo: Ian Pexton / Josh Byrne & Associates

Page 29, Figure 33 Elwood Foreshore

Photo: Andrew Lloyd

Source: *www.landezine.com/index.php/2011/04/elwood-foreshore-by-aspect-studios/*

Page 30, Figure 34 Elwood Foreshore

Photo: Andrew Lloyd

Source: *www.landezine.com/index.php/2011/04/elwood-foreshore-by-aspect-studios/*

Page 30, Figure 35 Bicycle racks and bin enclosures

Photo: Furphy Foundry

Source: *www.furphyfoundry.com.au/the-projects/item/bicycle-parking-spiral-bike-racks*

Page 30, Figure 36 The Edge Park

Photo: Alison Cartwright

Source: *www.landezine.com/index.php/2011/11/the-edge-park-landscape-architecture/*

Page 31, Figure 37 Elwood Foreshore

Photo: Andrew Lloyd

Source: *www.landezine.com/index.php/2011/04/elwood-foreshore-by-aspect-studios/*

Page 31, Figure 38 Stevenage Town Centre Gardens

Photo: HTA Landscape

Source: *www.landezine.com/index.php/2013/06/stevenage-town-centre-gardens-by-hta-landscape/*

Page 31, Figure 39 'Little Treasures' at Hamilton Northshore Parkland

Photo: Roger D'Souza,

Source: *www.uapcompany.com/studio/fionafoley*

Page 31, Figure 40 Esperance waterfront

Photo: Peter Bennetts

Source: *www.landezine.com/index.php/2017/03/esperance-waterfront/*

Page 31, Figure 41 Footscray Park Memorial Garden

Photographer: Andrew Lloyd

Source: *www.landezine.com/index.php/2013/01/footscray-park-memorial-garden-by-fitzgerald-frisby-landscape-architecture/*

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JOSH BYRNE & ASSOCIATES

SHIRE OF IRWIN
DONGARA PORT DENISON
A BRILLIANT BLEND

IRWIN RIVER WALKING TRAIL AMENITY UPGRADES MASTERPLAN

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Date of issue	Rev No.	Reason for Issue	Author	Reviewed By	Approved by
19/08/2021	-	Review	JLS	PV, JB	PV
07/09/2021	A	Review	JLS	PV	PV

This document may only be used for the purpose for which it was commissioned in accordance with the Terms of Engagement.

01 INTRODUCTION

The Irwin River Walking Trail Amenity Upgrades will enhance community wellbeing and highlight the unique qualities of Dongara/Port Denison. The Irwin River is an important natural asset for the twin towns.

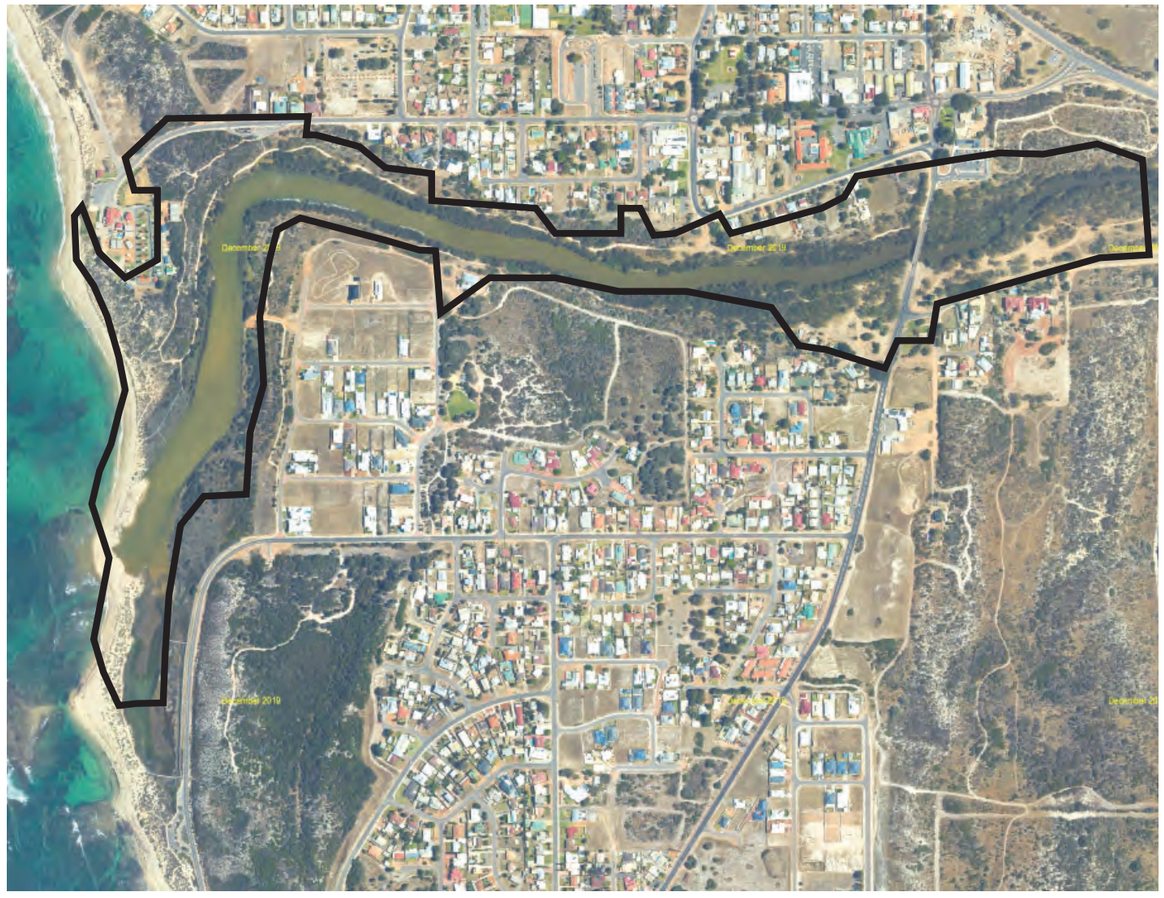
This document summarises JBA's masterplan design for the Irwin River Walking Trail Amenity Upgrades project. The masterplan is a strategic document that sets out principles for development and a vision for the amenity upgrades. Focus areas can then be selected for development by the Shire based on priority and funding. The masterplan covers the existing Irwin River Walking Trails from the traffic bridge to the lagoon and includes proposed new trails to the east of the traffic bridge. The Irwin River flows from east to its termination at the west coast. It divides the twin towns of Dongara and Port Denison.

The masterplan is informed by an opportunities and constraints analysis, site visits, community consultation, and key stakeholder engagement. These methods were used collectively to develop a strategy that responds to the unique character of Dongara/Port Denison and the needs of it's community. The key aim of the Dongara/Port Denison River Trails project is to enhance the existing Irwin River Walking Trails to better meet the needs of the community and attract visitors. Key objectives drawn from the brief include:

- To contribute to Dongara's 'sense of place'
- Improve access to trails and links to key points of interest
- Increase connection between river and town
- Improve recreation opportunities and connection to nature for all user groups
- Become regionally significant
- Engage with community during development
- Enhance the natural environment (including native revegetation and weed management)
- Incorporate bushfire management into the vegetation strategy
- Improve the condition of existing cultural heritage and its interpretation
- Opportunities for gathering and events
- Activation to increase safety and interest
- Preserve the 'natural', low-key character

The masterplan document provides a summary of key background documents and community feedback. Site analysis covers landscape, environment, culture/heritage, movement/ activation, and community. A series of masterplan principles have been developed from the background review, community feedback and site analysis. These principles create a framework for the masterplan.

The masterplan has been divided into a number of precincts of different characters, Central, East, Old Port Road, Lagoon and Lookout and Dunes. The trails move through level foreshore areas close to town, wetland boardwalks, and steep dune paths. The design strategies aim to reflect and enhance existing characteristics and connections of the different precincts. The report outlines an overall approach to planting, weed management, materials, drainage and trail surface, and fire management.



Aerial and Project Area NTS

02 BACKGROUND

Relevant background information included here are summaries of key policy documents relating to the study area, previous studies of the project site, and the public consultation undertaken for the schematic masterplan.

DESKTOP REVIEW OF KEY DOCUMENTS

The desktop review included the review of a number of key documents. These include:

- Shire of Irwin Strategic Community Plan 2017-2027
- Mid West Tourism Development Strategy 2014
- Shire of Irwin Tourism Development Plan 2013-2018
- Irwin Estuary Weed Management Plan (NACC, 2013)
- Irwin River Estuary Management Plan (Land Insights 2014)
- Green Infrastructure Strategy 2015-2020
- Access and Inclusion Plan 2012-2017

Key objectives from these reports have been incorporated into the masterplan. Relevant points have been summarised below:

- Need to support the aging population including accessibility
- Improving the natural environment including weed management, coastal protection and erosion, habitat preservation
- Recognise places of cultural heritage value
- Become RV friendly town (growing market), which has potential to increase visitation
- Marketing of distinctive, 'iconic' activities
- Increase Aboriginal/cultural tourism experiences
- Improve wayfinding, signage, smart devices, google maps, visitor amenities
- Increase nature-based activities/adventure, mountain biking, kayaking, riding, walking trails, fishing.
- More activities for children
- Develop river tourism kayak hire, tours etc)
- Need to reduce targeted weed species and revegetate
- Improve habitat by controlling access, minimising disturbance
- Control stormwater run-off
- The River is vulnerable to flooding, minimise infrastructure investment in low lying areas
- Develop sensitively designed carparks, facilities
- Upgrade recreational nodes including Church St lookout, Waldeck St carpark, Bridge picnic area, Denison House
- Highlight heritage and promote community involvement
- Improve image, sense of place
- Engage community and provide volunteering opportunities

PUBLIC CONSULTATION

Community consultation was undertaken by JBA at the Shire's consultation event on 4 March 2021 to gather responses to JBA's Schematic Plan for the River Trails. Feedback has been incorporated into the masterplan. Key points include:

- Don't want big changes to the trails themselves and maintain the natural character
- The existing kayak launch is used and there is support for locations indicated (Waldeck Street and Denison House and site of existing)
- Pedestrian bridge proposal supported but concern over location. Preference for Waldeck Street location.
- Trails are well used used for walking/cycling
- Weed reduction and path maintenance are priorities. Some respondents voiced an interest in volunteering to remove weeds
- Need more seating and bins
- Support for universal access at lookout, cemetery, pedestrian bridge, Waldeck street, south of bridge, Denison House, Ocean Drive, boardwalk
- Support for picnic lawns and BBQ's at area to south of bridge, Waldeck Street, Denison House
- Support for conservation area/limited access to area around Bee nests on south side of River (historic quarry), Dune areas, and to the east of the caravan park
- Nature play in picnic area south of bridge and Waldeck Street



03 ANALYSIS



River in 1985 from Church Street Image: IDHS



River Trail 2020 Img: JBA



Dunes 2020 Img: JBA

LANDSCAPE

Vegetation

The estuary was used as grazing area by the townspeople after European settlement. Native revegetation was undertaken in the estuary in the early 1970s and in the mid 2010's. NACC has mapped the vegetation and weed coverage extensively. The southern part of the site is in excellent condition, but central areas are degraded and weed species proliferate.

Geology and Soils

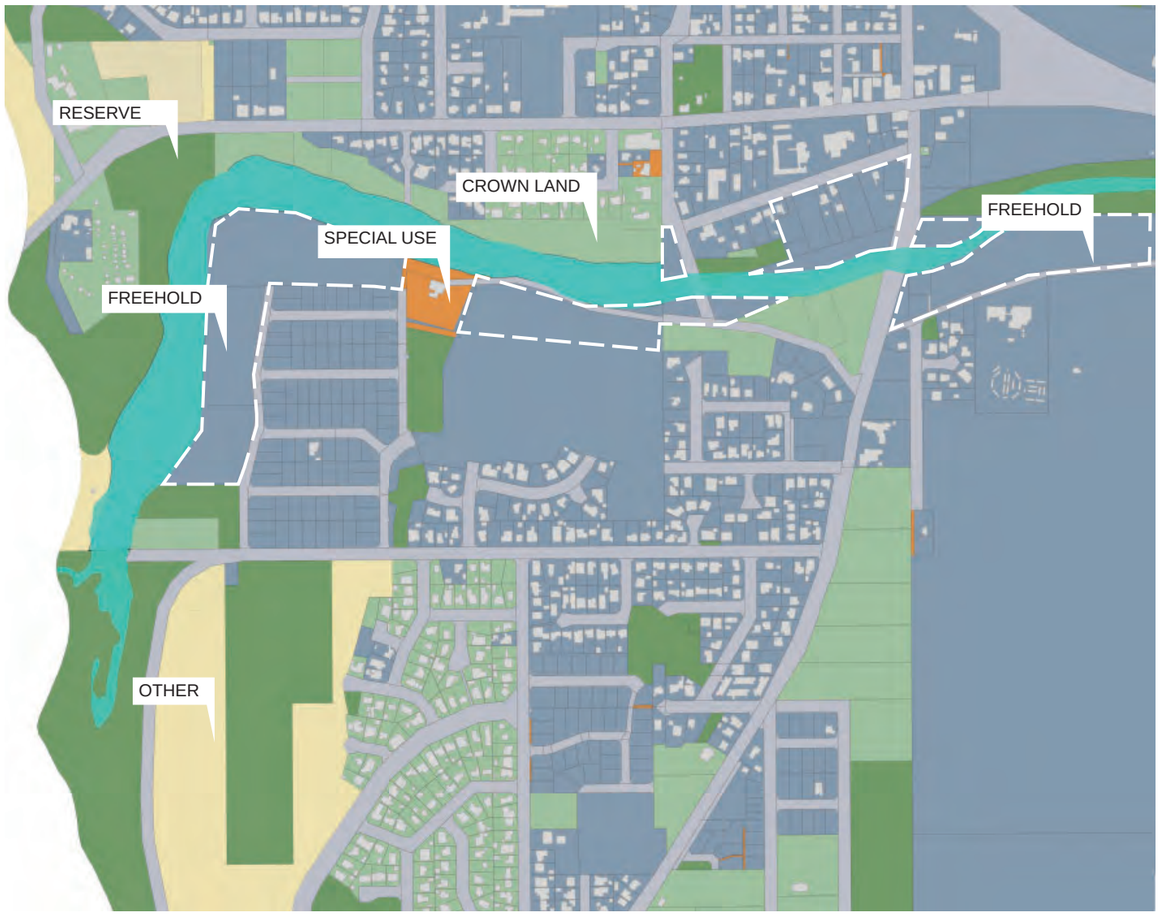
The site is at a junction of different soil systems including Quindalup Central (to south and north west coastal) is a coastal dune system; Tamala South System (to north) is low hills and limestone outcrops; Greenough Alluvium System (round River and to north) is alluvial plains on flood plains of red sandy, loamy earth, and clay. Sandy soils create fertility and water retention issues and the alluvial are prone to waterlogging. There are Acid Sulfate Soil risk areas in the low lying river valley.

Topography and Landscape Features

The landscape qualities come from the river character - riparian vegetation, river valley topography and adjacent limestone cliffs. The highest ground is at the Church Street lookout, and the land falls away to the east and the river valley. The levels climb out of the river valley to the south, and one of the highest points on the southern trail is at Denison House. The undulating topography creates opportunities for long distance vistas, and wide view scapes. The River runs east-west until the Church Street lookout where it turns sharply south to a wetland area at the rivermouth with a sandbar that separates the River from the ocean in summer. There is limited connection to the River from Dongara town centre.

Land Use

Areas within the study area are largely designated Reserve or Crown Land. The lot containing Denison House is zoned special use (permitted uses include Local Authority and Community Use). Problematic areas are indicated on the diagram right (white dashed boundaries) where the river trails are within Freehold land that extends to the waterline. This will limit potential to expand trails to the east and retain control over trails to the southern shore. This study supports recommendations in the 2014 Irwin River Estuary Management Plan to retain management of reserves in the project area. The central areas are mixed use urban, areas to the south and north are residential, and the eastern areas are reserve or caravan park.



Tenure Mapping Scale 1:10000

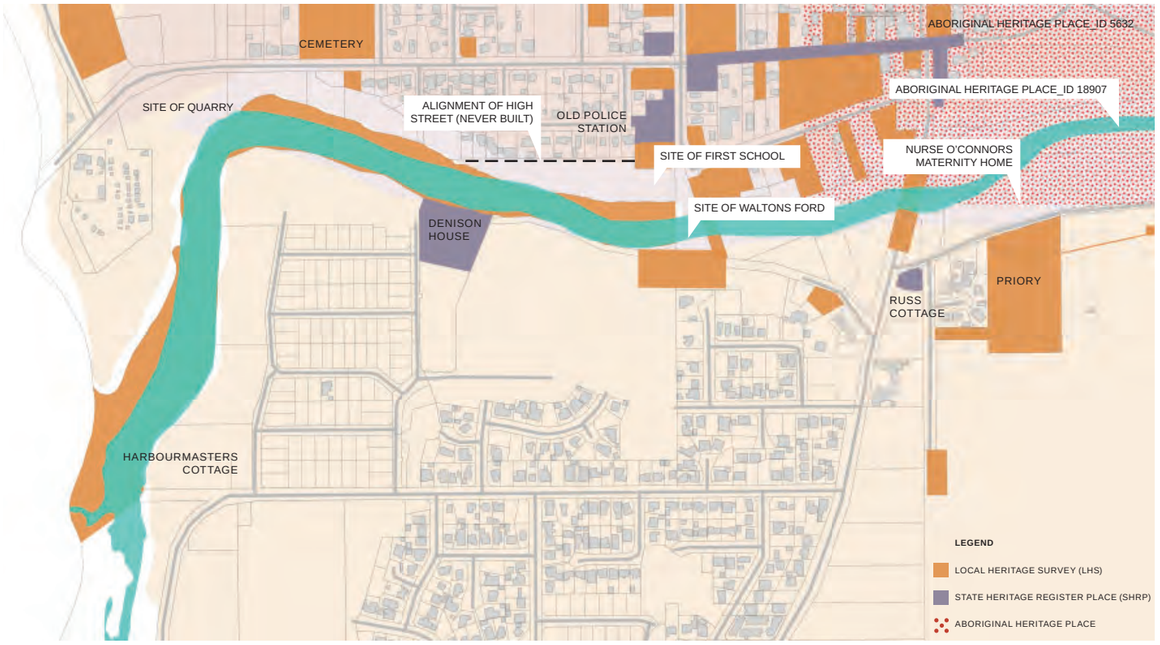
ANALYSIS



Road adjacent to River at ridge Img; JBA



River below Denison House (1986) Image: IDHS



Heritage Mapping Scale 1:1000

ENVIRONMENT

Water

The river trails are within a flood risk area. There have been a number of major floods that destroyed heritage properties along the estuary. The areas adjacent to the bridge are particularly vulnerable to inundation. Development should anticipate flood events and minimise infrastructure within these areas. The river has changed considerably. The 1986 photo shows a narrower River column and the lagoon was often dry in the summer. The widening of the River is eroding and undermining tree roots in especially south of the bridge. The water catchment includes private gardens and road run-off that flows unfiltered to the river, which can impact water quality (cyanobacterial bloom observed). The path is eroded due to overland drainage flow including (lookout and east of Waldeck St).

Climate

Dongara/Port Denison's climate is characterised by hot, dry summers, cool winters, low rainfall, and strong southerly wind. There is vegetative cover to the northern shore at the trail level, and to the southern shore between the bridge and Denison House. The south western trails, dune areas, and lagoon are more exposed and hot in summer. There are gaps in the street trees in roads that connect to trail heads. Heat and discomfort would discourage trail use in summer.

Bushfire

The entire project area is within a bushfire risk area. Proliferation of weed species increases fire risk as does unbroken dense vegetation.

Infrastructure

Water Corporation and Western power assets are not located along the river trails, but on Retreat Blvd and Clarkson St/Port Leander Drive and the termination of Waldeck Street, and Church Street. Connection to water for drinking fountains/WC's and connection for electricity for lighting is easiest in these locations. There are no public toilets in close proximity to trails. The condition of the existing boardwalks is poor, and some areas of existing trails are badly worn, creating an uneven surface and making access difficult for those less able bodied.

HERITAGE/CULTURE

Identity/Character

The Irwin River Trails showcase Dongara's natural, historical, and cultural features, but interpretive signage is currently lacking.

Indigenous Heritage

The Irwin River is of mythological significance to the Wattandee tribe. The freshwater and saltwater snake travelled through the estuary of Irwin Eerinoo/Wandha River. The Wattandee tribe are Ow'Wa Thardoo (Salt water) and Ow'Wa Go'aloo (Fresh water) people. There is limited signage and interpretation of indigenous history and culture. The Shire's recent engagement with the Wattandee community will enable the incorporation of Wattandee history.

Heritage Properties

The site history include connection to Lieutenant George Grey's naming of the "Irwin River", Convict labour, pastoral land development, and an active port. Heritage buildings on the Local Heritage Survey (LHS) or the State Heritage Register Place (SHRP) front the river trails or are in close proximity. These include Irwin District Museum (SHRP) built in 1870 and formerly the police station, the site of the first school c.1870-1902, the site of Walton's Ford. On the southern shore is Denison House c.1890s (SHRP) and the Old Mill (1862). The mill was sold to Dr Bartlett in 1897 who used the stone from the mill to build a residence. His wife built the terraced gardens. The property was purchased by the Benedictine Community in 1944. The quarry east of Denison House was used in the 1860s to provide stone to buildings in the town.

The Waldeck Street riverside is the site of the first school and Waltons Ford (stone river crossing) and are likely to have archeological potential. The southern trail follows the Old Port Road to the Mill, Quarry, Harbourmasters and old port. To the east are Russ Cottage c.1869 (SHRP) and the Priory (1881). The Priory was built as the Dongara Hotel in 1881, but purchased by Dominican Sisters in 1902. These sites offer cultural experiences for trail users, however, there is limited signage and interpretation of historic buildings from the trails. The Irwin District Museum has an existing historic trail, and a wealth of information that could be disseminated.

ANALYSIS



Arrival to trail head south of bridge



Waldeck Street Parking Area



Access north of bridge



Trail below Church St lookout - Trails are well used



Southern shore boardwalk through She-oaks

MOVEMENT/ACTIVATION

Connections

There is limited opportunity for visual connection to the trails given the topography. There is a lack of signage to direct to River Trails, despite the proximity to existing attractions on Dongara main street. There is a lack of visibility of trail heads, and limited ‘sense of arrival’ (see above).

Access

Access for bikes, kayaks, pushchairs and elderly was identified as a key concern by the community. Achieving universal access to all trail areas will be challenging given the undulating topography. River access to non-motorised craft is currently limited/informal.

Activation

The existing trails are regularly used during the day by locals. Lack of amenities was a key concern of the community. It limits potential for events, picnics, community use and reduces trail user comfort. There is currently no lighting and very few properties front onto the trails. Denison House is the only public community use building on the trails but is underutilised.

Parking/Transport

Informal parking at the end of Waldeck Street and south of Bridge are well used. There is no formal parking or road signage indicating trail heads or parking areas. RV and caravan parking is lacking which creates parking issues in residential streets or visitors to bypass Dongara.

COMMUNITY

Recreation

The trails are currently used for walking, fishing and bird watching. They are well used by locals, but access has been raised as an issue and lack of amenities. Recreation for visitors is limited by lack of knowledge of trails and lack of signage.

Nature Connection

The trails move through a number of different habitat types and the area is known for its wildflowers and birdlife. Nature connection needs to be balanced with controlling access to some areas to reduce disturbance to flora and fauna. It is a popular dog-walking trail, and dogs can harm native fauna. The community appreciate the natural state of the river trails, so this natural feel needs to be predominantly retained but with improved amenities and access (2014 Irwin River Estuary Management Plan Survey).

Safety

There is little passive surveillance of the trails as very few properties front onto the river trails. This has an impact on safety and activation.

Collaboration

The community consultation session suggested the community are interested in the improvements to the trail, and a number suggested they would be happy to volunteer for the ongoing maintenance, weed management, etc of the Trails.

04 DESIGN PRINCIPLES



ENHANCE LANDSCAPE QUALITIES

- Clear weeds, revegetate with local native species to enhance ecology, views and bushfire management
- Ethnobotanic interpretative signage
- Celebrate landscape values by enhancing key long distance vistas to the river, and views to the river from the trail
- Create continuous River Reserve
- Restrict access to some areas to enhance habitat
- New paths in disturbed areas only
- Create a co-ordinated and consistent signage strategy for directional, interpretive, information signs and locate sensitively
- Collaboration to maximise impact (NACC, MEEDAC)
- Consider value of weed species in relation to cultural heritage



RESPONSIVE DESIGN

- Enhance trail user comfort with amenities and shade where needed to mitigate heat
- Mitigate flood risk to low lying areas especially to south of bridge
- Filter road run-off using stormwater capture and treatment prior to entering the River
- Adopt stabilisation and embankment control where necessary
- Manage surface water drainage
- Mitigate bushfire risk through weed clearance, fire breaks
- Create sustainable, robust infrastructure



CELEBRATE HERITAGE/CULTURE

- Reinforce Dongara/Port Denison's distinctive sense of place by enhancing physical and visual connections to existing natural, cultural and built features
- Enhance signage, interpretation and public art opportunities
- Engage with Indigenous knowledge holders and strengthen Indigenous cultural interpretation
- Enhance heritage properties
- Focus amenities and interpretation in areas with strong links to existing heritage features
- Reconsider uses for underutilised historic buildings
- Explore and uncover archaeology of lost heritage features ('old school', harbourmasters cottage) to create additional historic destinations



CONNECTED AND ACTIVATED

- Enhance connections from existing features through new pedestrian crossings, signage/interpretation, shade, seating, nature play, wayfinding app, trail head visibility
- Create universal access at key access points
- Create continuous active streetscapes, lighting, and change of building use between existing visitor attractions and the river trails
- Provide well signed car and bike parking at trail heads
- Continue to consider potential for Pedestrian bridge to link towns across River
- Enhance the destinations along the River
- Create more adventure-based recreation activities to broaden user groups
- Activate public use buildings at night with events and co-location



DESIGNED WITH THE COMMUNITY

- Trails that cater for multiple user types - walking, cycling, prams
- Appropriate entry points
- Keep 'natural feel' to most of the trails
- Incorporate amenities requested by the community (kayak launch, water fountains, parking, BBQ's, playground, toilets)
- Enhance connection to river and trails through pedestrian links, vistas, thematic connections
- Collaborate with community groups/ create a taskforce to improve trails
- Collaborate with the community to develop a site-wide strategy for naming trails, amenity areas and reserves in a coordinated manner
- Consider lighting, sightlines, night-time activation to enhance community safety. (Lighting for amenity must be balanced with impact on ecology and light pollution)

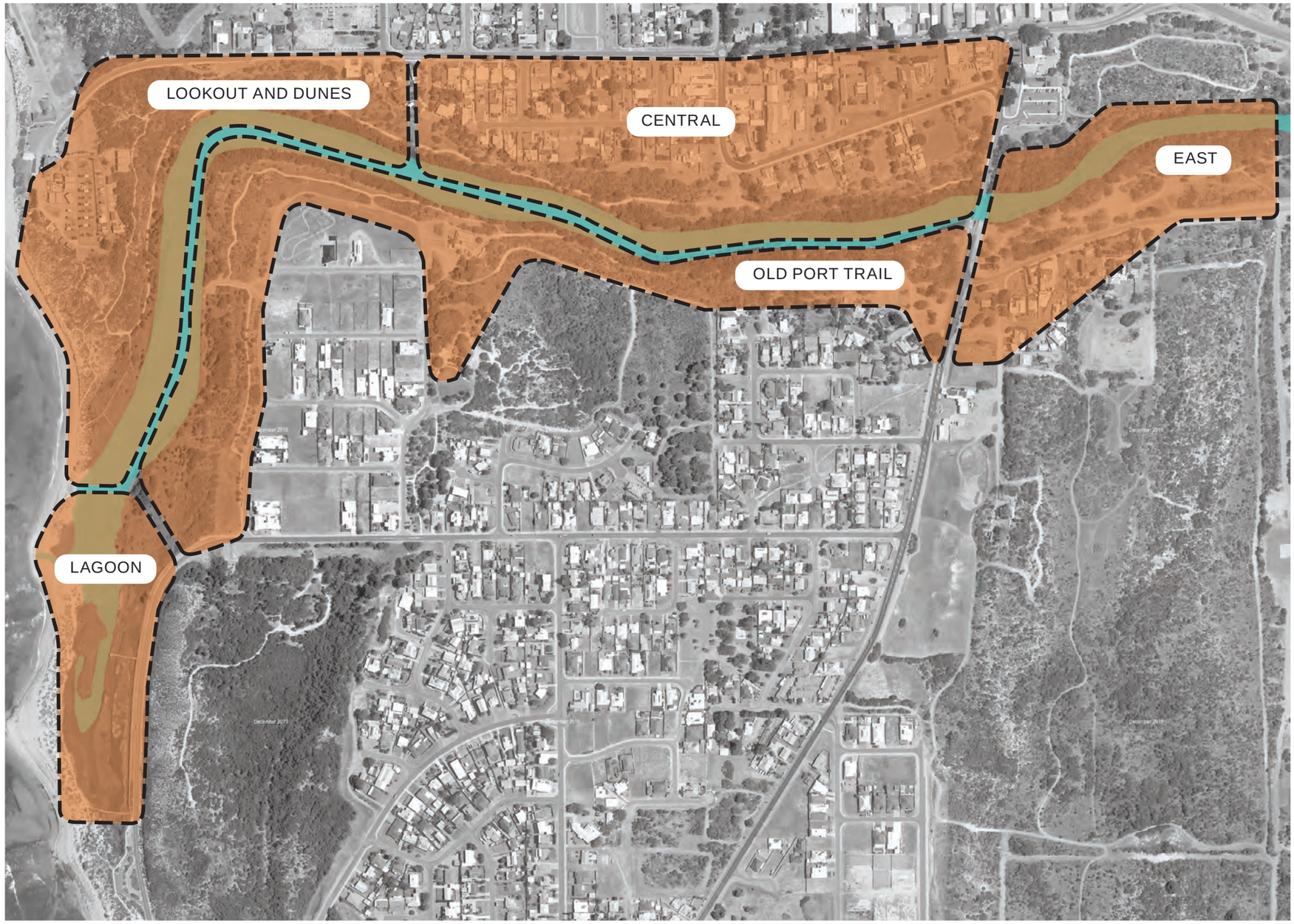
05 MASTERPLAN

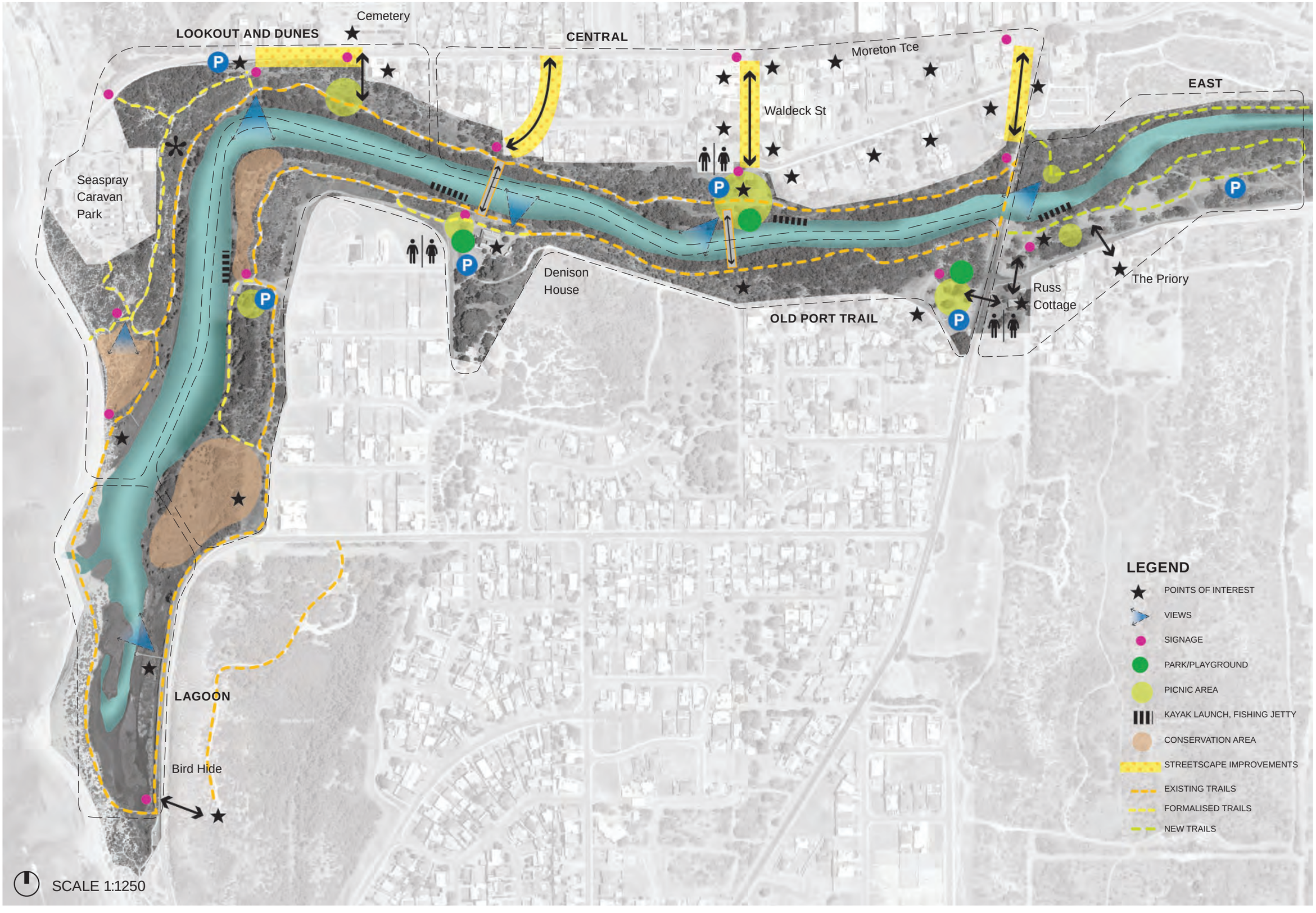
The masterplan has been developed in response to desktop review, site analysis, public and stakeholder consultation. The masterplan has been divided into a number of precincts of different characters:

- Central: Town Centre location with civic and historic elements. Key trail head entrance at Waldeck Street
- East: Disturbed areas of lower conservation value that could be developed into adventure zone with ample areas for parking and high visibility
- Old Port Trail: The route of the ‘old port’ road includes key historic elements in a natural setting. Key trail head entrances with high visibility at the bridge.
- Lagoon: Natural wetland area of high conservation value
- Lookout and Dunes: Natural coastal walk with sweeping views and destination lookout

Design strategies have then been identified for each of the precincts. The design strategies aim to reflect and enhance the different characteristics of the precincts and respond to the opportunities and constraints identified in the analysis.

The naming of the precincts themselves and spaces within the precincts could become a community engagement exercise and potential to incoporate Wattandee cultural references.




LOOKOUT AND DUNES
Cemetery
CENTRAL
Moreton Tce
Waldeck St
EAST
Seaspray
Caravan
Park
Denison
House
OLD PORT TRAIL
Russ
Cottage
The Priory
LAGOON
Bird Hide
SCALE 1:1250
LEGEND
POINTS OF INTEREST
VIEWS
SIGNAGE
PARK/PLAYGROUND
PICNIC AREA
KAYAK LAUNCH, FISHING JETTY
CONSERVATION AREA
STREETSCAPE IMPROVEMENTS
EXISTING TRAILS
FORMALISED TRAILS
NEW TRAILS

06 CENTRAL (CIVIC)



Site Photo looking up to Hunt Rd



Site Photo looking from Hunt Road to River

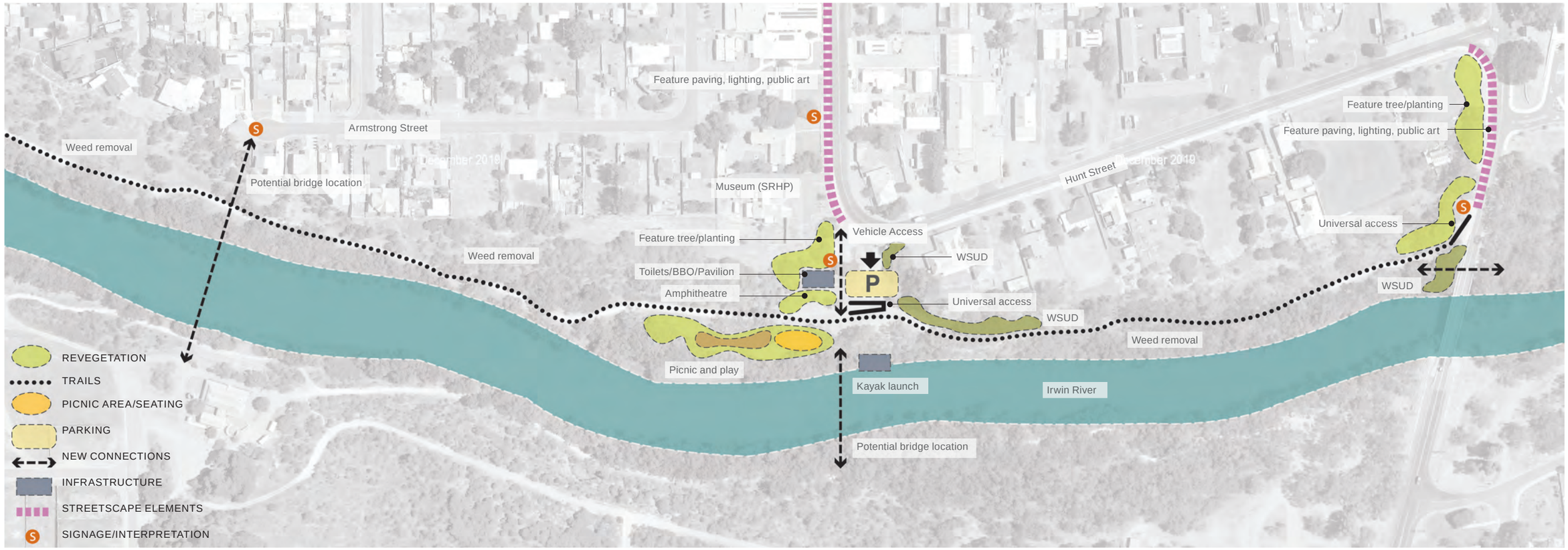
The Central Zone is one of the key access points to the River and is the main interface between Town and River. It has strong connections with heritage buildings on Waldeck Street and potential archeology of the Old School. It is near the Museum and Visitors Centre and the civic character of the area anticipates a higher degree of intervention/amenity. Key considerations include:

- Limited visual cues to River from Town Centre
- Limited sense of arrival at Waldeck Street trail head
- Little or no trail amenities
- Access does not meet universal access requirements
- Proximity to town is undermined by weak connectivity of footpaths, signage, activation

The design aims to develop the potential of the River as a civic space with gathering areas and amenities. Design strategies include:

- Use signage, interpretation, planting, new pedestrian crossings, and wayfinding apps to draw people down Waldeck Street to the River Trails.
- Use planting, signage, and amenities to create a visible trail head and public open space linked to civic functions on Waldeck Street. An architecturally significant shade structure and jetty would become visual cues to the river and civic space
- Place new amenities and infrastructure (toilets, BBQ's, shade structure) on higher ground to reduce flood risk. There are also services in close proximity.
- Topography could be used to create a terraced amphitheatre for events
- Provide well-signed car and bike parking at Waldeck Street trail head
- Create a low-key nature play area
- Consider how Wattandee names or significant animals could be used in the nature play area. These could include the water snake, willy wagtail, the mopoke/curlew
- Explore potential for a jetty structure for fishing and kayak launch with shade and seating
- Consider a pedestrian crossing to allow safe movement across Point Leander Drive or enable access under the bridge.
- Further explore potential for pedestrian bridge at suggested locations to increase pedestrian/cyclist connection between the twin towns and create new landmark. Further feasibility studies are required and more detailed public consultation following negative feedback about Armstrong St site.
- Use signage, planting, public art to increase visibility of Point Leander Drive access point. Riparian vegetation can be visual cues to the River
- Maintain Waldeck street trail head as Bushfire clearing
- Manage surface water drainage in areas where the trail is being eroded, and filter road run-off before it enters the River using WSUD.
- Explore potential for new landscape features that interprets the Old School site (see precedents opposite). Recommend archaeological assessment of Old School
- Incorporate interpretive signage of the Old School, Waltons Ford (the first river crossing), and Denison House (on opposite bank)
- Provide universal access and continuous sealed footpath at Waldeck Street trail head
- Create continuous active streetscapes, lighting, planting, feature paving between Moreton Terrace and the River Trails
- Consider change of use/tenure of buildings adjacent to river trails to promote activation
- Enhance views by weed removal and selective vegetation removal (non significant planting including of *Acacia*) to open up view corridor from Waldeck Street
- Consider lighting to public open space to improve activation and safety in an area that would have the least ecological impact of light pollution. Consider feature lighting of mature trees and shade structures

CENTRAL MASTERPLAN



PRECEDENTS



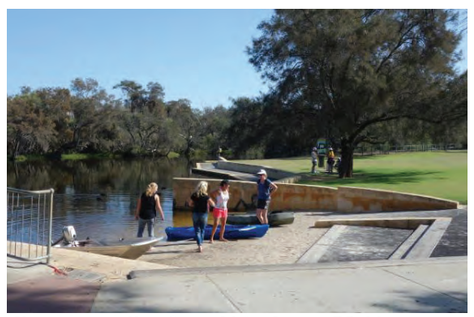
Old church foundations - AER - Image: Ivan Avdeenko



Ballast Point - Historical Interpretation Img: Christian Borchert



Dunbar Battery Rankin Fraser Image and Project



Kayak launch Kent Street Weir - Image: DPaW

07 EASTERN ZONE (ADVENTURE)



Russ Cottage



The Priory Image: Wikimedia

This eastern most extent of the River Trails is generally disturbed with weed inundation to the northern bank and heavily cleared and previously developed to the southern bank. The eastern zone is not currently included in the Irwin River Trails, and much of the area is currently freehold and would need to be transferred to reserve. Key considerations include:

- Weed infestation to north bank and limited visibility of River
- Southbank overrun by vehicle tracks
- Vegetation degraded
- Prone to flooding especially south bank
- High visibility of potential new trail at southern shore
- Increasing mountain biking market

It consists of two distinct ares:

NORTH SHORE

The aim is to enhance connection between town and river through a river trail and riverside platform. Key strategies include:

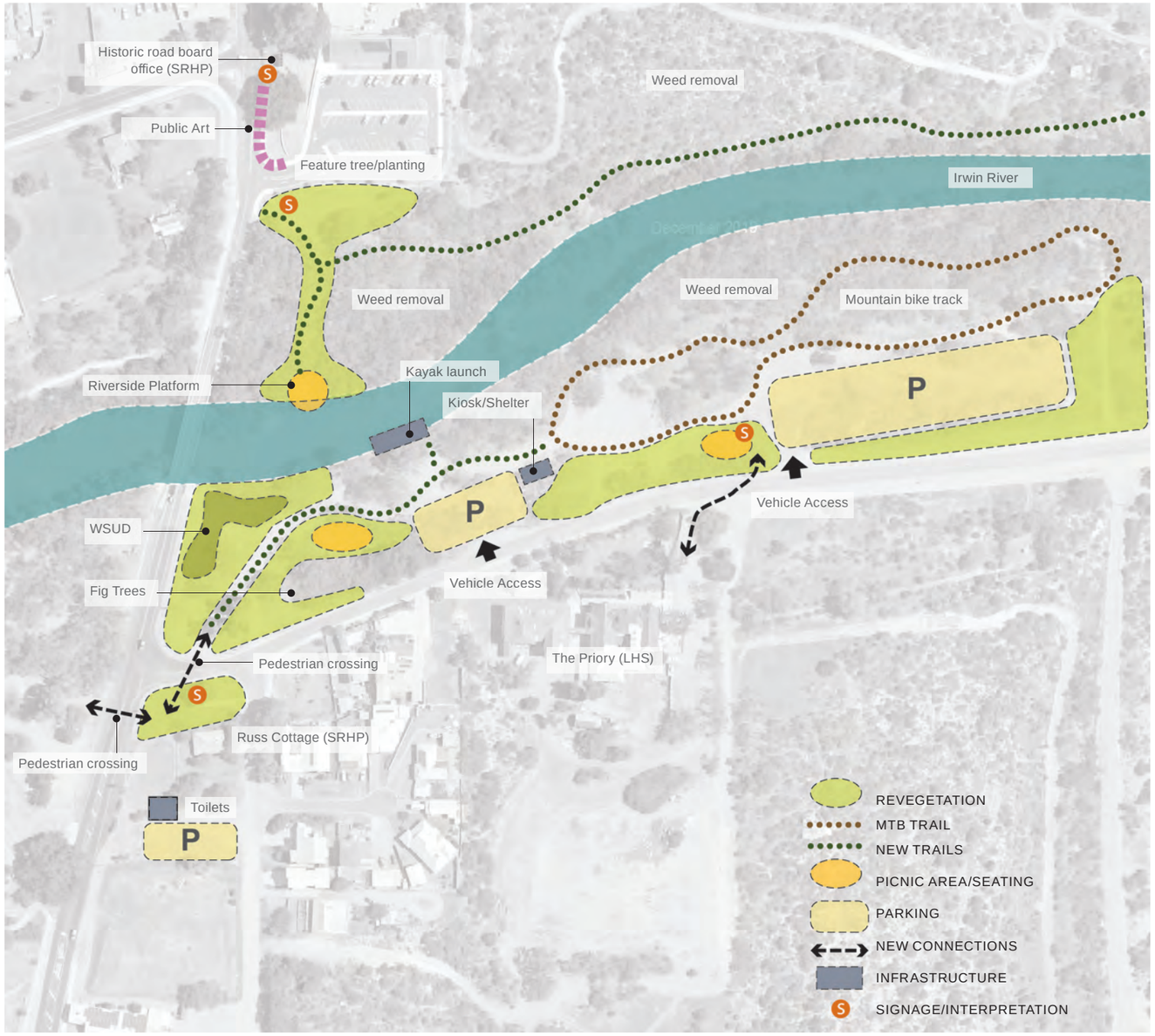
- Clear weeds and create a trail from Point Leander Drive to River.
- If tenure can be secured, create a new trail east to the BP
- Use signage, interpretation, and public art elements to draw pedestrians in the Town Centre to the River.
- The steep banks make a riverside trail challenging, but a high level riverside viewing platform may be feasible. At this higher level, it would also be less prone to flood damage
- Potential for new trail needs further investigation but would require selective clearing. The implication of this is reduced habitat and green infrastructure but improvements in bushfire risk and sightlines to the river.

SOUTHERN SHORE

The aim is to develop an adventure theme to differentiate this area and take advantage of the disturbed nature of the site to introduce an increased level of intervention. The extent of the eastern trail requires further investigation. Key strategies include:

- Explore potential for short technical mountain bike tracks catering to different levels of ability
- Provide co-located relevant activities/ amenities including bike hire, food kiosk/food trucks, kayak launch and hire
- Connect to the Priory (1881), and collaborate with the Priory to activate or provide services (bike hire, food and beverage). This would help to minimise infrastructure in the flood zone.
- Connect to Russ cottage and from Russ cottage to the west. Consider a pedestrian crossing or road marking in some manner
- Conservation of Russ Cottage and setting to retain its cultural significance, may involve preservation, restoration, reconstruction, and adaptation of the house and gardens.
- Consider co-locating a cafe and toilets at Russ cottage
- Interpretive signage for historic buildings in the vicinity and flooding history including the destruction of the Maternity Hospital and the destruction of the bridges, and the Priory
- Retain Fig trees and consider selective planting of additional fig trees to enhance the ‘place-based’ planting
- Provide well signed car and bike parking
- Revegetate with native species areas heavily disturbed by vehicles
- Incorporate WSUD landscape adjacent to road
- Selective clearing around kayak launch to improve physical and visual connection to River
- There is currently no sign of conflict between cyclists and pedestrians on the trails, but a dedicated mountain bike trail would help mitigate issues given a predicted increase in visitor numbers and provide more challenging mountain biking trails
- Low key infrastructure as this area is prone to flooding. Any infrastructure (kayak hire, shade structures, toilets) need to be robust to withstand inundation
- Adopt a low-key, ‘natural’ aesthetic with unsealed carpark and trails

EASTERN MASTERPLAN



PRECEDENTS



Wylde Mountain Bike Trail - GroupGSA Image: Simon Wood



Boodjar Bidi Youth Art Group 2021 Img: LouiseCoghill



Aston Hills - Trailscapes Images: Trailscapes



Technical elements - Trailscapes (designer and images)



Riverside Platform Img: Clariana

08 OLD PORT TRAIL (HISTORY)



Site photo near bridge looking south



Site photo near bridge looking north



Denison House

This trail follows the route of the Old Port Road, an 1850s track that connected the Mill Quarry (1850s-70s), the Mill (1859 - now Denison House), Harbourmasters Cottage (1857), and the Old Port at the Estuary. Key considerations include:

- Erosion of riverbank and undermining of mature existing trees near bridge
- Underutilisation of Denison House
- Limited signage and interpretation for (wayfinding, historic and cultural)
- Good opportunity for highly visibly trail head but currently underexploited
- Some areas in freehold would need to be transferred to reserve
- Lack of shade to west, can be hot and exposed
- Views to river limited by weeds
- Good sightlines to river at bridge and area popular as low-key play and sitting area

The trail consists of two distinct areas:

BRIDGE TO DENISON HOUSE

This area starts at the parkland near the bridge which is the most visible ‘gateway’ to trails, moves through a boardwalk Sheoak forest, past the old Quarry and rises up to Denison House. Key strategies include:

- Create community hub at Denison House as a place for volunteering/nature conservation and create a riverside friends group
- Conservation of Denison House/Smith’s Mill and setting to retain its cultural significance, may involve preservation, restoration, reconstruction, adaptation. Any work to be preceded by archaeological investigation.
- Adaptive re-use as community hub, place-based retail, food and beverage, markets, art gallery, picnic area/bbqs, playspace
- Denison House garden is a key part of its history and the conservation of this is an opportunity to include a micro botanic, bush tucker, or ethnobotanic garden of native species
- Investigate historic value of retaining invasive weed species in Denison House garden (Japanese Pepper) and Agave that indicates location of Harbourmasters cottage
- New residential development east of Denison House may activate trails but domestic fencing will need to be mitigated by planting to retain sense of ‘natural’ River Trail
- Define parking bays, create low-key nature play, seating, and signage at the trail head near the bridge. Incorporate public art piece to further increase visibility of trail head.
- Consider renaming Bridge park with a Indigenous name and low-key nature playground and indigenous themed/ collaborative public art
- Wattandee names or significant animals could be used in the nature play area. These could include the water snake, Jirjirri (willy wagtail), the Woorkunda (Mopoke/Curlew), the Kardarra (turtle), Minjinoo (Horny devil lizards), Bannajee’s (Ducks), Yalleebeeree (Emu), Jeereejeeree/Jirjiri (fly catcher willy-wagtail), Wootha (Magpie), Thogginyoo (Parrot), Woorndee (Bandicoot), Oothoo (Dingo’s) • Mimmee (Lizards), Wanderroo Thoogurnoo (Frogs), Wuralin (Small green Parrots)
- Wattandee history should be incorporated near the bridge including the story of how many of the Wattandee tribe were washed away in a flood.
- Consider embankment control especially near bridge where trees are being undermined
- Explore potential for universal access to lower trails and river. Create universal access at upper level
- Remove weed species at riverbank to improve views and replace with native vegetation for bank stabilisation
- Introduce swales and vegetation close to the roadside to filter water before it enters river
- The Irwin District Historical society suggest the community be consulted for a new name - this could be suggested for the parkland area east of the bridge
- Provide well signed parking for visitors at the trail heads, including cycle parking, caravans and RV’s.

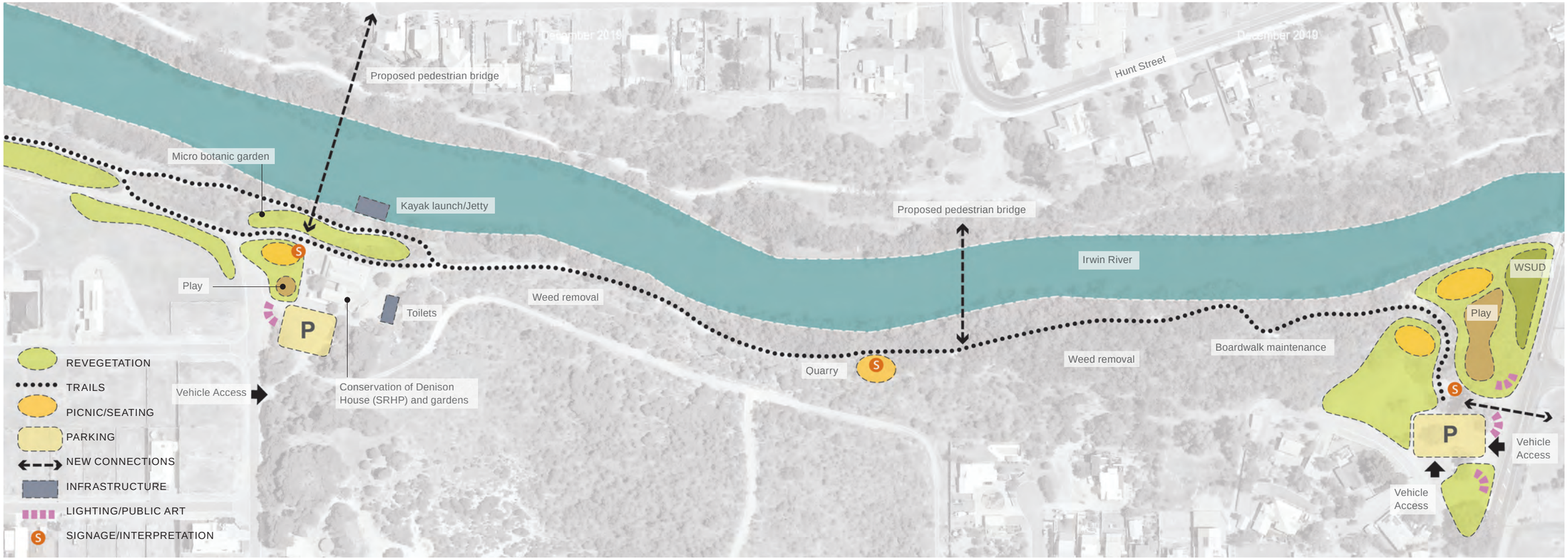


Evergreen Brickworks Image: Claude Cormier



Maramataha Bridge Image: Visit Ruapehu

OLD PORT TRAIL - BRIDGE TO DENISON HOUSE MASTERPLAN



PRECEDENTS



Grounds of Abbey Lorsch - Topotek1 Image: Hanns Joosten



Len Packham Playspace Design/Image: JBA



New Norcia Design/Image: Axiom



Commonground design & image

RIVERBEND

This is the westernmost edge of the southern shore. This trail has limited views and connection to the River but high conservation value. Key design strategies include:

- Introduce native trees at trail level to increase shade for trail user comfort
- Create nature reserves for bird and wildlife habitat. This area has also been identified in the Irwin River Estuary Management Plan Consider limiting access by fencing. Incorporate interpretive signage relating to nature conservation and ecology.
- Clearly mark trail head with directional and historic interpretation signage at existing carpark
- Formalise existing riverside trail and create a new link to a trail along Retreat Boulevard. Create a new trail ‘cutting the corner’ to Ocean Drive to enable a buffer to the residential area and enhance ‘nature’ feel.
- Investigate harbourmaster’s cottage site and provide landscape treatment, interpretive signage.
- Retain existing kayak launch, parking, and picnic area.
- Create a buffer of vegetation to the residential area to the east to enhance ‘natural’ trail feel
- Where possible, replace exotic species with native species on verges to retain ‘natural’ landscape
- Remove weeds with the potential exception of the exotic species marking the setting of the harbourmaster’s house if it is considered significant for historical conservation/historical interpretation.



Site photo walking south around the riverbend



Site photo at existing kayak ramp looking west



Site photo Retreat Boulevard

OLD PORT TRAIL - RIVERBEND MASTERPLAN



09 LAGOON (NATURE)

This trail includes the boardwalk to Ocean Drive and the dune trail at the rivermouth which is broken when winter water levels rise considerably. It is the least developed, most ‘natural’ of the trail zones with the strongest connection to the River and its ecology. It is bordered to the east by reserve and to the west by the ocean.

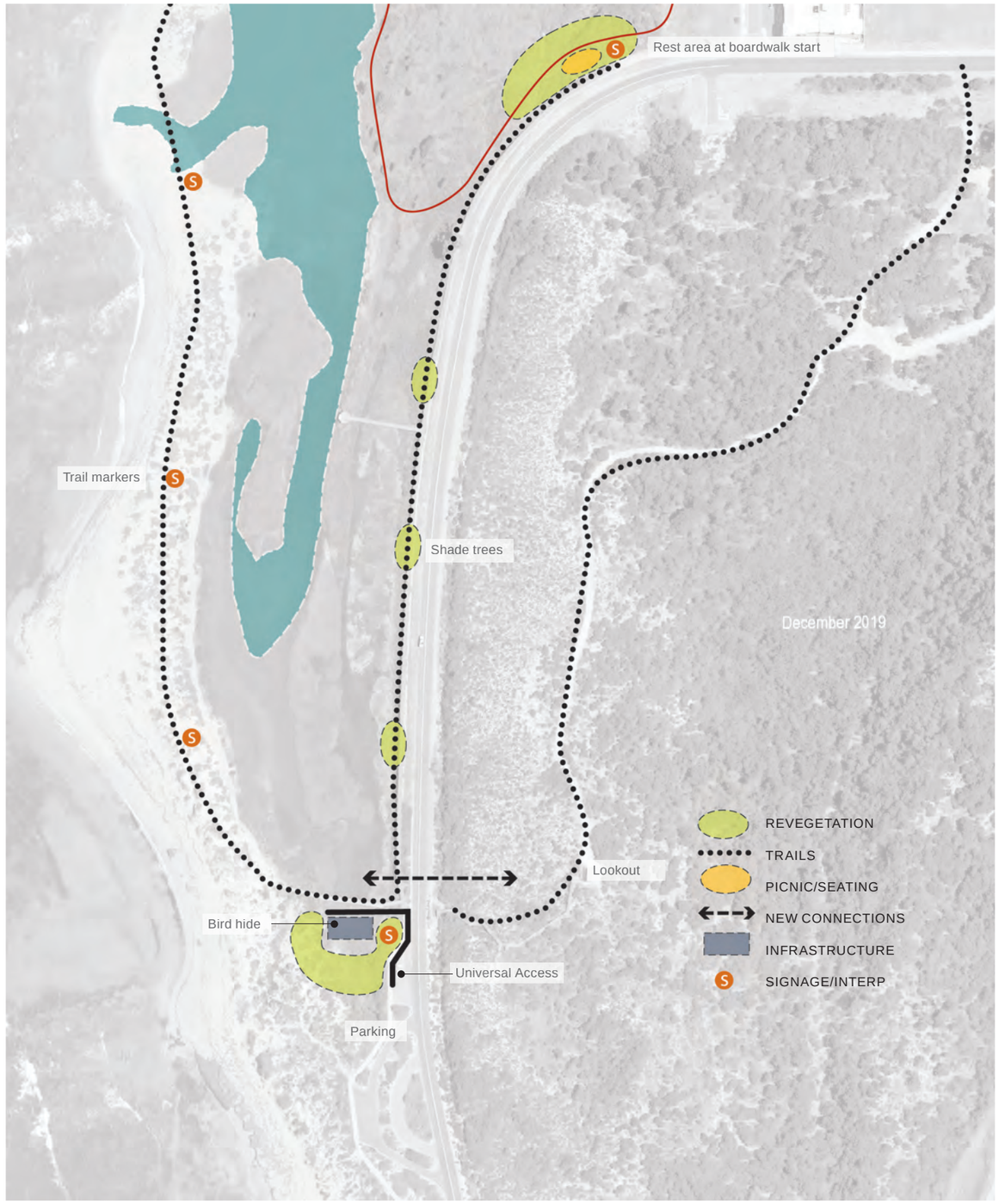
Key considerations include:

- This is a popular bird watching area
- It is a wetland lagoon environment with minimal tree cover
- The dune trail is ill defined and there are multiple routes through the dunes/samphire

Key strategies include:

- Maintain boardwalk or replace
- Create level access from carpark to viewpoint/ bird hide to south.
- Engage with Wattandee and provide interpretation and signage to explain indigenous language and cultural information.
- Wattandee bird names could be incorporated. This area of trail could be renamed or incorporate public art. The Jirjiri (willy wagtail), Walyamberree (Ibis), Wooradhoo (Swans), Ngooyambiddee (Pelicans) are some examples.
- Create bird hide as nature-focussed destination with ecological interpretation, seating and shade. Tuck into dune and buffer with vegetation to minimise impact in sensitive location
- Create single route through dunes with trail markers and signage to discourage alternative routes and protect samphire
- Create areas of shade with discrete grouping of trees or shade structures placed appropriately in this open lagoon landscape

LAGOON MASTERPLAN



PRECEDENTS



Bird Hide Ramboll Studio Dreiseitl (designer & image)



Bird Hide Agence Territories Image: Nicolas Waltefaugle



Shelter Plant Architect Image: Steven Evans

10 DUNES AND LOOKOUT (PROSPECT)



Site photo of existing lookout



Site photo of existing stair down to River Trail



Site photo of boardwalk

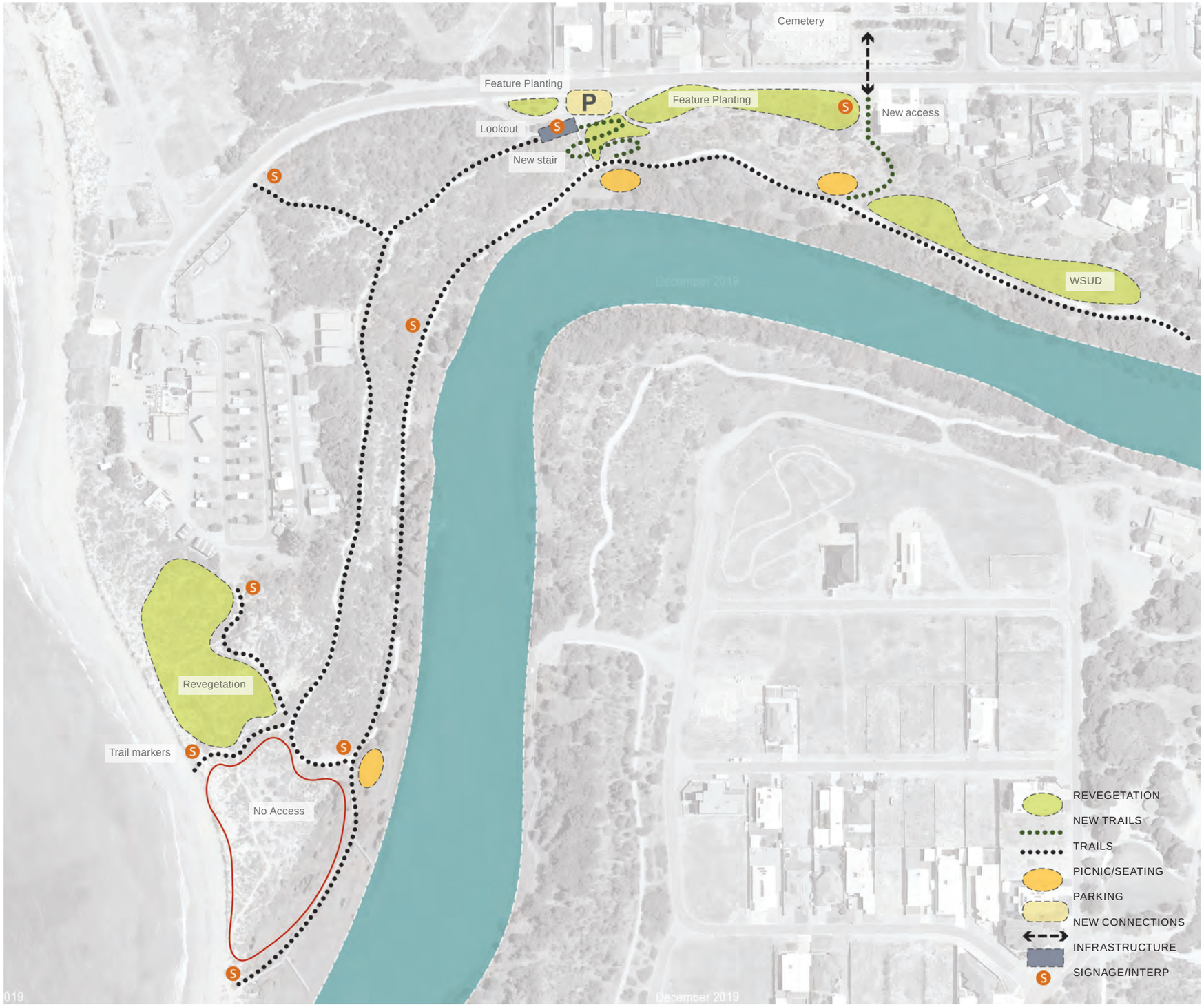
This area moves from the beach past limestone cliffs to the foot of the lookout stairs. The lower level includes boardwalks on the lagoon. At the higher level it climbs through the dunes to the clifftop and lookout. Key considerations include:

- The lookout has great views to River
- Dunes are degraded with multiple paths
- Very steep staircase from lookout to trails
- Limited amenities on trail
- It has a direct relationship with the river at the southern end and very good visual connections from dune trails and lookout
- Drainage issues on steep path from lookout
- ‘Natural’ undeveloped feel at lower trail level with native vegetation in good condition

Key design strategies include:

- Remove dilapidated bird hide, recommend not replacing in this location
- Maintain boardwalks
- Interpretive signage to Quarry, Old Port and harbourmaster’s cottage, and ecology
- Consider replacing lookout with something architecturally significant to create destination
- Replace staircase from from lookout with pathway or more gradual staircase.
- Create link to Cemetery (new trail/staircase)
- Introduce clear signage to lookout from Town Centre.
- Formalise paths through Dunes with trail markers, remove duplicate paths and revegetate.
- Limit access to dune area as shown to re-establish native vegetation and habitat
- Manage surface water drainage in areas where the trail is being eroded.
- Introduce seating areas in shady areas with river views
- Provide universal access to Lookout as a minimum
- Enhance setting of lookout with native feature planting
- Provide some discrete lighting at Lookout
- Incorporate Wattandee history, names or significant animals. Bannajee’s (Ducks), Warradha (Eagle hawks), Jeereejeeree/ Jirjiri (fly catcher willy-wagtail), Kakkainyoo (Osprey), Eerinyittee (Sparrow Hawk), Walyamberree (Ibis), Wootha (Magpie), Woorkunda (our spiritual bird the Mopoke/ Curlew)

DUNES AND LOOKOUT MASTERPLAN



PRECEDENTS



Coastal Walk - Aspect Studios designer and image



Mont Specie Lookout - Messner Achitects design/image



Quilotoa Lake Lookout - Image Lorena Darqueau

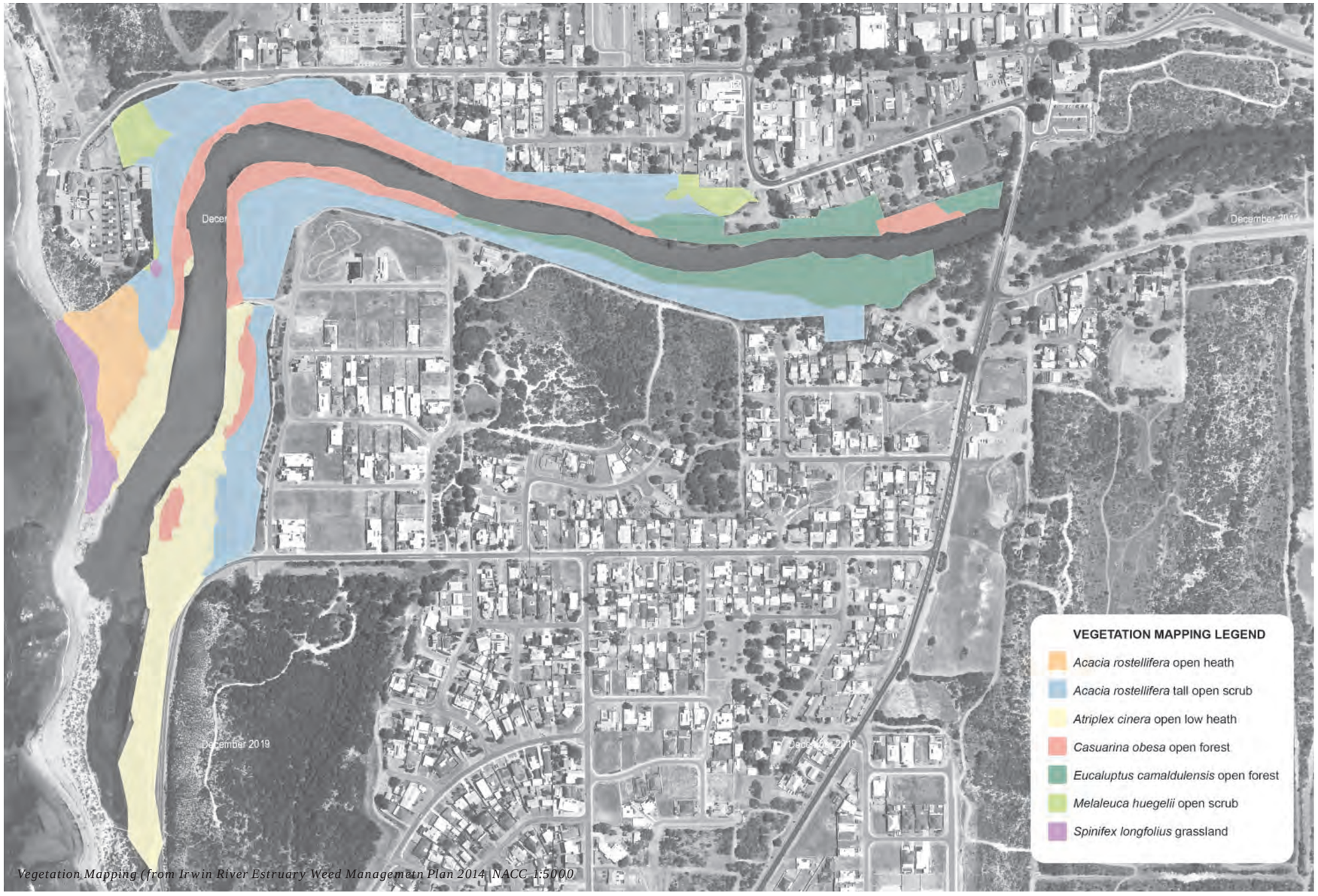
11 PLANTING PALETTE

The plant selection recommends native plants to reflect the natural setting. It is recommended that where exotic species have historical significance, for example Moreton Bay Fig and Port Jackson Fig they be preserved. The ficus species in the eastern zone should be preserved. Further study is required to understand the historical significance of the exotic planting adjacent to Denison House and near the Harbourmaster's cottage site.

The Irwin River Estuary Weed Management Plan (2013) summarised vegetation communities within the site. The areas from the bridge to the river bend were considered degraded or completely degraded. The diagram left shows where the vegetation types occur and these form the basis of the planting palette:

- *Acacia rostellifera* open heath in dunes
- *Acacia rostellifera* tall open scrub
- *Atriplex cinera* open low heath Alluvial flats
- *Casuarina obesa* open forest
- *Eucalyptus camaldulensis* open forest central River banks
- *Melaleuca huegelii* open scrub limestone cliffs
- *Spinifex longfolius* grassland western dunes

The planting strategy is to revegetate according to the appropriate vegetation community in degraded areas and new feature planting/ WSUD selected from the existing plant species. The Eastern Zone is mainly *Eucalyptus camaldulensis* and planting would be according to this vegetation community. Limited clearing of shrubs, dead wood should be considered as fire mitigation and to open up views.



Vegetation Mapping (from Irwin River Estruary Weed Managemetn Plan 2014 |NACC 1:5000

ACACIA ROSTELLIFERA OPEN HEATH

Acacia cyclops



Image Credit: katanninglandcare.org

Acacia rostellifora



Image Credit: John Baas

Acanthocarpus preissii



Image Credit: nativ.com.au

Enchylaena tomentosa



Image Credit: Arthur Chapman

Hardenbergia



Image Credit: waggaflora.com

Myoporum tetrandrum



Image Credit: M. Kealley

Olearia axillaris



Image Credit: Cottesloecoastcare.org

Rhagodia baccata



Image Credit: Cottesloecoastcare.org

Salsola australis-



Image Credit: Anne Hoggett

Spinifex longifolius -



Image Credit: Cottesloecoastcare.org

Tecticornia



Image Credit: Colin Meurk

Threlkeldia diffusa



Image Credit: scnaturesearch.com.au

SPINIFEX LONGIFOLIUS GRASSLAND

Acacia rostellifera



Image Credit: John Baas

Acanthocarpus preissii



Image Credit: nativ.com.au

Atriplex cinerea



Image Credit: plantthis.com.au

Atriplex isatidea



Image Credit: Cottesloecoastcare.org

Carpobrotus virescens



Image Credit: Lullfitz.com.au

Ficinia nodosa



Image Credit: Cottesloecoastcare.org

Nitraria billardierei



Image Credit: William Archer

Olearia axillaris



Image Credit: Cottesloecoastcare.org

Rhagodia baccata



Image Credit: Cottesloecoastcare.org

Salsola australis



Image Credit: Anne Hoggett

Santalum acuminatum



Image Credit: wtlandcare.org

Scaevola crassifolia



Image Credit: R. Clark

Senecio pinnatifolius



Image Credit: Arthur Chapman

Spinifex longifolius



Image Credit: Cottesloecoastcare.org

Threlkeldia diffusa



Image Credit: scnaturesearch.com.au

ACACIA ROSTELLIFERA TALL OPEN SCRUB

Acacia rostellifora



Image Credit: John Baas

Acanthocarpus preissii



Image Credit: nativ.com.au

Alyogyne huegelii



Image Credit: nativ.com.au

Alyxia buxifolia



Image Credit: northqueenslandplants.

Amyema miraculosa



Image Credit: northqueenslandplants.

Anthocercis intricata



Image Credit: Gary Thompson

Austrostipa elegantissima



Image Credit: Cottesloecoastcare.org

Callitris arenaria-



Image Credit: Rick Fencl

Carpobrotus virescens-



Image Credit: Lullfitz.com.au

Cassytha racemosa-



Image Credit: Cottesloecoastcare.org

Clematis linearifolia



Image Credit: northqueenslandplants.

Convolvulus remotus



Image Credit: Melissa Doherty

Dianella revoluta



Image Credit: Simontheplantman.com

Enchylaena tomentosa



Image Credit: Arthur Chapman

Exocarpos sparteus



Image Credit: William Archer

Hibbertia subvaginata-



Image Credit: Ellenbrook bushland

Lepidosperma



Image Credit: Lullfitz.com.au

Maireana brevifolia



Image Credit: Don Wood

Melaleuca cardiophylla-



Image Credit: Geoff Derrin

Melaleuca huegelii



Image Credit: Brian Freeman

Melaleuca lanceolata



Image Credit: nativeshop.com.au

Myoporum montanum



Image Credit: diversitynativeseeds.com

Myoporum tetrandrum



Image Credit: M. Kealley

Pittosporum



Image Credit: Robert Powell

Rhagodia baccata subsp.



Image Credit: Cottesloecoastcare.org

Rhagodia preissii



Image Credit: Westgrow.com.au

Salsola australis-



Image Credit: Anne Hoggett

Santalum acuminatum-



Image Credit: wtlandcare.org

Scaevola crassifolia -



Image Credit: R. Clark

Scaevola thesioides



Image Credit: Porteuspark.org.au

Spyridium globulosum



Image Credit: Cambridgecoastcare.com.

Suaeda australis



Image Credit: friendsofwilliamstown

Templetonia retusa



Image Credit nativ.com.au

Threlkeldia diffusa



Image Credit: scnaturesearch.com.au

Tricoryne elatior



Image Credit: Frasercoastplants

EUCALYPTUS CAMALDULENSIS OPEN FOREST

Acacia rostellifora



Image Credit: John Baas

Acacia saligna subsp.



Image Credit: Katanninglandcare.org.au

Alyogyne huegelii



Image Credit: Brian Freeman

Atriplex cinerea



Image Credit: plantthis.com.au

Austrostipa



Image Credit: Cottesloecoastcare.org

Casaurina obesa



Image Credit: vhd.heritage.vic.gov.au

Cyperus gymnocaulos



Image Credit: urrbraewetlandlc.org

Enchylaena tomentosa



Image Credit: Arthur Chapman

Eucalyptus Camaldulensis



Image Credit: Katanninglandcare.org.au

Maireana brevifolia-



Image Credit: Don Wood

Pimelea microcephala



Image Credit: SA Seed conservation

Tecticornia



Image Credit: Colin Meurk

Typha domingensis



Image Credit: wtlandcare.org

ATRIPLEX CINEREA OPEN LOW HEATH

Atriplex amnicola



Image Credit: State of Western Australia

Atriplex cinerea



Image Credit: plantthis.com.au

Cyperus gymnocaulos



Image Credit: urrbraewetlandlc.org

Samolus repens



Image Credit: Trees for life (SA)

Senecio pinnatifolius



Image Credit: Arthur Chapman

Sporobolus virginicus



Image Credit: Cottesloecoastcare.org

Suaeda australis



Image Credit: friendsofwilliamstown.

Tecticornia



Image Credit: Colin Meurk

MELALEUCA HUEGELII TALL OPEN SCRUB

Acanthocarpus preissii



Image Credit: nativ.com.au

Carpobrotus virescens



Image Credit: Lullfitz.com.au

Cassytha racemosa



Image Credit: Cottesloecoastcare.org

Dianella revoluta



Image Credit: Simontheplantman.com

Enchylaena tomentosa



Image Credit: Arthur Chapman

Eremophila glabra



Image Credit William Archer

Melaleuca huegelii



Image Credit: Brian Freeman

Myoporum montanum-



Image Credit: diversitynativeseeds.com

Olearia axillaris



Image Credit: Cottesloecoastcare.org

Ptilotus divaricatus



Image Credit: Timothy Hammer

Rhagodia baccata



Image Credit: Cottesloecoastcare.org

Salsola australis



Image Credit: Anne Hoggett

Santalum acuminatum



Image Credit: Anne Hoggett

Scaevola crassifolia



Image Credit: R. Clark

Tecticornia



Image Credit: Colin Meurk

Templetonia retusa



Image Credit nativ.com.au

Threlkeldia diffusa



Image Credit: scnaturesearch.com.au

CASUARINA OBESA OPEN FOREST

Alyogyne huegelii



Image Credit: Brian Freeman

Atriplex cinerea



Image Credit: plantthis.com.au

Casaurina obesa



Image Credit: vhd.heritage.vic.gov.au

Cyperus gymnocaulos



Image Credit: urrbraewetlandlc.org

Juncus kraussii



Image Credit: katanninglandcare.org.

Melaleuca rhaphiophylla



Image Credit: Lyn Alcock

Myoporum montanum-



Image Credit: diversitynativeseeds.com

Tecticornia



Image Credit: Colin Meurk

12 MATERIAL PALETTE

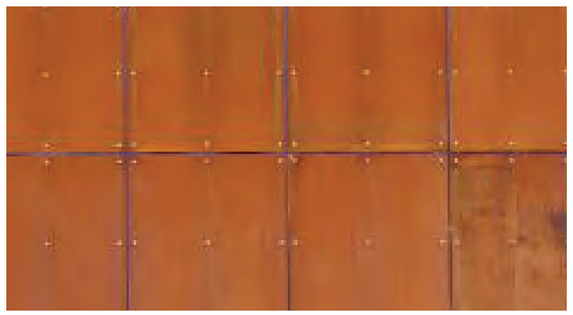
An important consideration to emerge from the public consultation, site analysis, and observation is the aspiration to retain the perceived ‘natural’ feel of the trails. The material strategy reflects and supports this:

- Minimise changes to the trails itself preserving the informal crushed rock trail surface and informal edge
- Develop bespoke shade structures, furniture or select furniture products that have colours and textures that are appropriate to the natural setting. These including timber, weathering steel, darker coloured painted steel, tinted concrete
- Create appropriate walls and footpaths using local limestone or coloured/textured concrete that reflects the local limestone geology
- Use natural curves and shapes found in nature
- Allow materials to form a natural patina rather than using stains and varnishes. Use reclaimed materials such as recycled jarrah that already have a patina and blend with the natural environment
- Avoid formal edges and large areas of hardstanding in contrasting colours. Carparks to be crushed gravel with timber or steel edging











13 WEED MANAGEMENT

This section adopts the recommendations set out in the 2013 Irwin Estuary Weed Management Plan. This report covers the Irwin River Trails site area except to the east of the bridge. Key issues include:

- The site area has been extensively cleared for agriculture and housing and is impacted by fire and weed infestation
- 38% of the site at the time of the survey was degraded or completely degraded
- 40 types of weed were recorded including very high priority for control
- There is a clear role for community volunteers including monitoring and hand removal of selected weed species, photo monitoring, and establishment of regional herbarium.

The table opposite summarises weeds identified, order of priority, and management. Full weed management details and location are included in the appendices of the 2013 Irwin Estuary Weed Management Plan.

It is recommended that the Shire collaborate with NACC, MEEDAC, and community groups for ongoing weed managment and revegetation.

Removal of weeds is also part of the bushfire mitigation strategy

SPECIES	PRIORITY	LOCATION	MANAGMENT
African Boxthorn	Very High	Throughout both banks	Remove (hand, cut and paint, spray) and monitor
Geraldton Carnation Weed	Very High	Throughout both banks	Community monitor and hand remove twice a year
Japanese Pepper	Very High	Throughout/eastern bank	Hand remove seedlings, stem inject/cut and paint trees
African Lovegrass	Very High	Northern End of Retreat Boulevard	Herbicide , Community monitor and hand remove
Couch and Kikuyu Grass	Very High	Alluvial flats	Experienced contractor to remove
Crownbeard	Very High	Around Perimeter and central	Community hand remove or spray
Fountain grass	Very High	Throughout both banks	Herbicide, Community monitor and hand remove
Ice Plant	Very High	Near Seaspray Caravan Park	Remove germinants and monitor
Lantana	Very High	South Bank	Remove all plants and do not spread fruit
Pypegrass	Very High	Seaspray Caravan Park	Eradicate
Tambookie Grass	Very High		Community monitor and hand remove
Whiteflower Fumitory	Very High	scattered throughout	Hand remove and spray with glyphosate larger areas
Wild Oats	Very High	Adjacent to Retreat Boulevard	Grass selective herbicide
Wild Turnip	Very High		Community monitor and hand remove
Canary island date palms	Medium	South Bank	Hand remove, cut and paint trees
Castor Oil	Medium	Throughout both banks	Community monitor and hand remove seedlings, cut and paint trees
False Bamboo	Medium	South Bank	Cut and paint, spray herbicide
Olive	Medium		Hand remove seedlings, cut and paint trees
Onion weed	Medium	Retreat Boulevard	Hand remove near Bridge
Pepper tree	Medium	East - both banks	Hand remove seedlings, stem inject/cut and paint trees
Soursob	Medium	Throughout both banks	Remove
Tamarisk	Medium	Ocean Drive and Point Leander Drive	Stem inject glyphosate, remove specimen near boardwalk and adjacent to Point Leander Drive
Agave Americana	Low	North bank Ocean Road and Retreat Boulevard	Hand remove small plants, chemical control large plants
Norfolk Island Hibiscus, Tree Tobacco	Low		Hand remove seedlings and stem inject mature

14 TRAIL SURFACE AND DRAINAGE

DOWNSLOPE EROSION

Water running down the trail creates deep ruts and uneven surface. This is particularly noticeable adjacent to the Lookout on Church Street, where the surface water flows down the steep slope. Further consideration needs to be given to this area as trails should not exceed 1 in 10 gradient. A switchback is advisable and/or water bars (see diagram right).

CROSS SLOPE EROSION

Water running across the trail washes away the trail surface and leaves it water logged. This has been observed to the east of Waldeck Street where there is a steep embankment uphill of the trail and the surface water flows down on to the trail. Strategies in this area include creating a vegetated swale downslope of the hill and rock armouring to the trail.

SURFACE WATER DRAINAGE

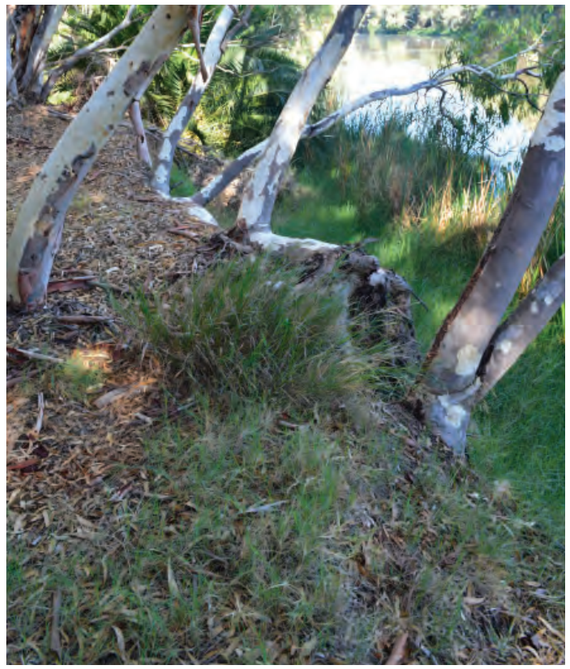
WSUD swales and infiltration basins are to be considered where run-off can filter road pollutants or domestic garden fertilizers and seeds.

EMBANKMENT CONTROL

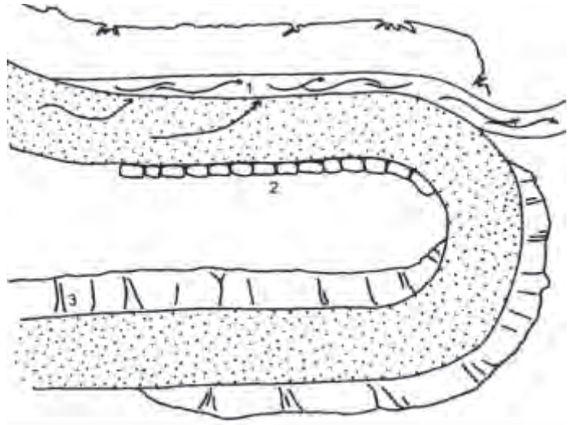
The photo right shows the embankment erosion near the bridge that is undermining existing trees. This could be controlled using natural looking approaches such as Bioengineering or Revetments. Bioengineering uses vegetation, wood and biodegradable products to reduce surface erosion and provide toe protection. Revetments create a protective cover (i.e limestone) on an embankment of earth to reduce erosion.



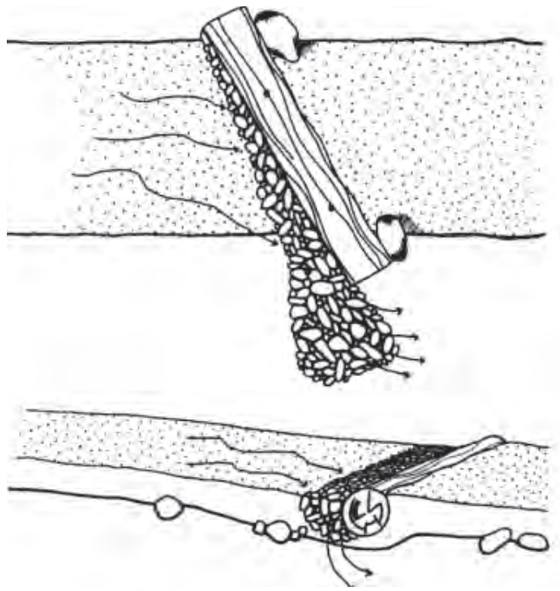
Path erosion downslope of lookout



Undermining southern bank



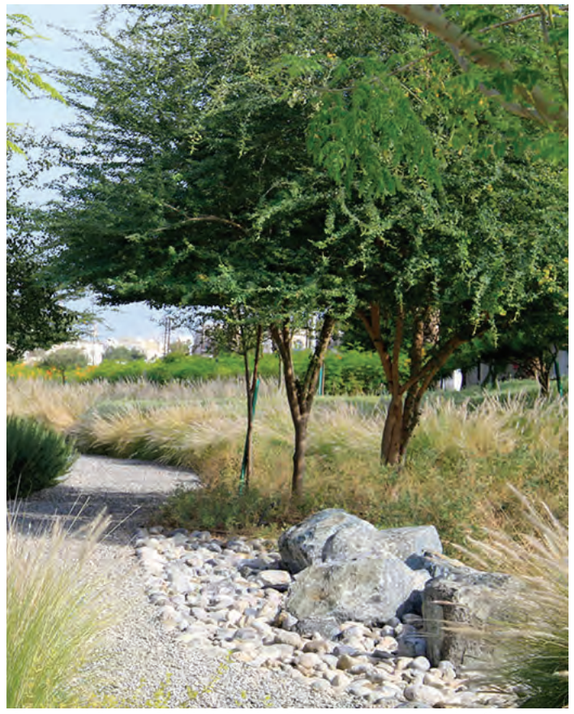
Switchback (British Columbia Ministry of Forestry for.gov.bc.ca)



Log Waterbar (British Columbia Ministry of Forestry for.gov.bc.ca)



Rock Revetments/Fillets (ECOS CSIRO Photo Becki Morris)



Vegetated Swales Wadi Al Alzeiba (Image Atelier Jaqueline Otsy)

15 BUSHFIRE MANAGEMENT

FUEL REDUCTION/MANAGEMENT

Fuel load risk should be mitigated by clearing weeds. Areas in close proximity to infrastructure should maintain combustible dead vegetation levels as set out in SPP 3.7.

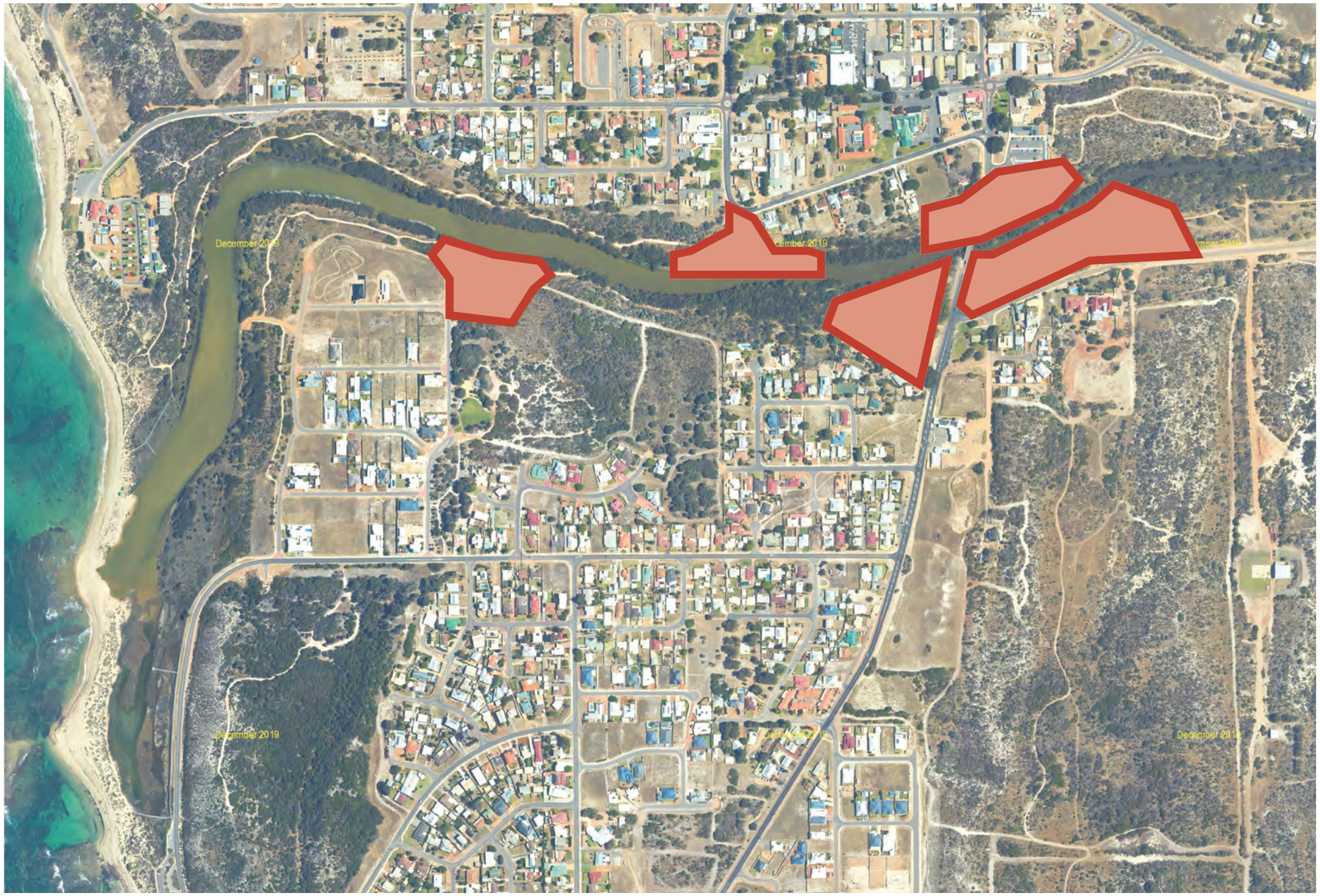
The Figure right illustrates potential areas of selective clearing. These areas already have some cleared area and are at high risk being in close proximity to existing homes. Weed removal could be focussed in these areas and there could be selective clearing of existing native shrubs and trees in poor condition. In these areas shrubs and trees should not form a continuous canopy and existing tree canopies could be raised (branches removed below 2m).

INFRASTRUCTURE SITING

Infrastructure is located in lower risk areas that are already substantially cleared or less dense. Maintain buffers to vegetation, create an Asset Protection Zone around new and existing infrastructure as set out in SPP 3.7.

PLANTING DESIGN

In this ‘natural’ context it is more appropriate to maintain the native planting palette rather than specify exotics that might be lower fire risk. However, reducing planting density for new planting (to reduce fuel load) and non-flammable rock mulches should be considered. Non-flammable stone walls can be incorporated as ‘shield’ walls (from wind, radiant heat, embers) in areas such as Denison House and Waldeck Street. Areas of low combustible planting/non-flammable mulches should be interspersed between trees, and shrubs clumped and separated from trees to break up fuel continuity.



Selective Clearing zones NTS

16 OPINION OF PROBABLE COST

CENTRAL

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL
1.00	**PRELIMINARY, SITE WORKS & DEMOLITIONS**				
1.01	Site mobilisation	1	item	$10,000.00	**$10,000.00**
1.02	Fine grading	1	item	$10,000.00	**$10,000.00**
1.03	Arborist Tree Pruning & TPZ Protection	1	item	$15,000.00	**$15,000.00**
1.04	Weed Eradication	20,000	m2	$0.80	**$16,000.00**
1.05	Minor Earthworks and fine grading	10,000	m2	$1.00	**$10,000.00**
1.06	Rock Excavation	10	m3	$350.00	**$3,500.00**
	PRELIMINARY, SITE WORKS & DEMOLITIONS TOTAL				**$64,500.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	Trails remediation - crushed limestone to match existing	1	allowance	$20,000.00	**$20,000.00**
2.02	Paving Type 1- 100mm thick coloured concrete	250	m2	$80.00	**$20,000.00**
2.03	Paving Type 2 - Exposed aggregate paving to feeder streets	250	m2	$160.00	**$40,000.00**
2.04	Driveway access and parking bitumen	350	m2	$32.00	**$11,200.00**
2.05	Concrete pads to seating and bin areas	50	m2	$80.00	**$4,000.00**
	HARDWORKS - SURFACE TREATMENTS TOTAL				**$95,200.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Ramps and stairs	80	m2	$2,000.00	**$160,000.00**
3.02	Edging Type 1 - Steel Edging to garden beds	100	m2	$45.00	**$4,500.00**
3.03	Edging Type 2 - flush kerb to carpark	60	l/m	$70.00	**$4,200.00**
3.04	Kayak Launch	1	allowance	$20,000.00	**$20,000.00**
3.05	Benches	12	item	$1,500.00	**$18,000.00**
3.06	Large Shelter/Pavilion/toilets	100	m2	$2,000.00	**$200,000.00**
3.07	Picnic tables	2	each	$5,000.00	**$10,000.00**
3.08	Bin enclosures	6	each	$7,000.00	**$42,000.00**
3.09	Bike rack	4	each	$750.00	**$3,000.00**
3.10	Bolders	10	each	$150.00	**$1,500.00**
3.11	Retaining walls	100	l/m	$1,200.00	**$120,000.00**
3.12	Drinking fountain with bottle refill	1	each	$6,910.00	**$6,910.00**
3.13	Signage	1	allowance	$5,000.00	**$5,000.00**
3.14	Double BBQ	2	each	$12,000.00	**$24,000.00**
3.15	Nature playspace	1	allowance	$100,000.00	**$100,000.00**
	HARDWORKS - INFRASTRUCTURE TOTAL				**$719,110.00**
4.00	**SOFTWORKS**				
4.01	Reveg Planting - Tube stock including soil wetting agent and slow release fertiliser as per manufacturers standards (4 tubes /m2)	6,000	m2	$12.00	**$72,000.00**
4.02	Planting - 140mm pot including soil wetting agent and slow release fertiliser as per manufacturers standards (3 /m2)	2,000	m2	$24.00	**$48,000.00**
4.03	Trees - 45L - incl. Tree Stakes & Soil conditioner	10	item	$160.00	**$1,600.00**
4.04	Trees - 200L - incl. Tree Stakes & Soil conditioner	10	item	$430.00	**$4,300.00**
4.05	Soil conditioner for garden bed areas - 25mm thick	9,000	m2	$12.00	**$108,000.00**
4.06	Mulch Type 1 - Native Organic mulch to garden beds- 75mm thick	5,000	m2	$12.00	**$60,000.00**
4.08	Mulch Type 2 - Rock mulch - 75mm thick	4,000	m2	$30.00	**$120,000.00**
4.09	Roll on turf - with 20mm soil conditioner	350	m2	$10.27	**$3,594.50**
	SOFTWORKS TOTAL				**$417,494.50**
5.00	**SERVICES AND PUBLIC ART**				
5.01	Light posts and associated electrical work (allowance for 1 post per 25m)	1	item	$24,000.00	**$24,000.00**
5.02	Lighting to built structures	1	item	$2,000.00	**$2,000.00**
5.03	Conduits, trenching, cabling, cabinets and switchboards, etc	1	item	$50,000.00	**$50,000.00**
5.04	Irrigation	1	allowance	$20,000.00	**$20,000.00**
5.05	Public Art	1	allowance	$30,000.00	**$30,000.00**
	SERVICES AND PUBLIC ART TOTAL				**$126,000.00**
6.00	**PEDESTRIAN BRIDGE**				**$1,000,000.00**

	Sub Total Construction		**$2,422,304.50**
	Contingency	30%	**$726,691.35**
	Sub total Exc GST		**$3,148,995.85**
	GST	10%	**$314,899.59**
	TOTAL inc GST		**$3,463,895.44**

EASTERN

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL
1.00	**PRELIMINARY, SITE WORKS & DEMOLITIONS**				
1.01	Site mobilisation	1	item	$10,000.00	**$10,000.00**
1.02	Fine grading	1	item	$10,000.00	**$10,000.00**
1.03	Arborist Tree Pruning & TPZ Protection	1	item	$15,000.00	**$15,000.00**
1.04	Weed Eradication	30,000	m2	$0.80	**$24,000.00**
1.06	Minor Earthworks and fine grading	10,000	m2	$1.00	**$10,000.00**
1.07	Rock Excavation	10	m3	$350.00	**$3,500.00**
	PRELIMINARY, SITE WORKS & DEMOLITIONS TOTAL				**$72,500.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	Trails remediation - crushed limestone to match existing	1	allowance	$20,000.00	**$20,000.00**
2.02	Paving Type 2 - Exposed aggregate paving to feeder streets	250	m2	$160.00	**$40,000.00**
2.03	Paving Type 3 - New crushed limestone trails	1,400	m2	$65.00	**$91,000.00**
2.04	Driveway access and parking (gravel)	4,500	m2	$65.00	**$292,500.00**
2.05	Concrete pads to seating and bin areas	40	m2	$80.00	**$3,200.00**
	HARDWORKS - SURFACE TREATMENTS TOTAL				**$446,700.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Edging Type 1 - Steel Edging to garden beds	100	m2	$45.00	**$4,500.00**
3.02	Riverside Platform	1	allowance	$20,000.00	**$20,000.00**
3.03	Kayak Launch	1	allowance	$20,000.00	**$20,000.00**
3.04	Benches	12	item	$1,500.00	**$18,000.00**
3.05	Toilets	60	m2	$2,000.00	**$120,000.00**
3.06	Picnic tables	2	each	$5,000.00	**$10,000.00**
3.07	Bin enclosures	6	each	$7,000.00	**$42,000.00**
3.08	Bike rack	10	each	$750.00	**$7,500.00**
3.09	Shelter	2	each	$20,000.00	**$40,000.00**
3.10	Mountain bike track and technical elements	1	allowance	$150,000.00	**$150,000.00**
3.11	Drinking fountain with bottle refill	2	each	$6,910.00	**$13,820.00**
3.12	Signage	1	allowance	$5,000.00	**$5,000.00**
3.13	Pedestrian Crossings	2	allowance	$4,000.00	**$8,000.00**
	HARDWORKS - INFRASTRUCTURE TOTAL				**$458,820.00**
4.00	**SOFTWORKS**				
4.01	Reveg Planting - Tube stock including soil wetting agent and slow release fertiliser as per manufacturers standards (4 tubes /m2)	8,000	m2	$12.00	**$96,000.00**
4.02	Planting (Feature and Swale) - 140mm pot including soil wetting agent and slow release fertiliser as per manufacturers standards (3 /m2)	3,000	m2	$24.00	**$72,000.00**
4.03	Trees - 45L - incl. Tree Stakes & Soil conditioner	20	item	$160.00	**$3,200.00**
4.04	Trees - 200L - incl. Tree Stakes & Soil conditioner	10	item	$430.00	**$4,300.00**
4.05	Soil conditioner for garden bed areas - 25mm thick	3,000	m2	$12.00	**$36,000.00**
4.06	Mulch Type 2 - Rock mulch - 75mm thick	3,000	m2	$30.00	**$90,000.00**
	SOFTWORKS TOTAL				**$301,500.00**
5.00	**LIGHTING AND PUBLIC ART**				
5.01	Light posts and associated electrical work (allowance for 1 post per 25m)	1	item	$24,000.00	**$24,000.00**
5.02	Lighting to built structures	1	item	$2,000.00	**$2,000.00**
5.03	Conduits, trenching, cabling, cabinets and switchboards, etc	1	item	$20,000.00	**$20,000.00**
5.04	Public Art	1	allowance	$10,000.00	**$10,000.00**
	LIGHTING AND PUBLIC ART TOTAL				**$56,000.00**

	Sub Total Construction		**$1,335,520.00**
	Contingency	30%	**$400,656.00**
	Sub total Exc GST		**$1,736,176.00**
	GST	10%	**$173,617.60**
	TOTAL inc GST		**$1,909,793.60**

OLD PORT TRAIL

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL
1.00	**PRELIMINARY, SITE WORKS & DEMOLITIONS**				
1.01	Site mobilisation	1	item	$10,000.00	**$10,000.00**
1.02	Fine grading	1	item	$10,000.00	**$10,000.00**
1.03	Arborist Tree Pruning & TPZ Protection	1	item	$15,000.00	**$15,000.00**
1.04	Weed Eradication	30,000	m2	$0.80	**$24,000.00**
1.05	Minor Earthworks and fine grading	10,000	m2	$1.00	**$10,000.00**
1.06	Rock Excavation	10	m3	$350.00	**$3,500.00**
	PRELIMINARY, SITE WORKS & DEMOLITIONS TOTAL				**$72,500.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	Trails remediation - crushed limestone to match existing	1	allowance	$20,000.00	**$20,000.00**
2.02	Paving Type 1- 100mm thick coloured concrete	340	m2	$80.00	**$27,200.00**
2.03	Driveway access and parking (gravel)	1,200	m2	$65.00	**$78,000.00**
2.04	Concrete pads to seating and bin areas	20	m2	$80.00	**$1,600.00**
2.05	Boardwalk remediation	1	allowance	$20,000.00	**$20,000.00**
	HARDWORKS - SURFACE TREATMENTS TOTAL				**$146,800.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Ramps and stairs (Denison House)	20	m2	$2,000.00	**$40,000.00**
3.02	Edging Type 1 - Steel Edging to garden beds	100	m2	$45.00	**$4,500.00**
3.03	Kayak Launch	1	allowance	$20,000.00	**$20,000.00**
3.04	Benches	6	item	$1,500.00	**$9,000.00**
3.05	Toilets (Denison House)	40	m2	$2,000.00	**$80,000.00**
3.06	Picnic tables	4	each	$5,000.00	**$20,000.00**
3.07	Bin enclosures	6	each	$7,000.00	**$42,000.00**
3.08	Bike rack	4	each	$750.00	**$3,000.00**
3.09	Bolders	10	each	$150.00	**$1,500.00**
3.10	Retaining walls	100	l/m	$1,200.00	**$120,000.00**
3.11	Drinking fountain with bottle refill	1	each	$6,910.00	**$6,910.00**
3.12	Signage	1	allowance	$8,000.00	**$8,000.00**
3.13	Double BBQ	2	each	$12,000.00	**$24,000.00**
3.14	Nature playspace	2	allowance	$100,000.00	**$200,000.00**
3.15	Conservation Area fencing	400	l/m	$50.00	**$20,000.00**
	HARDWORKS - INFRASTRUCTURE TOTAL				**$598,910.00**
4.00	**SOFTWORKS**				
4.01	Reveg Planting - Tube stock including soil wetting agent and slow release fertiliser as per manufacturers standards (4 tubes /m2)	8,000	m2	$12.00	**$96,000.00**
4.02	Planting - 140mm pot including soil wetting agent and slow release fertiliser as per manufacturers standards (3 /m2)	1,500	m2	$24.00	**$36,000.00**
4.03	Trees - 45L - incl. Tree Stakes & Soil conditioner	10	item	$160.00	**$1,600.00**
4.04	Trees - 200L - incl. Tree Stakes & Soil conditioner	18	item	$430.00	**$7,740.00**
4.05	Soil conditioner for garden bed areas - 25mm thick	1,500	m2	$12.00	**$18,000.00**
4.06	Mulch Type 2 - Rock mulch - 75mm thick	1,500	m2	$30.00	**$45,000.00**
4.07	Roll on turf - with 20mm soil conditioner	300	m2	$10.27	**$3,081.00**
	SOFTWORKS TOTAL				**$207,421.00**
5.00	**LIGHTING AND PUBLIC ART**				
5.01	Light posts and associated electrical work	1	item	$10,000.00	**$10,000.00**
5.02	Lighting to built structures	1	item	$20,000.00	**$20,000.00**
5.03	Conduits, trenching, cabling, cabinets and switchboards, etc	1	item	$50,000.00	**$50,000.00**
5.04	Public Art	2	allowance	$15,000.00	**$30,000.00**
	LIGHTING AND PUBLIC ART TOTAL				**$110,000.00**
			Sub Total Construction		**$1,135,631.00**
			Contingency	30%	**$340,689.30**
			Sub total Exc GST		**$1,476,320.30**
			GST	10%	**$147,632.03**
			TOTAL inc GST		**$1,623,952.33**

LAGOON

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL
1.00	**PRELIMINARY, SITE WORKS & DEMOLITIONS**				
1.01	Site mobilisation	1	item	$10,000.00	**$10,000.00**
1.02	Fine grading	1	item	$10,000.00	**$10,000.00**
1.03	Arborist Tree Pruning & TPZ Protection	1	item	$15,000.00	**$15,000.00**
1.04	Weed Eradication	15,000	m2	$0.80	**$12,000.00**
1.05	Minor Earthworks and fine grading	2,000	m2	$1.00	**$2,000.00**
	PRELIMINARY, SITE WORKS & DEMOLITIONS TOTAL				**$49,000.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	Boardwalk across water (timber or grated walkway including support structure and handrail)	200	m2	$800.00	**$160,000.00**
2.02	Paving Type 1- 100mm thick coloured concrete to replace boardwalk	1,000	m2	$80.00	**$80,000.00**
2.03	Concrete pads to seating and bin areas	20	m2	$80.00	**$1,600.00**
	HARDWORKS - SURFACE TREATMENTS TOTAL				**$241,600.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Ramps and stairs	20	m2	$2,000.00	**$40,000.00**
3.02	Benches	6	item	$1,500.00	**$9,000.00**
3.03	Bird Hide (feature)	40	m2	$2,000.00	**$80,000.00**
3.04	Bin enclosures	2	each	$7,000.00	**$14,000.00**
3.05	Bike rack	2	each	$750.00	**$1,500.00**
3.06	Signage including through Dunes (Directional & Interpretive)	1	allowance	$7,000.00	**$7,000.00**
	HARDWORKS - INFRASTRUCTURE TOTAL				**$151,500.00**
4.00	**SOFTWORKS**				
4.01	Reveg Planting - Tube stock including soil wetting agent and slow release fertiliser as per manufacturers standards (4 tubes /m2)	500	m2	$12.00	**$6,000.00**
4.02	Trees - 200L - incl. Tree Stakes & Soil conditioner	10	item	$430.00	**$4,300.00**
	SOFTWORKS TOTAL				**$10,300.00**
5.00	**LIGHTING AND PUBLIC ART**				
5.01	Lighting to carpark	1	item	$2,000.00	**$2,000.00**
5.02	Conduits, trenching, cabling, cabinets and switchboards, etc	1	item	$5,000.00	**$5,000.00**
5.03	Public Art	1	allowance	$10,000.00	**$10,000.00**
	LIGHTING AND PUBLIC ART TOTAL				**$17,000.00**
			Sub Total Construction		**$469,400.00**
			Contingency	30%	**$140,820.00**
			Sub total Exc GST		**$610,220.00**
			GST	10%	**$61,022.00**
			TOTAL inc GST		**$671,242.00**

DUNES AND LOOKOUT

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL
1.00	**PRELIMINARY, SITE WORKS & DEMOLITIONS**				
1.01	Site mobilisation	1	item	$10,000.00	**$10,000.00**
1.02	Fine grading	1	item	$10,000.00	**$10,000.00**
1.03	Arborist Tree Pruning & TPZ Protection	1	item	$15,000.00	**$15,000.00**
1.04	Weed Eradication	30,000	m2	$0.80	**$24,000.00**
1.05	Minor Earthworks and fine grading	10,000	m2	$1.00	**$10,000.00**
1.06	Rock Excavation	20	m3	$350.00	**$7,000.00**
	PRELIMINARY, SITE WORKS & DEMOLITIONS TOTAL				**$76,000.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	Trails remediation - crushed limestone to match existing	1	allowance	$20,000.00	**$20,000.00**
2.02	Paving Type 1- 100mm thick coloured concrete	50	m2	$80.00	**$4,000.00**
2.03	Paving Type 3 - New crushed limestone trails	250	m2	$65.00	**$16,250.00**
2.04	Parking (Bitumen)	50	m2	$32.00	**$1,600.00**
2.05	Concrete pads to seating and bin areas	50	m2	$80.00	**$4,000.00**
2.06	Conservation Area fencing	600	l/m	$50.00	**$30,000.00**
	HARDWORKS - SURFACE TREATMENTS TOTAL				**$75,850.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Ramps and stairs	120	m2	$2,000.00	**$240,000.00**
3.02	Edging Type 2 - flush kerb to carpark	60	l/m	$70.00	**$4,200.00**
3.03	Benches	8	item	$1,500.00	**$12,000.00**
3.04	Lookout (Architectural feature)	50	m2	$2,000.00	**$100,000.00**
3.05	Picnic tables	2	each	$5,000.00	**$10,000.00**
3.06	Bin enclosures	2	each	$7,000.00	**$14,000.00**
3.07	Bike rack	2	each	$750.00	**$1,500.00**
3.08	Retaining walls	20	l/m	$1,200.00	**$24,000.00**
3.09	Drinking fountain with bottle refill	1	each	$6,910.00	**$6,910.00**
3.10	Signage	1	allowance	$5,000.00	**$5,000.00**
	HARDWORKS - INFRASTRUCTURE TOTAL				**$417,610.00**
4.00	**SOFTWORKS**				
4.01	Reveg Planting - Tube stock including soil wetting agent and slow release fertiliser as per manufacturers standards (4 tubes /m2)	6,000	m2	$12.00	**$72,000.00**
4.02	Planting - 140mm pot including soil wetting agent and slow release fertiliser as per manufacturers standards (3 /m2)	1,100	m2	$24.00	**$26,400.00**
4.03	Trees - 200L - incl. Tree Stakes & Soil conditioner	12	item	$430.00	**$5,160.00**
4.04	Soil conditioner for garden bed areas - 25mm thick	1,100	m2	$12.00	**$13,200.00**
4.05	Mulch Type 2 - Rock mulch - 75mm thick	1,100	m2	$30.00	**$33,000.00**
	SOFTWORKS TOTAL				**$149,760.00**
5.00	**LIGHTING AND PUBLIC ART**				
5.01	Lighting to built structures	1	item	$2,000.00	**$2,000.00**
5.02	Conduits, trenching, cabling, cabinets and switchboards, etc	1	item	$10,000.00	**$10,000.00**
5.03	Public Art	1	allowance	$30,000.00	**$30,000.00**
	LIGHTING AND PUBLIC ART TOTAL				**$42,000.00**

	Sub Total Construction		**$761,220.00**
	Contingency	30%	**$228,366.00**
	Sub total Exc GST		**$989,586.00**
	GST	10%	**$98,958.60**
	TOTAL inc GST		**$1,088,544.60**

SUMMARY

ITEM	DESCRIPTION	TOTAL
1.00	**Central**	
1.01	PRELIMINARY, SITE WORKS & DEMOLITIONS	$64,500.00
1.02	HARDWORKS - SURFACE TREATMENTS	$95,200.00
1.03	HARDWORKS - INFRASTRUCTURE	$719,110.00
1.04	SOFTWORKS	$417,494.50
1.05	LIGHTING AND PUBLIC ART	$126,000.00
1.06	PEDESTRIAN BRIDGE	$1,000,000.00
	Central	**$2,422,304.50**
2.00	**Eastern**	
2.01	PRELIMINARY, SITE WORKS & DEMOLITIONS	$72,500.00
2.02	HARDWORKS - SURFACE TREATMENTS	$446,700.00
2.03	HARDWORKS - INFRASTRUCTURE	$458,820.00
2.04	SOFTWORKS	$301,500.00
2.05	LIGHTING AND PUBLIC ART	$56,000.00
	Eastern	**$1,335,520.00**
3.00	**Old Port Trail**	
3.01	PRELIMINARY, SITE WORKS & DEMOLITIONS	$72,500.00
3.02	HARDWORKS - SURFACE TREATMENTS	$146,800.00
3.03	HARDWORKS - INFRASTRUCTURE	$598,910.00
3.04	SOFTWORKS	$207,421.00
3.05	LIGHTING AND PUBLIC ART	$110,000.00
	Old Port Trail	**$1,135,631.00**
2.00	**Lagoon**	
2.01	PRELIMINARY, SITE WORKS & DEMOLITIONS	$49,000.00
2.02	HARDWORKS - SURFACE TREATMENTS	$241,600.00
2.03	HARDWORKS - INFRASTRUCTURE	$151,500.00
2.04	SOFTWORKS	$10,300.00
2.05	LIGHTING AND PUBLIC ART	$17,000.00
	Lagoon	**$469,400.00**
2.00	**Dunes and Lookout**	
2.01	PRELIMINARY, SITE WORKS & DEMOLITIONS	$76,000.00
2.02	HARDWORKS - SURFACE TREATMENTS	$75,850.00
2.03	HARDWORKS - INFRASTRUCTURE	$417,610.00
2.04	SOFTWORKS	$149,760.00
2.05	LIGHTING AND PUBLIC ART	$42,000.00
	Dunes and Lookout	**$761,220.00**

Sub Total Construction	$6,124,075.50
Contingency 30%	$1,837,222.65
Sub total Exc GST	$7,961,298.15
GST 10%	$796,129.82
TOTAL inc GST	$8,757,427.97



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JOSH BYRNE & ASSOCIATES

SHIRE OF IRWIN
DONGARA · PORT DENISON
A BRILLIANT BLEND

EXTENDED ENTRY STATEMENT MASTERPLAN

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Document Status

Date of issue	Rev No.	Reason for Issue	Author	Reviewed By	Approved by
19/08/2021	-	Review	JLS	PV, JB	PV
07/09/2021	A	Review	JLS	PV/JB	PV

This document may only be used for the purpose for which it was commissioned in accordance with the Terms of Engagement.

01 INTRODUCTION

The aim of the Extended Entry Statement is to attract visitors into the town and improve the arrival experience.

This document summarises JBA's masterplan for the Dongara/Port Denison Extended Entry. The analysis involved a desktop review, GIS analysis, an initial site visit, community consultation, key stakeholder engagement. These methods were used collectively to develop a strategy that responds to the unique character of Dongara/ Port Denison and the needs of it's community.

DESKTOP REVIEW OF KEY DOCUMENTS

The desktop review included the review of a number of key documents. These include:

- Shire of Irwin Strategic Community Plan 2017-2027
- Mid West Tourism Development Strategy 2014
- Shire of Irwin Tourism Development Plan 2013-2018
- Green Infrastructure Strategy 2015-2020

Key objectives from these reports have been incorporated into the masterplan. Relevant aims have been summarised below:

- Attract more visitors
- Improve the natural environment including weed management, habitat preservation
- Recognise places of cultural heritage value
- Become an RV friendly town (growing market), which has potential to increase visitation
- Market distinctive, 'iconic' activities
- Increase Aboriginal/cultural tourism experiences
- Improve wayfinding, signage, smart devices, google maps, visitor amenities
- Reduce targeted weed species and revegetate
- Control stormwater run-off
- The River is vulnerable to flooding, minimise infrastructure investment in low lying areas
- Develop sensitively designed carparks, amenities
- Improve image, sense of place
- Engage community and provide volunteering opportunities

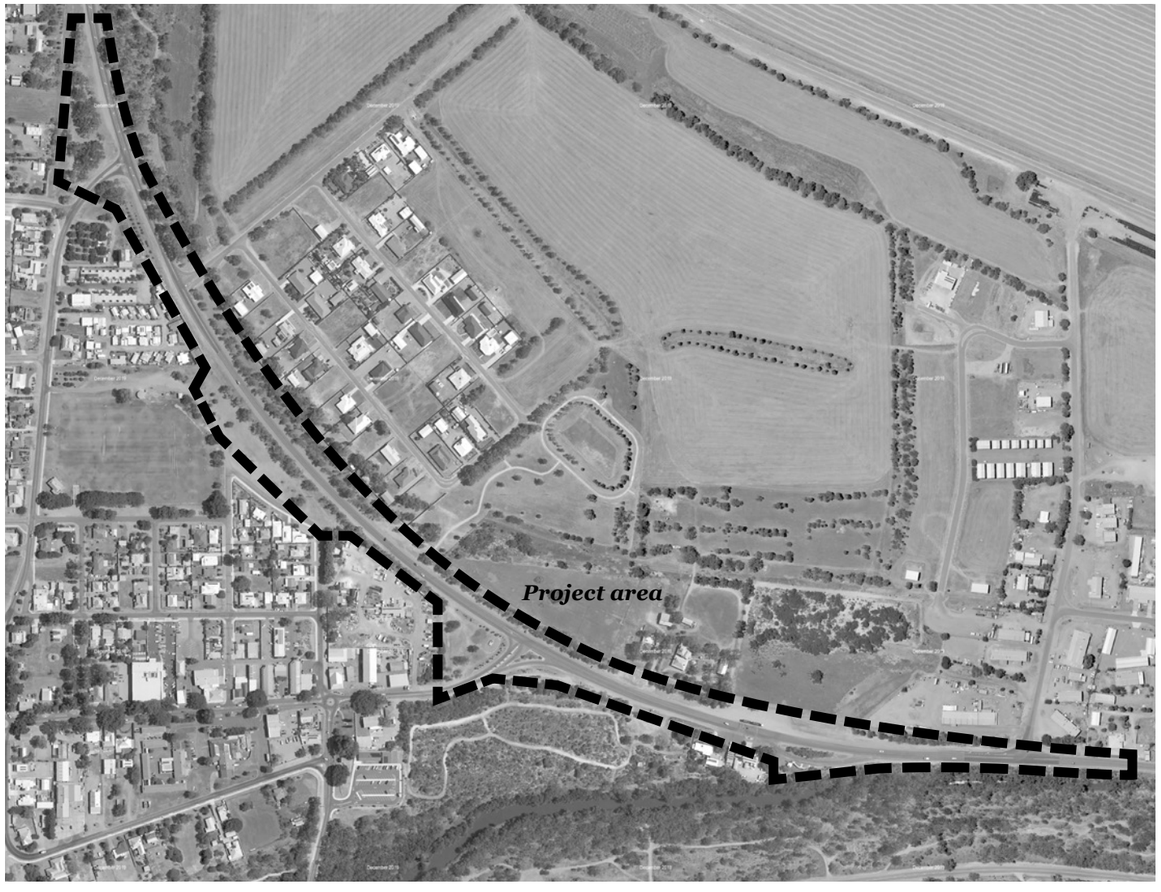
ANALYSIS

The five key analysis areas included Landscape, Environment, Heritage/Culture, Connection and Community. The analysis informed a strategy, that informed the masterplan.

CONSULTATION

Community consultation was undertaken by JBA on 4 March 2021. Feedback on the schematic masterplan has been incorporated into the masterplan. Key points include:

- Label plants and trees in entry statement
- Tree planting as community engagement
- RV and caravan parking at entry statement
- Support use of feature lighting to town signage and big lobster
- Signage on Brand Highway and directional signage to indicate caravan parking



02 ANALYSIS SUMMARY







LANDSCAPE

Vegetation

There are native vegetation communities within the site area. Much of the area has been cleared and is degraded, exotic species introduced, and weed species proliferate. Weeds limit views to the river, compete with native species for resources, and contribute to bushfire risk. Exotic species are incongruous with Shire branding associated with closeness to nature.

Geology and Soils

The soil systems include Quindalup Central (to south), Tamala South System (to north), Greenough Alluvium System (round River and to north). There are Acid Sulfate Soil risk areas in the low lying river valley.

Topography and Landscape Features

The land is relatively flat, so views into Dongara/ Port Denison area limited. The Irwin River runs to the south, downslope of the Brand Highway before turning towards the coast, but views are limited by dense weeds and signage. There is a mix of industrial, agricultural and residential buildings along the approach into Dongara.

Land use

Areas within the study area are largely designated Reserve or Main Roads. Bordering areas are Freehold, which offers limited scope for change.

ENVIRONMENT

Climate

Dongara/Port Denison's climate is characterised by hot, dry summers, cool winters, and low rainfall. A strong southerly wind is typical. The road reserve often appears dry and dusty with limited shade. The perception of inviting shade and comfort is needed in stopping areas.

Water

The southern half of the site, closest to the river is in a flood risk area. Minimising infrastructure within these areas is recommended. Surface water is conveyed via overland flow to the river in the southern part. Some cyanobacterial bloom observed in the River.

Bushfire

Most of the site is within a bushfire risk area. Proliferation of weed species increases fire risk as does unbroken dense vegetation.

HERITAGE/CULTURE

Identity/Character

There are currently limited elements on the Brand Highway to reference the character of Dongara/Port Denison. However, there are a number of natural and heritage features in close proximity.

Indigenous Heritage

The Irwin River is of mythological significance to Indigenous people, there is also a listed artefact site in the vicinity. The local Indigenous group are the Wattandee tribe. This area was referred to as *Thungarra* by the local Indigenous people, meaning place of seals.

Historic Buildings

There are municipal and state listed heritage properties nearby. The prominence and stature of the Royal Steam Roller Flour Mill on Brand Highway makes it a landmark when approaching Dongara from the North. It is on the State Register of Heritage Places. It also potentially enables a second entrance if the first turn-off is missed. There is significant heritage in Dongara, but awareness of the historic town is limited and poorly referenced from the Highway.

CONNECTIONS AND COMMUNITY

Connections

There is a lack of visual connection to the river, and limited signage/interpretation. There is limited wider pedestrian connections into town or from stopping areas to town. There are traffic issues with cars stopping and pulling out from BP and the entrance statement.

There are particular issues with RV and caravan parking, and perception of Dongara not providing parking and/or directional signage to the parking.

03 DESIGN PRINCIPLES



SHOWCASE LANDSCAPE QUALITIES

- Clear weed species and exotics and revegetate verges and stopping areas with local native species to enhance ecology, views and bushfire management.
- Use a native species palette to showcase Dongara's natural environment - incorporate botanic interpretation.
- ASS areas must be carefully managed. Further information will be need if proposals are likely to disturb ASS risk areas.
- Enhance views to key focus points including the River, the entrance statement, and the Mill
- Focus development in areas of Reserve and work with Main Roads to develop areas within their control.
- Provide screening to residential development near Town Oval and industrial area near the big lobster.



RESPONSIVE DESIGN

- Create comfortable rest-stops with amenities and shade (water fountains, shade structures, seating). Key locations identified - big lobster, Mill stop.
- Minimise infrastructure on lower ground.
- Direct surface stormwater runoff into vegetated swales and infiltration basins.
- Develop a drought tolerant native species palette.
- Clear weeds to mitigate fire risk and improve views.
- Create sustainable, robust infrastructure. Explore potential for PV lighting.



PUBLICISE HISTORIC ASSETS

- Reinforce Dongara's sense of place by highlighting existing natural, cultural and built features through enhanced vistas, signage, interpretation and public art opportunities.
- Try to mitigate visually detracting areas such as the industrial area behind the big lobster.
- Engage with Wattandee to input into landscape design and public art. Increase visibility and appreciation of Indigenous cultural heritage through interpretative signage, landscape treatment and public art. Consider Ethnobotanic interpretation.
- Increase access to Royal Steam Roller Flour Mill by gaining ownership, zoning or a collaborative relationships. Improve the landscape setting of the building (remove exotic vegetation on verge and revegetate).
- Improve signage to reference historic buildings and the historic town of Dongara, incorporate interpretation.

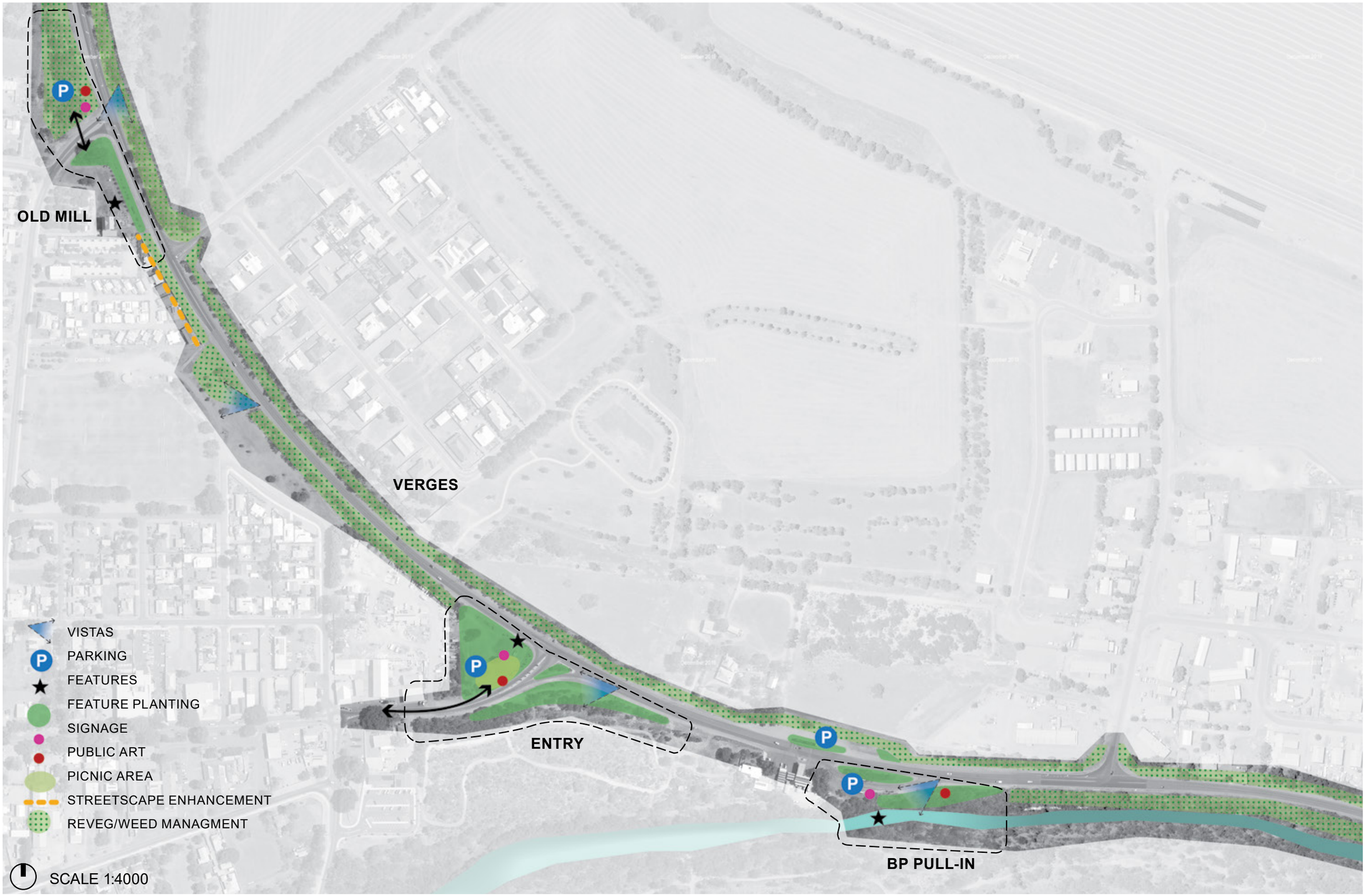
Royal Steam Roller Flour Mill Image: Aussie Towns



CONNECTED AND CO-DESIGNED

- Enhance footpaths into town from entrance statement
- Create visual connection to river
- Improve traffic movement at big lobster, BP stopping area, and formalise parking in stopping areas.
- Place signs well in advance of turn-off to warn of approach. Include signage to show caravan/RV parking catered for.
- Create attractive stopping places with signage, lighting and interpretation to encourage visitors into Dongara.
- Continue to consult with the community to incorporate design ideas that are important to them.
- Develop a taskforce of interested community members to help with weed control and revegetation.

04 MASTERPLAN



05 ENTRY

The main entry to Dongara from Brand Highway includes a pull-in and the Big Lobster sculpture, which is a feature where people stop to take 'selfies'. Key considerations include:

- The topiaried exotics do not support the Shire's theme for Dongara/Port Denison as 'connected to nature'. They are visually detracting and undermine local biodiversity.
- Drivers stopping to photograph the Big Lobster create a traffic hazard.
- The informal rest stop doesn't offer amenities or an attractive setting.
- Lack of pedestrian links to Dongara.

The aim is to improve the safety and setting of the Big Lobster and entrance to Dongara to create an attractive rest stop and encourage visitors into the town. Key strategies include:

- Improve amenities and comfort (shade, seating, water).
- Clear weed species and exotics.
- Use feature lighting and new signage to highlight the town entrance.
- Direct surface stormwater runoff into vegetated swales and infiltration basins.
- Formalise parking for caravans, campers and cars with easy, clear exit for larger vehicles.
- Create universal access to Big Lobster.
- Create walking trails through landscape.
- Enhance landscape setting with native trees, wildflowers, and Fig trees to create a lush shaded environment and links to the character of Dongara.
- Incorporate interpretive signage describing Dongara/Port Denison's heritage, botanical information, Indigenous history/themes.

EXISTING PHOTOS



Industrial Site adjacent to Big Lobster



Existing Entry (from south)



Turn-off into Dongara

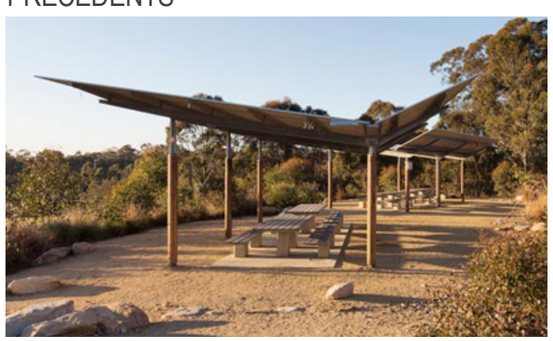


Approach to Moreton Terrace

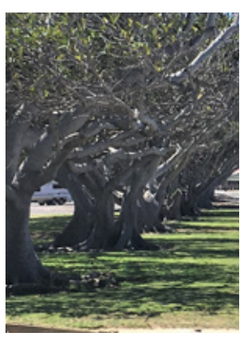
MAIN ENTRY CONCEPT PLAN



PRECEDENTS



Picnic Shelter Img: Lizard Log Simon Whitbread





Illuminated Town Signage Img: RSM Design



Picnic lawn Img: McGregor Coxall



Mulched area with logs and rocks Img: JBA

06 BP PULL-IN

The BP pull-in is a first potential pull-in point prior to the entry to Dongara from the south. Key considerations include:

- The River Irwin is in close proximity to the Brand Highway at this location.
- Lack of visibility of the River by weeds, undergrowth and signage.
- Unattractive and uninformative signage.
- Lack of road/parking markings make vehicle movements unclear.

The aim is to improve the look and feel of this key stopping point before the Dongara turn-off to promote key values of the towns of Dongara and Port Denison. Key strategies include:

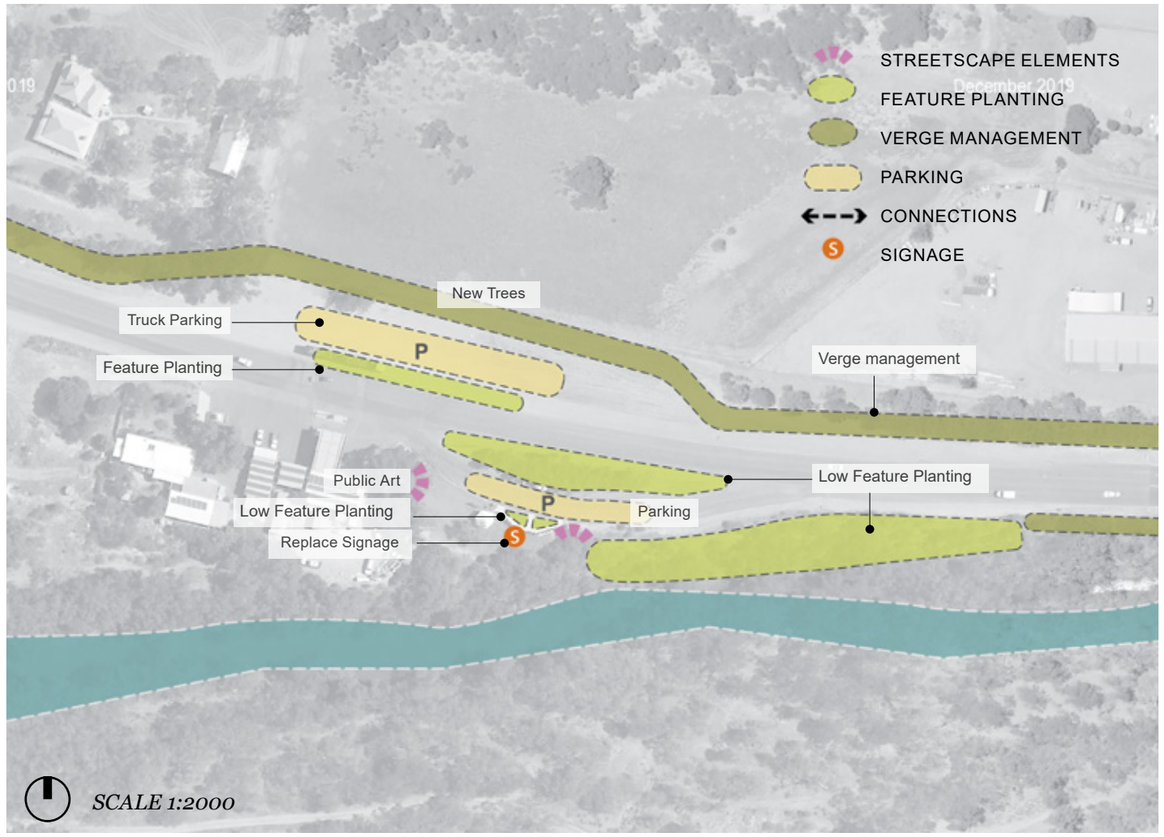
- Remove existing advertising and replace with sympathetic and discrete information signage. Re-use limestone in low wall.
- Clear weed species and selective native species (*Acacia*) to improve views to the River.
- Plant native species on island and surrounding pull-in as feature planting. Feature trees and low feature planting to maintain views to the River.
- Create low key trail to River.
- Formalise parking/traffic movement with road markings.
- Formalised truck parking and plant new trees to the north for shade and low feature planting on the Roadside to screen the large area of gravel.
- Introduce public art elements linked to River, Ocean, Jetty, Limestone Cliffs, Historic buildings, Shipwrecks, local Flora/Fauna, Wattandee totem or language.

EXISTING PHOTOS





BP PULL-IN MASTERPLAN



PRECEDENTS



New Norcia Design/Image: Axiom



Commonground design & images



The Australian Garden Img: TCL



WGV native planting Img: JBA

07 OLD MILL

The Old Mill is a key feature of the approach to Dongara from the north. It acts as a landmark to the northern turn-off to Dongara, but it's value is not yet fully realised. Key considerations include:

- The Mill is under private ownership and public access is currently limited.
- The adjacent planting is unplanned and ill-considered.
- Verges are inundated with weeds and exotic species.
- There is no interpretive signage to describe the Mill History despite it being a significant state registered heritage place .
- There is an informal parking space to the north of the mill.
- To the south is a residential subdivision with a fence of low aesthetic value.
- Visual connection to Mill must be maintained.

The aim is to improve the setting and interpretation of the Mill and this northern entry. Key strategies include:

- Create parking area/pull-in to north including for caravans and larger vehicles.
- Interpretive signage for Mill, and Dongara history, local flora and fauna.
- Improve landscape setting with feature native planting. Include several feature trees and low feature planting to retain visual connection to Mill. Crushed limestone pathways.
- Negotiate with owner to give public access to Mill or create public access use (gallery, cafe) to activate the Mill and Brand Highway.
- Incorporate public art that references the mill history and related agricultural history.
- Replace fence/create public art screen to residential

EXISTING PHOTOS



Royal Steam Roller Flour Mill Image: Aussie Towns

OLD MILL MASTERPLAN



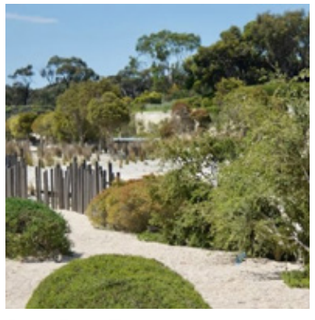
PRECEDENTS



Interpretative signage Design/Img: Multistory



Native Feature Planting Paul Thomson/TCL Img: Paul Thompson





Timber screening/planting Img: Clare Cousins

08 VERGES AND APPROACH

The entrance sequence to Dongara extends 3-5km to the north and south of the Town Entry. These areas must also be addressed in the design to increase the potential of visitors entering Dongara. Key considerations include:

- Signage to describe the features in Dongara/ Port Denison in the lead up to the town entry is limited.
- Verges are inundated with weeds and exotic species.
- Limited design of verge planting.
- Limited expression of points of interest and natural features.

The aim is to improve the look and feel of the verges leading up to the town entry to promote key features and themes of the towns of Dongara and Port Denison. Key strategies include:

- Weed removal
- Signage 3km before turn-off to describe historical/environmental features of Dongara/ Port Denison (see example right).
- Incorporate public art thematically linked to River, Ocean, Jetty, Limestone Cliffs, Historic buildings, Shipwrecks, local Flora/Fauna, Wattandee totem or language.
- Consider how the road itself or industrial buildings could be 'activated' with public art (see examples right).
- Direct surface stormwater runoff into vegetated swales and infiltration basins.
- Use native planting palette to create visual interest and diversity at low level adjacent to the road.
- Planted or landscape elements as screening to industrial development to improve approach.

PRECEDENTS



Tourist Attractions Signage Img: Ozroads



Ashphalt activation Img Super Fresh Design



Silo Art Artist Rone Img: Robin Dunk Annette Gree



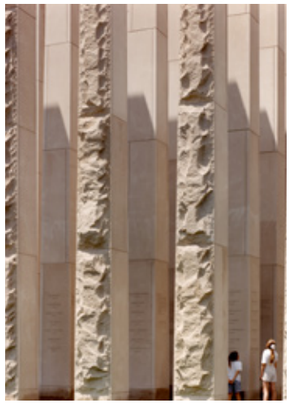
Backyard Botanicals Img: D.Blumer



Lanna Landcraft Img: G.Carr



Australian Memorial Img: Mike Rolf



Img Charles Rose Architects



Edge of the Trees Img: Sydney Living Museum



Boodja Bidi Youth Art Img: Louise Coghill

09 PLANT PALETTE

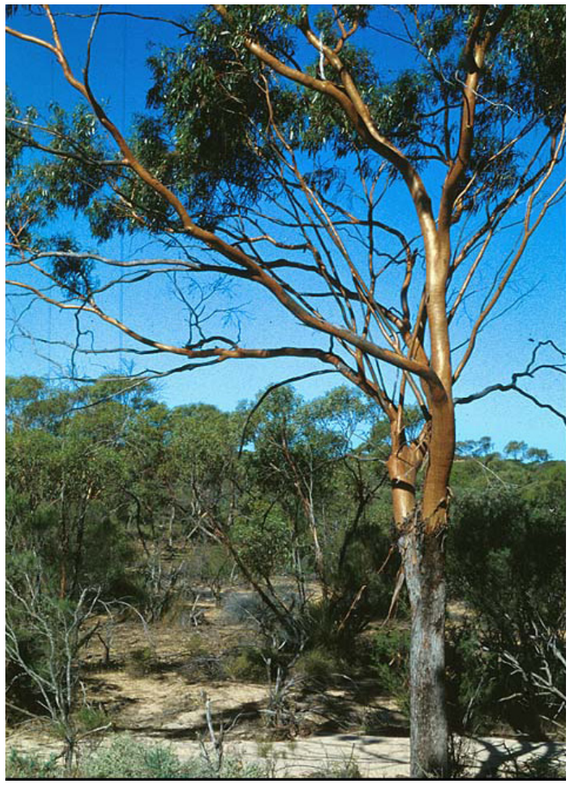
The plant palette selection recommends native plants to reflect Dongara's natural setting. It is recommended that where exotic species have historical significance, for example Moreton Bay Fig and Port Jackson Fig, they be preserved. Selective additional planting of Ficus species is considered appropriate in the Main Entry only. Further study is required to understand the historical significance of the exotic planting adjacent to the Mill and any historical buildings on the approach to the town. Where Australian native trees (but not local) are planted (i.e Tuarts) it is recommended to retain them as they have landscape value.

GIS mapping, the Dongara to Cape Burney Coastal Vegetation Survey (2010), and the Irwin River Estuary Weed Management Plan (2013) have been used to identify native vegetation units for the area that form the basis of the planting palette. Vegetation units include:

- *Acacia rostellifera* tall open scrub
- *Casuarina obesa* open forest
- *Eucalyptus camaldulensis* open forest
- *Melaleuca huegelii* open scrub
- Beard's 1976 Map identifies Units 352 (York Gum woodland) and 433 (Acacia rostellifera, Meleleuca cardiophylla thicket/sparse low woodland; Eucalyptus erythycorys (Illyarrie).

The planting strategy is to use local species to revegetate in degraded areas and new feature planting/WSUD. Limited clearing of shrubs and dead wood should be considered as fire mitigation and to open up views. Planting of new trees can only be considered where they won't interfere with visibility.

EUCALYPTUS LOXOPHLEBA (YORK GUM)



York Gum Image Florabase Img: B.R Maslin S.J Patrick

FICUS MACROPHYLLA



Ficus Macrophylla (Moreton Bay Fig) Img:JBA

EUCALYPTUS ERYTHYCORYS (ILLYARRIE)



Eucalyptus Erythrocorys Img: Jim Barrow.jpg

ACACIA ROSTELLIFERA TALL OPEN SCRUB

Acacia rostellifora



Image Credit: John Baas

Acanthocarpus preissii



Image Credit: nativ.com.au

Alyogyne huegelii



Image Credit: nativ.com.au

Alyxia buxifolia



Image Credit: northqueenslandplants.com.

Amyema miraculosa subsp.



Image Credit: northqueenslandplants.com.

Anthocercis intricata



Image Credit: Gary Thompson

Austrostipa elegantissima



Image Credit: Cottesloecoastcare.org

Callitris arenaria-



Image Credit: Rick Fencl

Carpobrotus virescens-



Image Credit: Lullfitz.com.au

Cassytha racemosa-



Image Credit: Cottesloecoastcare.org

Clematis linearifolia



Image Credit: northqueenslandplants.com.

Convolvulus remotus



Image Credit: Melissa Doherty

Dianella revoluta



Image Credit: Simontheplantman.com

Enchylaena tomentosa var.



Image Credit: Arthur Chapman

Exocarpos sparteus



Image Credit: William Archer

Hibbertia subvaginata-



Image Credit: Ellenbrook bushland

Lepidosperma gladiatum-



Image Credit: Lullfitz.com.au

Maireana brevifolia



Image Credit: Don Wood

Melaleuca Carcardiophylla-



Image Credit: Geoff Derrin

Melaleuca huegelii



Image Credit: Brian Freeman

Melaleuca lanceolata



Image Credit: nativeshop.com.au

Myoporum montanum



Image Credit: diversitynativeseeds.com

Myoporum tetrandrum



Image Credit: M. Kealley

Pittosporum ligustrifolium



Image Credit: Robert Powell

Rhagodia baccata subsp.



Image Credit: Cottesloecoastcare.org

Rhagodia preissii



Image Credit: Westgrow.com.au

Salsola australis-



Image Credit: Anne Hoggett

Santalum acuminatum-



Image Credit: wtlandcare.org

Scaevola crassifolia -



Image Credit: R. Clark

Scaevola thesioides



Image Credit: Porteuspark.org.au

Spyridium globulosum



Image Credit: Cambridgecoastcare.com.au

Suaeda australis



Image Credit: friendsofwilliamstown

Templetonia retusa



Image Credit nativ.com.au

Threlkeldia diffusa



Image Credit: scnaturesearch.com.au

Tricoryne elatior



Image Credit: Frasercoastplants

EUCALYPTUS CAMALDULENSIS OPEN FOREST

Acacia rostellifora



Image Credit: John Baas

Acacia saligna subsp. lindleyi



Image Credit: Katanninglandcare.org.au

Alyogyne huegelii



Image Credit: Brian Freeman

Atriplex cinerea



Image Credit: plantthis.com.au

Austrostipa elegantissima



Image Credit: Cottesloecoastcare.org

Casaurina obesa



Image Credit: vhd.heritage.vic.gov.au

Cyperus gymnocaulos



Image Credit: urrbraewetlandlc.org

Enchylaena tomentosa var.



Image Credit: Arthur Chapman

Eucalyptus Camaldulensis



Image Credit: Katanninglandcare.org.au

Maireana brevifolia-



Image Credit: Don Wood

Pimelea microcephala subsp.



Image Credit: SA Seed conservation

Tecticornia halocnemoides



Image Credit: Colin Meurk

Typha domingensis



Image Credit: wtlandcare.org

MELALEUCA HUEGELII TALL OPEN SCRUB

Acanthocarpus preissii



Image Credit: nativ.com.au

Carpobrotus virescens



Image Credit: Lullfitz.com.au

Cassytha racemosa



Image Credit: Cottesloecoastcare.org

Dianella revoluta



Image Credit: Simontheplantman.com

Enchylaena tomentosa var.



Image Credit: Arthur Chapman

Eremophila glabra subsp.



Image Credit William Archer

Melaleuca huegelii



Image Credit: Brian Freeman

Myoporum montanum-



Image Credit: diversitynativeseeds.com

Olearia axillaris



Image Credit: Cottesloecoastcare.org

Ptilotus divaricatus



Image Credit: Timothy Hammer

Rhagodia baccata subsp.



Image Credit: Cottesloecoastcare.org

Salsola australis



Image Credit: Anne Hoggett

Santalum acuminatum



Image Credit: Anne Hoggett

Scaevola crassifolia



Image Credit: R. Clark

Tecticornia halocnemoides



Image Credit: Colin Meurk

Templetonia retusa



Image Credit nativ.com.au

Threlkeldia diffusa



Image Credit: scnaturesearch.com.au

10 MANAGEMENT

WEEDS

The project area is typically is in a semi-degraded condition and impacted by weed infestation. Environmental weeds identified during site visits are listed opposite and supplemented with weeds identified in the 2013 Irwin Estuary Weed Management Plan, and the 2010 Dongara to Cape Burney Coastal Vegetation Survey, which are both reports commissioned by NACC on sites immediately adjacent to the project areas. The table opposite summarises weeds identified, order of priority, and management. Further details can be found in the reports referenced. The ranking indicates the priority for weed eradication.

Areas of particular weed management focus should be the entry statement to Dongara and catchment areas where weed seeds could be washed by surface water drainage into the river.

There is a clear role for community volunteers including monitoring and hand removal of selected weed species, photo monitoring, and establishment of regional herbarium. Volunteer weed management is best suited to tackling smaller areas of highly visible weeds removed manually and ongoing monitoring. It is recommended that the Shire collaborate with NACC, MEEDAC, and community groups for ongoing weed management and revegetation.

Revegetation could also be tackled by community volunteers. Tree planting on the Entry site by high school students has historically occurred, and this could be attempted again.

Weed control is important to improve the visual landscape value, for bushfire mitigation, and to maintain the ecological and biodiversity value of the vegetation communities and anything downstream of the project area where weed seeds could be transported by the Irwin River.

SPECIES	PRIORITY	MANAGMENT
African Boxthorn	Very High	Remove (hand, cut and paint, spray) and monitor
Geraldton Carnation Weed	Very High	Community monitor and hand remove twice a year
Japanese Pepper	Very High	Hand remove seedlings, stem inject/cut and paint trees
African Lovegrass	Very High	Herbicide , Community monitor and hand remove
Couch and Kikuyu Grass	Very High	Experienced contractor to remove
Crownbeard	Very High	Community hand remove or spray
Fountain grass	Very High	Herbicide, Community monitor and hand remove
Ice Plant	Very High	Remove germinants and monitor
Lantana	Very High	Remove all plants and do not spread fruit
Pypegrass	Very High	Eradicate
Tambookie Grass	Very High	Community monitor and hand remove
Whiteflower Fumitory	Very High	Hand remove and spray with glyphosate larger areas
Wild Oats	Very High	Grass selective herbicide
Wild Turnip	Very High	Community monitor and hand remove
Great Brome	High	
Annual Beardgrass	Medium	
Barley Grass	Medium	
Red Brome	Medium	
Canary island date palms	Medium	Hand remove, cut and paint trees
Cape Weed	Medium	
Castor Oil	Medium	Community monitor and hand remove seedlings, cut and paint trees
False Bamboo	Medium	Cut and paint, spray herbicide
False Hawkbit	Medium	
Fescue (Squirrels Tail, Vulpia, Rat's Tail)	Medium	
Hop Clover	Medium	
Hottentot Fig, Pigface	Medium	
Olive	Medium	Hand remove seedlings, cut and paint trees
Onion weed	Medium	Hand remove near Bridge
Lupin	Medium	
Nettleleaf Goosefoot or Green Fat Hen	Medium	
Pepper tree	Medium	Hand remove seedlings, stem inject/cut and paint trees
Pimpernel	Medium	
Smooth Cat's Ear, Flat Weed	Medium	
Soursob	Medium	Remove
Saffron Thistle and Common Sowthistle	Medium	
Tamarisk	Medium	Stem inject glyphosate, remove specimen near boardwalk and adjacent to Point Leander Drive
Velvet Pink	Medium	
Agave Americana	Low	Hand remove small plants, chemical control large plants
French Catchfly	Low	
Norfolk Island Hibiscus, Tree Tobacco	Low	Hand remove seedlings and stem inject mature
Rye Grass	Low-Medium	
Veldt Grass	Low-High	

BUSHFIRE

Fuel reduction/management

Fuel load risk should be mitigated by clearing weeds. In areas in close proximity to infrastructure maintain combustible dead vegetation levels as set out in SPP 3.7. Selective clearing could occur at the BP pull-in where it would also create visual connection to the River and a crushed limestone path could create a buffer. Another clearing could occur to the east where the River Reserve is still under Shire Control. Weed removal could be focussed in these areas and there could be selective clearing of existing native shrubs and trees in poor condition. In these areas shrubs and trees should not form a continuous canopy and existing tree canopies could be raised (branches removed below 2m).

Infrastructure siting

Infrastructure is located in lower risk areas that are already substantially cleared or less dense. In the entry, an Asset Protection Zone should be created around new and existing infrastructure as set out in SPP 3.7.

Planting design

In this 'natural' context it is considered to maintain the native planting palette rather than specify exotics that might be lower fire risk. However, reducing planting density for new planting (to reduce fuel load) and non-flammable rock mulches should be considered at the Entry, BP pull-in, and Mill. Non-flammable stone walls can be incorporated as 'shield' walls (from wind, radiant heat, embers). Areas of low combustible planting/non-flammable mulches will be interspersed between trees, and shrubs will be clumped and separated from trees to break up fuel continuity.

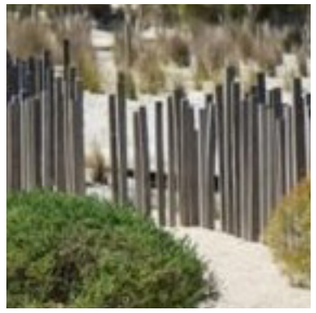
11 MATERIAL PALETTE

The material palette reflects key the key themes identified as appropriate to Dongara/Port Denisons character. These include thematic links to maritime history, coastal geology, the natural Riparian environment, and agricultural history. The material strategy reflects and supports this:

- Create low-key crushed rock trails with informal edges
- Develop bespoke shade structures, furniture or select furniture products that have colours and textures that are appropriate to the natural setting. These including timber, weathering steel, darker coloured painted steel, tinted concrete
- Create appropriate walls and footpaths using local limestone or coloured/textured concrete that reflects the local limestone geology
- Use natural curves and shapes found in nature
- Allow materials to form a natural patina rather than using stains and varnishes.
- Use reclaimed materials such as recycled jarrah that already have a patina and blend with the natural environment and link to maritime history themes
- Avoid formal edges and large areas of hardstanding in contrasting colours. Carparks to be crushed gravel with timber or steel edging









12 OPINION OF PROBABLE COST

ENTRY

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL PRICE
1.00	**PRELIMINARIES, SITE WORKS AND DEMOLITIONS**				
1.01	Site Mobilisation	1	item	$15,000.00	$15,000.00
1.02	Traffic Control	1	item	$6,000.00	$6,000.00
1.03	Demolition and disposal *(existing paving in Median)*	110	m2	$30.00	$3,300.00
1.04	Bulk Earthworks - Import of soil *(feature mounds and levelling parking area)*	400	m3	$14.00	$5,600.00
1.05	Bulk Earthworks - Spreading of soil	400	m3	$8.00	$3,200.00
1.06	Site Preparation - Excavation and fine grading	4,070	m2	$2.50	$10,175.00
1.07	Final trim for soft landscape	1,830	m2	$1.50	$2,745.00
		PRELIMINARIES, SITE WORKS AND DEMOLITIONS			**$46,020.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	P01 - Paving Type 1 - Exposed Aggregate Paving - 100mm thick 0.5mm exposed 14mm quartz aggregate on compacted sub grade *(path and Lobster hardstand)*	220	m2	$140.00	$30,800.00
2.02	P02 - Paving Type 2 - Compacted crushed gravel - 75mm *(walk trail)*	90	m2	$30.00	$2,700.00
2.03	P03 - Paving Type 3 - Ferricrete/gravel *(Car parking area and road edging)*	1480	m2	$30.00	$44,400.00
2.04	E01 - Edging Type 1 - Concrete garden edging, 200 x 300mm *(turf edging)*	80	lin m	$70.00	$5,600.00
2.05	E03 - Edging Type 3 - Kerbing - Semi-mountable *(to driveway and roundabout)*	255	lin m	$70.00	$17,850.00
2.06	E04 - Rock Pitching - Mortared laterite stone pitching, nom 400 x 400mm *(path ramp to Lobster - retaining)*	25	m2	$145.00	$3,625.00
2.07	Pram Ramp	1	item	$1,200.00	$1,200.00
		HARDWORKS - SURFACE TREATMENTS			**$106,175.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Picnic Setting Type 1 - table with bench seats (potential artist item)	2	item	$6,000.00	$12,000.00
3.02	Shade Structure - 4 x 4m, steel HDG frame, powdercoated finish, inground fixing	1	each	$15,000.00	$15,000.00
3.03	Arrival Sequence Public Art	2	item	$15,000.00	$30,000.00
3.04	Signage - in park interpretive signage	4	item	$3,000.00	$12,000.00
3.05	Concrete Seating wall - with recessed corten 'Dongara' signage	37	lin m	$1,200.00	$44,400.00
3.06	Vertical sleepers - variable 1.8 - 3m high *(screening to concrete works)*	15	each	$250.00	$3,750.00
3.07	Log steppers *(to Lobster)*	5	each	$450.00	$2,250.00
3.08	Large climbing log - smoothed off	2	each	$3,000.00	$6,000.00
3.09	Local rock boulders - nom 600 x 600 x 800mm	10	each	$120.00	$1,200.00
		HARDWORKS - INFRASTRUCTURE		**TOTAL**	**$126,600.00**
4.00	**SOFTWORKS**				
4.01	Turf	570	m2	$15.00	$8,550.00
4.02	Planting Type 1 - 140mm - Planting Mix - Feature Landscape 3 x $8 per m2	805	m2	$24.00	$19,320.00
4.03	Planting Type 2 - 140mm - Planting Mix - General Landscape 2 x $8 per m2	2,113	m2	$16.00	$33,808.00
4.04	Planting Type 3 - Tubestock - Planting - General Landscape 4 x $3 per m2	1,244	m2	$12.00	$14,928.00
4.05	Planting Type 4 - Cells - 6 per m2 *(Swales)*	550	m2	$12.00	$6,600.00
4.06	Soil Conditioner - 25mm thick *(garden beds and turf incl reveg areas)*	5,282	m2	$7.00	$36,974.00
4.07	Mulch Type 1 - Native Organic mulch - 75mm thick *(Garden beds and swale)*	4,712	m2	$6.00	$28,272.00
4.08	Trees - 45L with staking - including 750g of Terracottem per tree and slow release tree pills as per manufacturers standards	28	item	$200.00	$5,600.00
			SOFTWORKS	**TOTAL**	**$154,052.00**
5.00	**ELECTRICAL**				
5.01	Electrical cabinet	1	each	$6,000.00	$6,000.00
5.02	Feature lighting - Lobster	2	each	$6,000.00	$12,000.00
5.03	Feature lighting - Arrival sequence	16	each	$4,000.00	$64,000.00
			ELECTRICAL	**TOTAL**	**$82,000.00**
6.00	**IRRIGATION**				
6.01	Drip Irrigation to garden beds and sprays to turf	2,945	m2	$20.00	$58,900.00
			IRRIGATION	**TOTAL**	**$58,900.00**
			SUB TOTAL		**$573,747.00**
			Contingency	30%	**$172,124.10**
			Sub total Exc GST		**$745,871.10**
			GST	10.00%	**$74,587.11**
			TOTAL inc GST		**$820,458.21**

BP PULL-IN

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL
1.00	**PRELIMINARY, SITE WORKS & DEMOLITIONS**				
1.01	Site mobilisation	1	item	$10,000.00	**$10,000.00**
1.02	Fine grading	1	item	$10,000.00	**$10,000.00**
1.03	Arborist Tree Pruning	1	item	$5,000.00	**$5,000.00**
1.04	Weed Eradication	2,000	m2	$0.80	**$1,600.00**
1.05	Minor Earthworks and fine grading	100	m2	$1.00	**$100.00**
1.06	Removal and disposal of existing signage (reclaim limestone)	10	m3	$30.00	**$300.00**
		PRELIMINARY, SITE WORKS & DEMOLITIONS TOTAL			**$27,000.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	Paving - New crushed limestone trail to River	80	m2	$65.00	**$5,200.00**
2.02	Parking Line marking	1	allowance	$4,000.00	**$4,000.00**
2.03	Rock pitching to swales	80	m2	$145.00	**$11,600.00**
2.04	Concrete pads to seating and bin areas	2	m2	$80.00	**$160.00**
		HARDWORKS - SURFACE TREATMENTS TOTAL			**$20,960.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Edging - Flush kerb to island	100	m2	$45.00	**$4,500.00**
3.01	Benches	1	item	$1,500.00	**$1,500.00**
3.01	Picnic tables	1	each	$5,000.00	**$5,000.00**
3.01	Bin enclosures	1	each	$7,000.00	**$7,000.00**
3.01	Signage - Information and Interpretive	1	allowance	$6,000.00	**$6,000.00**
		HARDWORKS - INFRASTRUCTURE TOTAL			**$24,000.00**
4.00	**SOFTWORKS**				
4.01	Planting (Feature and Swale) - 140mm pot including soil wetting agent and slow release fertiliser as per manufacturers standards (3 /m2)	1,200	m2	$24.00	**$28,800.00**
4.03	Trees - 45L - incl. Tree Stakes & Soil conditioner	20	item	$160.00	**$3,200.00**
4.03	Soil conditioner for garden bed areas - 25mm thick	1,200	m2	$12.00	**$14,400.00**
4.03	Mulch Type 2 - Rock mulch - 75mm thick	1,200	m2	$30.00	**$36,000.00**
		SOFTWORKS TOTAL			**$82,400.00**
5.00	**SERVICING AND PUBLIC ART**				
5.01	Lighting, conduits, cabling etc,	1	allowance	$4,000.00	**$4,000.00**
5.02	Irrigation	400	m2	$20.00	**$8,000.00**
5.03	Conduits, trenching, cabling, cabinets and switchboards, etc	1	item	$20,000.00	**$20,000.00**
5.04	Public Art	1	allowance	$10,000.00	**$10,000.00**
		SERVICING AND PUBLIC ART TOTAL			**$42,000.00**
			Sub Total Construction		**$196,360.00**
			Contingency	30%	**$58,908.00**
			Sub total Exc GST		**$255,268.00**
			GST	10%	**$25,526.80**
			TOTAL inc GST		**$280,794.80**

OLD MILL

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL
1.00	**PRELIMINARY, SITE WORKS & DEMOLITIONS**				
1.01	Site mobilisation	1	item	$10,000.00	**$10,000.00**
1.02	Fine grading	1	item	$10,000.00	**$10,000.00**
1.03	Arborist Tree Pruning	1	item	$5,000.00	**$5,000.00**
1.04	Weed Eradication	1,000	m2	$0.80	**$800.00**
1.05	Minor Earthworks and fine grading	100	m2	$1.00	**$100.00**
	PRELIMINARY, SITE WORKS & DEMOLITIONS TOTAL				**$25,900.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	Paving - crushed limestone	340	m2	$80.00	**$27,200.00**
2.02	Parking (gravel)	800	m2	$65.00	**$52,000.00**
2.03	Concrete pads to seating and bin areas	5	m2	$80.00	**$400.00**
	HARDWORKS - SURFACE TREATMENTS TOTAL				**$79,600.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Pedestrian crossing/drop kerbs	1	allowance	$2,000.00	**$2,000.00**
3.02	Edging Type 1 - Concrete kerb	100	m2	$45.00	**$4,500.00**
3.03	Benches	2	item	$1,500.00	**$3,000.00**
3.04	Bin enclosures	1	each	$7,000.00	**$7,000.00**
3.05	Signage	1	allowance	$4,000.00	**$4,000.00**
	HARDWORKS - INFRASTRUCTURE TOTAL				**$20,500.00**
4.00	**SOFTWORKS**				
4.01	Planting - 140mm pot including soil wetting agent and slow release fertiliser as per manufacturers standards (3 /m2)	1,500	m2	$24.00	**$36,000.00**
4.02	Trees - 45L - incl. Tree Stakes & Soil conditioner	10	item	$160.00	**$1,600.00**
4.03	Soil conditioner for garden bed areas - 25mm thick	1,500	m2	$12.00	**$18,000.00**
4.04	Mulch Type 2 - Rock mulch - 75mm thick	1,500	m2	$30.00	**$45,000.00**
	SOFTWORKS TOTAL				**$100,600.00**
5.00	**LIGHTING AND PUBLIC ART**				
5.01	Lighting and electrical	1	item	$5,000.00	**$5,000.00**
5.02	Conduits, trenching, cabling, cabinets and switchboards, etc	1	item	$50,000.00	**$50,000.00**
5.03	Public Art	1	allowance	$15,000.00	**$15,000.00**
	LIGHTING AND PUBLIC ART TOTAL				**$70,000.00**
			Sub Total Construction		**$296,600.00**
			Contingency	30%	**$88,980.00**
			Sub total Exc GST		**$385,580.00**
			GST	10%	**$38,558.00**
			TOTAL inc GST		**$424,138.00**

VERGES AND APPROACH

ITEM	DESCRIPTION	QTY	UNIT	RATE	TOTAL
1.00	**PRELIMINARY, SITE WORKS & DEMOLITIONS**				
1.01	Site mobilisation	1	item	$10,000.00	**$10,000.00**
1.02	Weed Eradication	100,000	m2	$0.80	**$80,000.00**
1.03	Litter Removal	1	allowance	$10,000.00	**$10,000.00**
	PRELIMINARY, SITE WORKS & DEMOLITIONS TOTAL				**$100,000.00**
2.00	**HARDWORKS - SURFACE TREATMENTS**				
2.01	Rock pitching to WSUD swales	100	m2	$145.00	**$14,500.00**
	HARDWORKS - SURFACE TREATMENTS TOTAL				**$14,500.00**
3.00	**HARDWORKS - INFRASTRUCTURE**				
3.01	Signage	1	allowance	$5,000.00	**$5,000.00**
	HARDWORKS - INFRASTRUCTURE TOTAL				**$5,000.00**
4.00	**SOFTWORKS**				
4.01	Reveg Planting - Tube stock including soil wetting agent and slow release fertiliser as per manufacturers standards (4 tubes /m2)	5,000	m2	$12.00	**$60,000.00**
4.02	Trees - 200L - incl. Tree Stakes & Soil conditioner	20	item	$430.00	**$8,600.00**
	SOFTWORKS TOTAL				**$68,600.00**
5.00	**LIGHTING AND PUBLIC ART**				
5.01	Lighting and electical (including lighting public art)	1	allowance	$5,000.00	**$5,000.00**
5.03	Public Art	1	allowance	$20,000.00	**$20,000.00**
	LIGHTING AND PUBLIC ART TOTAL				**$25,000.00**
			Sub Total Construction		**$213,100.00**
			Contingency	30%	**$63,930.00**
			Sub total Exc GST		**$277,030.00**
			GST	10%	**$27,703.00**
			TOTAL inc GST		**$304,733.00**

SUMMARY

ITEM	DESCRIPTION		TOTAL
1.00	**Entry**		
1.01	PRELIMINARY, SITE WORKS & DEMOLITIONS		$46,020.00
1.02	HARDWORKS - SURFACE TREATMENTS		$106,175.00
1.03	HARDWORKS - INFRASTRUCTURE		$126,600.00
1.04	SOFTWORKS		$154,052.00
1.05	ELECTRICAL		$82,000.00
1.06	IRRIGATION		$58,900.00
		Entry	**$573,747.00**
2.00	**BP Pull-in**		
2.01	PRELIMINARY, SITE WORKS & DEMOLITIONS		$27,000.00
2.02	HARDWORKS - SURFACE TREATMENTS		$20,960.00
2.03	HARDWORKS - INFRASTRUCTURE		$24,000.00
2.04	SOFTWORKS		$82,400.00
2.05	LIGHTING AND PUBLIC ART		$42,000.00
		BP Pull-in	**$196,360.00**
3.00	**Old Mill**		
3.01	PRELIMINARY, SITE WORKS & DEMOLITIONS		$25,900.00
3.02	HARDWORKS - SURFACE TREATMENTS		$79,600.00
3.03	HARDWORKS - INFRASTRUCTURE		$20,500.00
3.04	SOFTWORKS		$100,600.00
3.05	LIGHTING AND PUBLIC ART		$70,000.00
		Old Mill	**$296,600.00**
2.00	**Verges and Approach**		
2.01	PRELIMINARY, SITE WORKS & DEMOLITIONS		$100,000.00
2.02	HARDWORKS - SURFACE TREATMENTS		$14,500.00
2.03	HARDWORKS - INFRASTRUCTURE		$5,000.00
2.04	SOFTWORKS		$68,600.00
2.05	LIGHTING AND PUBLIC ART		$25,000.00
		Verges and Approach	**$213,100.00**
		Sub Total Construction	$1,279,807.00
		Contingency 30%	$383,942.10
		Sub total Exc GST	$1,663,749.10
		GST 10%	$166,374.91
		TOTAL inc GST	$1,830,124.01

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Masterplan	Precinct/Type	Comments
Foreshore Masterplan	Obelisk	safety is a concern for oblisc access with proposed t-junction oncoming traffic coming around a corner. Congested traffic build up in a small area with access point proposed. Would you consider removing all vehicle access at the top of oblisc???so visitors would have to park and walk up to oblisc to allow for more informal design development of this site when car park is already provided nearby.
Foreshore Masterplan	Obelisk	Visitor information centre proposal isn't central to town and would attract many travelling tourists to parking with caravans and congest a public carpark. Many locals do bog laps to check out the weather from this location. It would create a bottle neck if poorly designed. Would be more ideal having tourist information centre near Irwin Irwin River Walking Trail Amenity Upgrades Masterplan with deck space where there is ample carpark for all vehicle types and cafe space with views over looking the Irwin River Walking Trail Amenity Upgrades Masterplan. Would also link to Irwin River Walking Trail Amenity Upgrades Masterplan walk design.
Foreshore Masterplan	Obelisk	Allocated land for units below oblisc should be considered rezoning as commercial. The concern of land development of two story units infront of oblisc would take away views and importance of oblisc.
Foreshore Masterplan	Obelisk	If unit land is rezoned into commercial area could be a walk in dog friendly cafe/food van area like Grannies/Green Beanie with picnic areas and grass for families as it is wind protected and has views for everyone to enjoy back along the Foreshore Masterplan - would take pressure off Grannies Beach
Foreshore Masterplan	Obelisk	Proposed platform into marina would be detrimental to the living marine fauna found in that location. Many use this space to launch kayaks, fish, snorkel, and swim (low impact) due to the cleanness and clarity of the water at this location due to the marina entrance and water circulation. This location is thriving with marine fauna from sea grasses, hard and soft corals, breading and nursery area for blue swimmer crabs, live cowrie shells, feather stars, brittle stars, cuttlefish etc…. Would be more ideal for a snorkel trail area and information of local marine fauna display
Foreshore Masterplan	Obelisk	Opportunity to incorporate seating designs, metal sculptures and path design with coastal enhancements ie- metal rock lobster, octopus etc with design concepts from local artists
Foreshore Masterplan	Boat Ramp	great idea to incorporate another launch and retrieval ramp due to current congestion
Foreshore Masterplan	Boat Ramp	Design needs to be wide platform to walk on, safer, and include a dog leg/ small t zone or long ramps so boats can be tied up and passengers can walk down ramp with ease to board vessel without holding up traffic and not rush families or folks with children.
Foreshore Masterplan	Boat Ramp	Toilet facilities need to be upgraded and a fish cleaning station with a fish waste bin (frames can be collected by fisheries or locals to be used as pot bait) and domestic waste bins for disposal of rubbish
Foreshore Masterplan	Boat Ramp	Don't think a boat wash down facility is required as this can be done at home with own water supply or at holiday accommodation. Congests carpark area and wastes water that goes down the drain.
Foreshore Masterplan	Foreshore Masterplan Core	great idea to upgrade toilet facilities, seating, lighting and bbqs
Foreshore Masterplan	Foreshore Masterplan Core	Jetty with good lighting and metal disks in pathway of shipwreck walk would be ideal
Foreshore Masterplan	Foreshore Masterplan Core	Need to keep design open to enhance Foreshore Masterplan views as current structure cuts off ocean views and is uninviting.
Foreshore Masterplan	Foreshore Masterplan Core	Ocean pool is centrally located and would be a huge draw card however water quality would be an issue, and continued dredging for depth
Foreshore Masterplan	Foreshore Masterplan Core	Would be better if pool design wasn't ocean reliant, but built into the Foreshore Masterplan area as a pool.
Foreshore Masterplan	Foreshore Masterplan Core	Or move pool to another location (ie; fishing platform at Grannies) where ocean reliant with good water quality and design with break wall north, to protect Grannies Beach and ample carpark can be designed near commercial fishing co/op
Foreshore Masterplan	Foreshore Masterplan Core	In much need of a local playground facility designed for all ages
Foreshore Masterplan	Foreshore Masterplan Core	Lock up area for functions should be open for the community and not Shire depending for keys and rent. Jurien Bay has a platform with power supply and no lock up required.
Foreshore Masterplan	Foreshore Masterplan Core	Parking needs to be considered and designed if wanting local visitors or tourists with caravans… who are your monopoly visitors?
Foreshore Masterplan	Foreshore Masterplan Park	this area has always been a family gathering area for picnics out of the weather and shallow water access for beach launches and kids swimming
Foreshore Masterplan	Foreshore Masterplan Park	More bbq facilities would be ideal as two which are provided isn't enough for demand and supply by locals and visitors
Foreshore Masterplan	Foreshore Masterplan Park	The volleyball and badminton net has encouraged many to the grass area giving people something to do
Foreshore Masterplan	Foreshore Masterplan Park	Over development of this area will take away its tranquility as it encourages families to come together and enjoy bbqs or fish n chips on the Foreshore Masterplan
Foreshore Masterplan	Foreshore Masterplan Park	Better lighting and updated pathway is required
Foreshore Masterplan	Granny's Beach	Beach erosion is an annual problem as no break wall is provided to lessen the wave action on this beach this needs to be considered for the future of grannies beach
Foreshore Masterplan	Granny's Beach	Many hard/ soft corals and sea grass beds have died at this location due to continual sand dumps. An underwater dive trail would be ideal, along with break wall and ocean pool design
Foreshore Masterplan	Granny's Beach	Remove play area all together, the beach should be the play area
Foreshore Masterplan	Granny's Beach	Create a bigger beach area and move back umbrella grass area (look up Bathers Beach in Fremantle)
Foreshore Masterplan	Granny's Beach	Definitely build a change room and toilet facilities!!!

Foreshore Masterplan	Granny's Beach	Love the idea the roundabout is changed for traffic flow
Foreshore Masterplan	Granny's Beach	Good location for a mr whippy van and coffee van - keep it simple.
Foreshore Masterplan	Executive Summary	We note that the precinct boundaries remain the same as in the draft. The significant William Street and George Street alignments remain intact. We support the inclusion of Foreshore Masterplan vegetation in the Obelisk and Boat Ramp precincts. However, the continued obscuring of the Herbert Street alignment in the Obelisk precinct remains a concern (see comment on s 4.6).
Foreshore Masterplan	Public Engagement	We note and concur with many of the public comments, and emphasise our support for a natural or terraced shoreline, and wheelchair access, to Grannies Beach precinct; the Foreshore Masterplan Park precinct design responding to the fishing museum; interpreting and remembering Denison Hall, and locating the proposed pavilion further southwards in the Foreshore Masterplan Core precinct; and recognition of the Herbert Street landing place, and placing the shipwrecks plaques on the shoreline promenade, in the Obelisk precinct; but we retain concerns over the playground location, 'floating restaurant', visitor centre, private development, road, levels and car parking around the obelisk.
Foreshore Masterplan	Analysis	We note and support the recognition in the analysis of the sensitivity of the obelisk as a historical monument, and the links to the Sandhills Obelisk.
Foreshore Masterplan	Character & Heritage	We note and support the identification of heritage places in a diagram, although this could have been more focused by distinguishing between State (No 8) and local (Nos 4, 5) heritage listings (the similar plan in the Irwin River Walking Trail Amenity Upgrades Masterplan Trails masterplan is a better approach), and making it clear that the character places (1, 2, 3, 6 and 7) are not identified heritage places. We note that local heritage place 087 is not marked on the plan, and should be.
Foreshore Masterplan	Design Principles	We support the inclusion of the 6th point in 'A Distinct Place', all points in 'An Accessible Place', and the 5th point in 'A Place to Visit'. We note the irony of the 3rd point, 'create a civic heart', in 'A Place to Visit', when the Shire went out of its way to demolish the existing civic heart in 2019.
Foreshore Masterplan	Design Strategies	We support all points in 'Culture and Heritage', and generally the points in the 'Landscape Qualities' and 'Environment' design strategies, notably managing weeds such as sea lavender and lawn grasses, and the points in the 'Infrastructure' design strategy, especially impacts of light pollution and reducing lawn areas in favour of drought-tolerant and coastal species.
Foreshore Masterplan	Concept Overview	We do not support the 3rd point in Foreshore Masterplan Core, to extend Foreshore Masterplan reclamation, we support the 5th point on historical and cultural interpretation of the Old Jetty and Denison Hall, we support improving access, interpretation and the setting for the obelisk and opportunities for the shipwreck walk and landing place in the Obelisk precinct.
Foreshore Masterplan	Granny's Beach	We support including design elements that reflect Wattandee cultural history linked to the Foreshore Masterplan. We note that the illustrations on page 13 still indicate vertical sea walls rather than stepped or diagonal walls, and argue that this will not achieve the 3rd key aim for the precinct, protecting the beach against erosion caused by natural processes. The graduated walls in the illustrations on page 14 may be better able to achieve this aim and the other two aims for the precinct.
Foreshore Masterplan	Foreshore Masterplan Park	We support the aims generally, and the 2nd aim in particular to reduce irrigation of the lawns.
Foreshore Masterplan	Foreshore Masterplan Park	We support the provision of future connections to the MOFAS through the precinct.
Foreshore Masterplan	Foreshore Masterplan Core	We do not support the omission of interpreting and conserving the historic significance of the Denison Hall/Old Jetty/William Street axis as a key aim of the precinct – this should be included as a key aim.
Foreshore Masterplan	Foreshore Masterplan Core	We do not support the infilling or reclaiming of the bay – in our submission on the draft plan we suggested this needed further and explicit public discussion. This has not occurred in any organised way. Our rationale was outlined in the original submission, including incremental loss of the defining crescent-shape of Arurine Bay, but none of the points have been addressed either by local leadership or in the final plan. No measurement of the infilled area is given in the plan, but we calculate it to be about 1.4 ha or 14,400 m2. In the absence of any informed discussion, we cannot support the infill/reclamation.
Foreshore Masterplan	Foreshore Masterplan Core	We note the relocation of the pavilion southwards to a more suitable location – a location that we note does not, according to the illustrations on page 16, require any infill/reclamation of the bay.
Foreshore Masterplan	Foreshore Masterplan Core	We support the 12th and 14th points concerning interpreting Denison Hall and the Old Jetty, and archaeological investigation and interpretation of tramway relics.
Foreshore Masterplan	Foreshore Masterplan Core	We remain perplexed about the location of the playground, which seems contrary to any dignified achievement of the 12th point, especially as the proposed infilling of the harbour will provide a similar extent of land for the playground just north of the precinct's southern boundary. What other point is there to the infill if it has no purpose such as playground location?
Foreshore Masterplan	Playground & Pavillion	We do not support the location of the playground as shown in the plan, especially the 6th point to insert a large basket swing within the Denison Hall footprint. As noted above, this is contrary to any dignified achievement of the 12th point of the Notes on page 16. While this may be resolvable through more detailed design work, the plan as shown on page 17 seems deliberately provocative for no clear purpose.

Foreshore Masterplan	Playground & Pavillion	No mention is made of the demolition of the 1969 Pavilion that will be required for this scheme to proceed – we noted in our submission on the original plan that the 1969 serpentine seawall could be retained to interpret this older scheme, but the plan is silent on this. The plan is also silent on investigating and interpreting the archaeological evidence of the several layers of earlier 20th century development on this site, which are identified in the Local Heritage Survey (place 087), as noted in our original submission. On that basis, we cannot support the amphitheatre which, if the drawing on page 18 is accurate, will involve some excavation of these archaeological zones without any prior investigation. On the other hand, if the amphitheatre 'swale' is to be a raised embankment, it will (especially in combination with the new pavilion) obscure views between the harbour and the historic CBD of Port Denison, views that are partly the rationale for the CBD location. See also comment on s7.3, item 4.04.
Foreshore Masterplan	Playground & Pavillion	As noted earlier, the insistence of locating the playground on this site is perplexing when a similar area of land is proposed to be made available by the proposed reclamation/infilling at the southern end of the precinct without the same issues. This is the location we suggested in our comments on the draft plan as suitable, even without infilling the harbour, and it is disappointing that no response has been made.
Foreshore Masterplan	Boat Ramp	The plan on page 19 indicates pathways cut through the regenerating Foreshore Masterplan vegetation. We indicated our opposition to these paths in our submission on the draft plan, and we do not support cutting paths through the Foreshore Masterplan vegetation (see 4.6 Obelisk precinct for more).
Foreshore Masterplan	Boat Ramp	We note the key aims for the precinct fail to include 'conservation of natural and regenerating Foreshore Masterplan vegetation' – this should be included as a key aim.
Foreshore Masterplan	Boat Ramp	We do not support the continued obscuring of the west end of George Street within a car park. We noted in our original submission that the street is a significant historical axis that could be reinforced through appropriate car park design. It is disappointing that this opportunity has been ignored.
Foreshore Masterplan	Obelisk	We support the key aim of enhancing interpretation of the cultural and historical heritage of Port Denison, and argue this should also include natural heritage.
Foreshore Masterplan	Obelisk	We support recreating the shipwreck walk as part of the proposed promenade.
Foreshore Masterplan	Obelisk	We do not support cutting paths through the Foreshore Masterplan vegetation. This is the last area of natural Foreshore Masterplan vegetation within the harbour, although marred by weed invasion and feral animals, notably rabbits. The area is noted in figure 2.2 as a 'character' area - that must mean something? Section 3.3 'A Place To Visit' includes the principle 'highlight the natural environment and biodiversity of the Foreshore Masterplan'; and 3.4 'Design Strategies' include 'retain and restore remnant dune vegetation and control weed infestation', 'native revegetation planting and habitat establishment' and 'weed management'. These strategies cannot be attained by fragmenting the Foreshore Masterplan vegetation with more paths. In addition, since making our original submission, we have been made aware of the existence of Aboriginal middens (possibly disturbed) within the area of regenerating Foreshore Masterplan bushland (and hence the name Midden Beach). Regenerating this area of Foreshore Masterplan vegetation will need to engage with the potential for Aboriginal archaeological sites. This must be taken into account in any further design work for this area, including before cutting any paths through the area.
Foreshore Masterplan	Obelisk	Similarly, the natural values of the gulls fishing for sea urchins and dropping the catch on Leander Point for feeding has not received any recognition. This needs to be considered further given the proposals for road works and car parking in the vicinity of the Obelisk.
Foreshore Masterplan	Obelisk	We do not support the 'potential restaurant' and 'proposed visitor centre' on Leander Point shown on page 20 (presumably the 'future café' in the 12th point in the Key Notes?). Reasons were set out in our original submission, and it is disappointing to see the proposals remain in the plan. They are unsustainable from a heritage, design or environmental perspective and should be deleted from the plan immediately.
Foreshore Masterplan	Obelisk	We do not support continuing the incremental infilling of the landing place cove and beach, or the continuing addition of built elements to the Leander Point ledge, as stated in our original submission. The plan remains disappointingly silent on these issues.
Foreshore Masterplan	Obelisk	We do not support the loss of the western end of Herbert Street within a proposed new car park. We noted in our original submission that the street is a significant historical axis that could be reinforced through appropriate car park design. It is disappointing that this opportunity has been ignored.
Foreshore Masterplan	Obelisk	We support the key design considerations of improving the obelisk setting, including reference in interpretation to the Sandhills Obelisk, establishing a walking track between the two obelisks, universal access to the obelisk, and minimising the extent of cut and fill around the obelisk.
Foreshore Masterplan	Obelisk	We noted in our original submission that a cross-section drawing of the proposed Obelisk treatment is needed, as it is difficult to comprehend on plan. Unfortunately, this has still not been provided. Design issues may be resolvable through more detailed design work in the future, but we remain concerned about overly-engineered development around the obelisk.
Foreshore Masterplan	Obelisk	We noted in our original submission, at figure 11, the potential cumulative impacts of proposals surrounding the obelisk, impacts apparently also raised in other public submissions (see 1.3, page 6). Unfortunately, this cumulative impact has not been addressed in the plan. We suggest that an additional key aim of 'keeping the obelisk wholly visible in-the-round from near and far points of view' needs to included.
Foreshore Masterplan	Plant Schedule	The suggested plant schedule will be very useful if it is used to guide future regeneration works.
Foreshore Masterplan	Project Costs	7.5 'Grannies Beach' repeats 7.1 'Grannies Beach', and presumably should be 'Obelisk', which is missing from the costings. The Obelisk precinct costings need to be provided.
Foreshore Masterplan	Project Costs	7.3 Foreshore Masterplan Core costings

Foreshore Masterplan	Project Costs	Items 1.02 and 3.02 - total cost $790,800, relating to infilling the harbour – if an estimate of the volume of the infill, and length of new seawall, is available for costing purposes, then the area (m2) must also be available and should be made public, as well as the source of the infill;
Foreshore Masterplan	Project Costs	item 4.04 suggests about 120 large trees will be planted on the amphitheatre swale (the only swale in the precinct) – is this correct?;
Foreshore Masterplan	Project Costs	item 3.19 allows $200,000 for upgrades to the existing (recreational fishers?) jetty, but there is no mention of this work or the jetty in the plan, is this correct? Ideally the jetty would be in the Boat Ramp precinct as its uses appear unrelated to the core precinct.
Foreshore Masterplan	Project Costs	Overall costings
Foreshore Masterplan	Project Costs	The promenade appears to be 'thick grey concrete' (item 2.01 in each precinct), which seems somewhat different to options suggested in the plan (e.g. images on pages 9 and 21) – is this correct?
Foreshore Masterplan	Project Costs	The costings across all precincts (except the missing Obelisk precinct) indicate 278 medium-large trees (100L containers) will be planted and 5,968m2 of new turf will be laid – is this correct, and if so, how is the extent of new turf consistent with the design strategies in s3.4?
Foreshore Masterplan	Project Costs	item 1.01 in each precinct is for 'mobilisation, demolition, earthworks and fine grading' – this item is costed at $120,000 in the Foreshore Masterplan Park precinct, the largest for any precinct and 35% of the total across four precincts for item 1.01 – nothing in section 4.3 Foreshore Masterplan Park Precinct appears to fit this description or include actions that would warrant this expenditure, absolutely or comparatively – is this correct?
Foreshore Masterplan	General	We also note that the plans seems to assume no climate change-related alterations to the shoreline or river valley, which is inconsistent with findings in the Irwin Coastal Hazard Risk Management and Adaptation Plan (CHRMAP 2016) and the more detailed Geraldton CHRMAP (2019).
Foreshore Masterplan	General	The Master Foreshore Masterplan plan has been completed to a great understanding of the local lifestyle and amenities, well done. The Walking trails Amenities upgrade will be a highly value asset to the community, the concept plans are well presented. I confirm that the concept plans and to my likely.
Foreshore Masterplan	General	Just a couple of comments re the Foreshore Masterplan plan. Car access and parking to granny's looks a bit limited? The drive thru parking is easy and works great at the moment. Also, I recently visited Albany and loved the remembrance plaques place on the jetty and boardwalks . I've mentioned it it others and have been surprised how many local people have seen them and liked them also. I have attached photos.
Foreshore Masterplan	General	I have had a look at the Master Plan for the Denison Foreshore Masterplan and am very excited at the overall plan but would like to make the following comments-:
Foreshore Masterplan	General	Look at having a lined ceiling in the main pavilion plan to stop birds nesting and resting in this area
Foreshore Masterplan	General	Inclusion of drink fountains that incorporate dog drinking bowls along the Foreshore Masterplan
Foreshore Masterplan	General	Dog tie up areas
Foreshore Masterplan	General	Plenty of bins and perhaps the recycling can go towards community clubs fundraising
Foreshore Masterplan	General	Plenty of seating at the playgrounds that give good visibility across the whole play area
Foreshore Masterplan	General	Have some of the shaded picnic shelters suitable for larger groups eg 12 people, birthday parties
Foreshore Masterplan	General	Lots of BBQ areas
Foreshore Masterplan	General	Volley ball net
Foreshore Masterplan	General	Bus parking eg Trans WA
Foreshore Masterplan	General	Bike/scooter racks
Foreshore Masterplan	General	Solar lighting in the paths
Foreshore Masterplan	General	Additional play area to the 'crayfish' one that accommodate ages 0 – 6 years then one that is for 6 years plus
Foreshore Masterplan	General	If there is to be a community kitchen area will there be closer parking to the facility to unload items??
Foreshore Masterplan	General	I look forward to seeing the final draft and wish you good luck on gaining funding for this project
Foreshore Masterplan	General	2.0 ANALYSIS First bullet point states 'there are stong winds from the south-easterly direction in the afternoon/evening that discourage use of the Foreshore Masterplan'. Appears to be the only reference in the docment to wind direction and I wonder where this information has been sought as it's incorrect. Wonder if it's a typo or the entire design is on the basis of an incorrect dominant wind direction? Wind direction and velocity have not been taken into account with the planting selection - see 6.0 Suggested Planting Schedule.
Foreshore Masterplan	General	2.1 CONTEXT & USES The Legend map shows Grannies Beach having a 'built form' and marked on 4.1 Grannies Beach Prescinct as 'Cafe' , however the cross section in 4.1 shows The Green Beanie mobile coffee caravan in that spot - See 4.2 points below.
Foreshore Masterplan	Granny's Beach	4.1 CONCEPT OVERVIEW 1. GRANNIES BEACH·New retaining wall, stairs, ramp access to the beach: Concerned that the design doesn't reference detailed data specific for on-coast structural works at Grannies Beach nor mention climate change and increasingly frequent storms, and how this design will cope.

Foreshore Masterplan	Granny's Beach	4.1 CONCEPT OVERVIEW 1. GRANNIES BEACH·Enhanced lawn area, playspace, space for food/organised events: Addressing the playspace referred to in this point, it appears there's an assumption that the reserve will cater only for toddler and preschool children. In 1.3 Public Engagement a key priority is for a bigger playground at Grannies. One integrated playground space for the many primary school aged AND preschoolers who currently play in the existing playground is needed. The two sand 'dips' shown on the plan are tiny, with the one next to the beach ramp taking up valuable beachfront space. Two limestone block height walls must surround exposed playgrounds as sand ends up removed by prevailing winds. Shade over a playground is necessary. Observing children using the Grannies playground for 5 years now, I can confidently say that toddlers & younger age groups love the challenge of multi-height play equipment and active play just as older primary aged kids do and it is used extensively by these older children as well. Surely the theme of the Foreshore Masterplan Core playground can extend to Grannies, integrating the design and linking the themes to each prescinct. The sandpits on the map look boring!
Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT·Transform the primary pathway into a beach promenade linking Grannies Beach to the Foreshore Masterplan to the south:. I would suggest including Wattandee cultural designs into the pathways as mosaics/paving designs rather than into what appears to be very pricey art pieces of Wattandee animals which I assume are for the sand pits?
Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT·Provide an accessible route to Port Denison Foreshore Masterplan: Suggest closing the one way road that comes from the fishing platform and transforming mostly for pedestrian access, utilising the 20m or so from the new beach wall at Grannies back towards to sea within the rocked pier/roadway to make a slightly sunken protected seating wall and platform. Allows better observation for swimming classes and beachgoers and more protection from prevailing winds (like a sun baking deck). Design work would be needed to allow wider access and egress down to the hardstand/commercial boat ramp area, and removal of the roundabout could be incorporated into these uses. A bus pull in point could also be accommodated if this road entrance/roundabout was redesigned.
Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT·Consolidate lawn & shade areas...: Laying turf and reticulating it on the entire reserve will enable more play and multiuse options. However there needs to be shade on the east side of the pathway not just on the beach side. Many dog walkers use the pathways and currently are unable to sit under shade shelters due to dog restrictions on that side. An allocation of only six shade shelters is completely inadequate; Summer swimming lessons will use those. On hot days it's not unusual to see up to five groups of users under the one casuarina tree next to the first caravan park, and proped up against the verandah of that first cabin trying to get some shade. Casuarina trees or other hardy species strategically placed in islands on the reserve would be ideal and in place all year around unlike shade umbrellas. Shade and seating were two of the amenities identified in 4.1 Concept Overview.
Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT·Provide improved access to the beach....: I'd suggest removing the stairs all together and reversing the direction of the beach access ramp. The beach is small and a multiuse access ramp can save on beach sand space and infrastructure costs. The swimming area is not as accessible off the ramp as submerged layers of rocks are in that area meaning beachgoers will have to walk back towards the south to access the water safely.
Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT·Reconfigure the existing carpark and providing a safer entry and exit point off Ocean Drive and closing the access point adjoining the roundabout. Potentially include bus pull-in: The number of parking bays is reduced on this plan rather than increased as recognised in 1.3 Public Engagement. The parking bays should be adjoining the reserve parkland on the north side, enabling safer pedestrian access direct from the reserve to vehicles rather than walking across reversing area. Separation of the pedestrian pathway drawn between the carpark and road barrier garden space for safety will need consideration. The access/egress proint from the carpark to Ocean Drive is also dangerous as the slip lane off Point Leander Drive sees cars whip around into Ocean Drive, unseen due to vegetation, and there's barely 1.5 car lengths bonnet to bonnet when pulling out of the carpark.
Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT·Provide multi-use spaces for food trucks and organised events: The limited space identified in 1.3 Public Engagement Process and 3.3 Design Principles of incorporating flexible spaces, favours mobile food & beverage services or other services, to the Reserve. Built forms become quickly dated & untidy and need constant maintenance on the coast, and rather than assets they become liabilities, locking up valuable multiuse areas. The mobile services offered can also remain dynamic, and specialise in a number of offerings, being activities or things such as the very popular evening visit by the Mexican mobile diner at Grannies a couple of summers ago.
Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT·Provision for a future toilet/changeroom facility: Suggest this be on the opposite side to the plan next to the Big 4 to access plumbing and power in that area and/or future reclaimation of the caravan park for the people. Also keeps people and towing vehicles/vans separated and safe. Facility needs at least two plumbed showers which could be on the outside of the building. Showers are not mentioned anywhere in the design parameters.
Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT·Provide connection to the adjoining residential areas: Suggest extension of the pathway from surf beach carpark that adjoins the road verge be extended to run behind the Big 4 park and onto Grannies Reserve grass area to the east. (see point at improved pedestrian links to the Rec Centre below).
Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT·Provision for service and emergency vehicle access: Unsure where this could be on this plan unless the road from the fishing platform is closed and provision is made there?

Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT·Consolidate signage: It is difficult to take a photo on the reserve without a signpost in the frame. Good idea to reduce the visual pollution however I note there is no provision for this in the costings on 7.1 which includes only entry, directional and interpretative signage). It also doesn't include provision for historical signage of shipwrecks just off Grannies or other interesting cultural heritage signage.
Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT·Improve pedestrian links to the Rec Centre: As suggested in 'provide connection to the adjoining residential areas, a pedestrian pathway extension loop behind the Big 4 caravan park could link into an access via the skate park area. Perhaps a safe cross-over near the pensioner units could be useful.
Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT·Include public art or playground design elements that refernce the Wattande cultural history and are linked to the Foreshore Masterplan. (Various animals detailed): Public art that can't be stolen or vandalised on this 'pub walkway route' is possibly better and could be spent in more durable art design such as paving designs, seating, or as part of other infrastructure pieces as detailed in 3.4 Design Strategies. It's disappointing to see the $50,000 allocated for public art from section 7.5 (3.10) missing in 7.1. See also last point in this section.
Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT·The Concept Overview in 4.1 says enhanced amenities (shade, seating, WC's, parking): Only 2 more bench seats allowed for in the costings (5 total) and no shade over these. What's wrong with some strategically selected placement of shade trees with the bench seats or trees on the open grassed areas?? Whilst trees on the perimenter are nice, people will have to sit in the garden beds once the 6 shade shelters are in use! Swimming lessons take all the shelters. Note the 3 picnic table sets in doubled up section 7.5 @ $5000 are missing from 7.1 - where will groups sit to eat their food cooked on the 2 BBQ's in the plan?
Foreshore Masterplan	Granny's Beach	4.2 GRANNIES BEACH PRECINCT There's a great opportunity at Grannies to utilise the sloping ground towards the beach into the design and create a more windproofed area with better beach views. This could include minimal terracing to the SE and SW sides of the reserve and incorporate low terraced walls doubling as informal seating for many people. Curved artistic wind break walls to the south west and south east, or other design opportunities could extend the use of the reserve and beach outlooks, and enhance and tie in with the design themes of the Foreshore Masterplan and cultural heritage values.
Foreshore Masterplan	Obelisk	4.6 OBELISK PRESCINT Key Notes: Bullet points list provision for a future cafe within the harbour (I assume it's 'potential restaurant' as shown on the drawing?) This is not in any way in keeping with the Design Methodology, Design Principles, nor Project Aspirations and looks to be a last minute addition? It would have major negative impacts on the shoreline, natural landscape and the remnant flora and the fauna in this area, not to mention traffic/parking issues, nor obvious detraction from natural features and views of this historic and picturesque area. The same applies to locating a 'Proposed Visitor Centre' in that area. It is completely at odds with the concepts discussed throughout the plans and inappropriate to include in this manner. Both of these structures should be removed from these concept plans. If such ideas were floated in the future, they should be investigated using a formal thorough process, not merely added to these plans. My previous comments in relation to maintaining buildings in this harsh location apply.
Foreshore Masterplan	General	6.0 SUGGESTED PLANT SCHEDULE An assumption has been notated in the plan from The Irwin Irwin River Estuary Weed Management Plan (2013) that while they did not survey the project area, it can be assumed that the dune communities identified in the study (Weed Mgmt) continue to the south to include Port Denison Foreshore. The plan also noted inclusions for additional trees from the Dongara dunes included in the Trees & Shrubs for the Midlands and Northern Wheatbelt (NACC 2015).
Foreshore Masterplan	General	6.0 SUGGESTED PLANT SCHEDULE The soil profile along the river banks of the Irwin, and the aspect and topography of the beach areas (and dunes) compared to the project area south are extremely different. The Grannies and Foreshore Masterplan prescincts up to the Obelisk are hostile, salty planting zones and will not support a number of the trees listed. Same applies to Dongara dune plants which are their own separate microclimate. There are no salbush species listed nor many mid size dense 2m x 2m natives to block strong winds between the tree canopies throughout the coast facing prescincts.
Foreshore Masterplan	General	6.0 SUGGESTED PLANT SCHEDULE it seems a massive oversight to not have surveyed the project areas in person as the plant selections form, role and cost in the designs are major. I would request a formal survey including visiting coastal plantings in Leeman and the Geraldton Foreshore Masterplan to study the successful plantings on their ocean frontage.
Foreshore Masterplan	Granny's Beach	Public toilets should be near the Caravan Park fence so that in the future, when the park has been closed for extra Foreshore area, it will have easier access and is also closer for connection to the sewerage.
Foreshore Masterplan	Granny's Beach	There needs to be more access for itinerate traders, e.g. burger bus, soft serve and others. Plus extra parking to the North of the present parking. The present parking needs to be reduced in width to allow for a tree planted nature strip for shade and extra picnic area.
Foreshore Masterplan	Granny's Beach	What has been planned in this concept is that the Granny' Beach parking has been further reduced by around 50%.
Foreshore Masterplan	Granny's Beach	The Umbrellas need to be removed and replaced by trees which would cut back on seasonal maintenance.
Foreshore Masterplan	Foreshore Masterplan Park	Half of the parking has been removed from North of where the Bond Store was and from around the hall and amenities block.
Foreshore Masterplan	Foreshore Masterplan Park	Parking along the Foreshore has already been reduced by around 30 spaces.
Foreshore Masterplan	Foreshore Masterplan Park	The children play area was changed from rectangular to quadrilateral, which has made the square shade sails redundant. Now there is no shade over the reduced children's play area. As the playground equipment is broken, it is removed and not replaced.

Foreshore Masterplan	Foreshore Masterplan Core	The shelters and picnic tables have been removed along with the toilet facilities which have been moved to allow a pathway. These have been replaced with a pavilion where the Bond Store was and four shelter/picnic barbecue sites.
Foreshore Masterplan	Foreshore Masterplan Core	By removing the shelters, you are removing seating for around 50 people.
Foreshore Masterplan	Foreshore Masterplan Core	The original seating of the shelters had over 20 built-in picnic settings, seating around 80 persons, some of these have been removed and/or replaced.
Foreshore Masterplan	Foreshore Masterplan Core	The presently envisaged pavilion has seating for a one-off Australia Day event, with five picnics settings and three shaded picnic settings in place of the shelters.
Foreshore Masterplan	Foreshore Masterplan Core	The harbour will be infilled to allow more Foreshore with less facilities, parking and amenities. This is retrogressive.
Foreshore Masterplan	Boat Ramp	There is at present, inadequate boat ramp facilities during holiday periods. This can be doubled by building two ramps, one each side of the present two and increasing parking of boat trailers by reversing trailers onto the lawn areas both sides and by removing two metres of lawn from Eastern area (3). To facilitate extra parking. I have photos of this method in action.
Foreshore Masterplan	Obelisk	Overflow parking for boat trailers and caravans; these rigs will have to work through a maze to enter and exit this area.
Foreshore Masterplan	Obelisk	The nearest toilets are near the boat ramp.
Foreshore Masterplan	Obelisk	A visitors centre where there is inadequate parking.
Foreshore Masterplan	General	Reversing into traffic along Point Leander Drive is definitely a safety issue as through traffic becomes denser. There is a very high risk of accidents here.
Foreshore Masterplan	General	There needs to be more seating; as older people find it harder to get down and get up again from the lawn area.
Foreshore Masterplan	General	Some bollards need to be removed and replaced with back to back seating, which the low pine post and rail fencing used to be used for.
Foreshore Masterplan	Granny's Beach	Retain the sea wall of the lime stone blocks on a step down level starting from the foot path with the ramp/matting down the left hand side.
Foreshore Masterplan	Granny's Beach	Have sand placed down these levels between footpath and beach with the umbrellas still in place (This gives parents for eye viewing of children playing in water and ability for others to play in sand sitting with parents in shade)
Foreshore Masterplan	Granny's Beach	Both play areas together on grass side (With more then 1 child, safer supervision and less timing on erosion of equipment)
Foreshore Masterplan	Granny's Beach	Beside playground on grass area have a smaller pavilion design with BBQ's and seating while being able to enjoy the small Cafe
Foreshore Masterplan	Granny's Beach	Allocate toilets on opposite side along Big4
Foreshore Masterplan	Granny's Beach	Cut off from behind the small open spot behind the toilets (in design) across to Big4 and turn into more carports
Foreshore Masterplan	Foreshore Masterplan Park	Small pavilion with BBQ's and seating on grass area in a location around of the Beach Vehicle Access point)
Foreshore Masterplan	Obelisk	Another small pavilion with BBQ's and seating Obelisk side of playground with a toilet block
Foreshore Masterplan	General	Community Projects - Decorative concrete Sea Creature's (Following the Sea Lions Sculptures Kelli Dawson's @ Fairy Garden); Made in postions of seating, daybeds, water fountains etc ; Allocate along and around the Foreshore and river.
Foreshore Masterplan	General	The shire needs to provide parking for 70+ vehicles and boat trailers. Over the last two months there has been 70+ boat trailers parked between the ramp and the obelisk, many on the private property opposite the ramp and the public open space alongside Sea Rescue. The catwalk at the ramp is woefully inadequate to cater to our older generation and it is surprising that there have been so few accidents with people trying to squeeze past each other
Foreshore Masterplan	General	My opinion for the Foreshore Masterplan plans is that I would love to see the fishing platform moved further around from Grannys as there have been heaps of sharks in the past week or two coming there to eat the bait/scraps that are thrown in right where kids swim, and then maybe that area turned into a sea pool.. I think it's strange that the sharks are fed where ppl swim... The fishing platform could then be used as a jumping /diving platform... Perfect spot for a sea pool too that is not in with the 'deisel and fish guts' that I was told not to swim in the harbour because of..
Foreshore Masterplan	General	Looks great but what about the slim on the bottom and the water is disgusting. Are you going to keep it flushed out? If not it will be a waste of money as people wont use it. A Pontoon at Grannies would be great for the older kids. The new pavilion looks nice ,what about the wind.
Foreshore Masterplan	General	I would love to suggest that the ocean pool highlighted in the Shire of Irwin's Foreshore Masterplan development proposal be implemented at grannies beach instead of in the marina.
Foreshore Masterplan	General	As someone who visits the Foreshore Masterplan often, unfortunately there is a lot of black sludge which surfaces when swimming which is both unsightly for tourists and unhygienic for kids and other swimmers. It is also a small marina with a lot of boating activity which in turn creates a safety hazard for swimmers.
Foreshore Masterplan	General	I would encourage the shire to look at Busseltons swimming jetty/ocean pool constructed alongside the Busselton jetty. This is a fantastic example of what we could have in Dongara. They also have an amazing nature playground that the shire could source ideas from (if they haven't already).
Foreshore Masterplan	General	I would also love to mention that the Shire has made the most progression that I have seen, in the way of development in the past 3 years than I have seen in the 30 years I've lived here. It's refreshing to see a group of people clearly listening to what other members of the community would like to see and implementing projects that will add value to our little town.
Foreshore Masterplan	General	As an owner of a property on Herbert St, I am concerned about 2 aspects of the Foreshore Masterplan master plan: 1. Our street looks like it is the carpark and has lost its sense of its own identity as an actual street. It feels as if our future house would be in the carpark as opposed to the street next to the carpark.

Foreshore Masterplan	General	2. I am concerned about the road continuing around the obelisk with a raised viewing platform. This would have people looking directly into our backyard giving us no privacy
Foreshore Masterplan	General	I've had a look at the master plans for the Foreshore Masterplan and everything looks very exciting. We'll done on getting things to this stage!! My couple of suggested are;
Foreshore Masterplan	General	Provide timed lighting, especially in the warmer months(maybe to 9-10pm) in the shelter huts in the Foreshore Masterplan park precinct area. This would allow people to enjoy the Foreshore Masterplan after the sun sets.
Foreshore Masterplan	General	And if we were looking at a new playground please look at Jurien Bay for inspiration and make one large nature play, not a couple of small ones. A great location would be in front of the Tavern but anywhere that would suit the scale.
Foreshore Masterplan	Foreshore Masterplan Core	1. The swimming pontoons complete with sun-bathing deck has been located in an area of muddy bottom that is easily stirred up by swimmers. The location is also between two rows of moored boats. Guess where any oil and fuel spill is likely to go? Secondly... a sun-bathing deck? Is this a joke? No-one sunbathes around here, especially in summer. Why not provide a shaded spot here instead? Unfortunately, the enclosed circular design of the swimming pontoons makes them perfect for trapping flotsam. This is likely to be a high-maintenance site; another bad idea that looks good on paper.
Foreshore Masterplan	Obelisk	2. Concerning a potential restaurant seaward of the obelisk: Please remember, that even though the obelisk was built in the 1800s, it still functions as a navigational landmark. Any structure that blocks the seaward view of the obelisk could put vessels in danger.
Foreshore Masterplan	General	3. Just north of the beach-vehicle access below the obelisk is an area of mature native vegetation that includes Nitre bush and Beach spinifex. I strongly recommend that area be retained as is.
Irwin River Walking Trail Amenity Upgrades Masterplan	General	Would be ideal to have a tourist information centre along the Irwin River Walking Trail Amenity Upgrades Masterplan with a deck area/ cafe and link to Irwin River Walking Trail Amenity Upgrades Masterplan walk. This would allow ample carpark for all vehicle types, information area for tourists, picnic seating and rest stop for caravans, a large play area/swings and nature playground and picnic/ bbq area out of the wind for the community to come together for a bbq/ kids birthday party/ children play dates. Should also include a Kayak launch facility as photos provided and toilet facilities.
Irwin River Walking Trail Amenity Upgrades Masterplan	General	The walk path needs to join the bird observation platform near the ocean for safety crossing the Irwin River Walking Trail Amenity Upgrades Masterplan mouth. This will connect the board work area to allow access to sea-spray and north shore. Would also provide shortcut for school children on bikes to and from school. No point in having it too close the existing bridge as this defeats the purpose- we need to connect the two towns better.
Irwin River Walking Trail Amenity Upgrades Masterplan	General	Agree weed eradication and fire breaks need to be maintained. Agree also more seating and sheltered areas need to be provided as well as possible solar lighting pathways.
Irwin River Walking Trail Amenity Upgrades Masterplan	General	Dune rehabilitation is also important with designated paths. Especially in Lagoon area! No pathway is designated on Oceanside to Irwin River Walking Trail Amenity Upgrades Masterplanmouth. More than one seating area needs to be incorporated also as it's under designed for its potential. A water kazibo could be used for bird watching, wedding photo opportunities and a place to sit in the tranquility of the area. Rottnest have done this well as an example.
Irwin River Walking Trail Amenity Upgrades Masterplan	General	Dune lookout needs to be updated with fixed binoculars and more inviting.
Irwin River Walking Trail Amenity Upgrades Masterplan	General	Would like to see an Information area of available walk paths, bird species, flora and fauna and cultural importance displayed.
Irwin River Walking Trail Amenity Upgrades Masterplan	General	Mountain bike track- why would you spend money on this when a bike track has just been built at the Foreshore Masterplan? Allowing this design to go ahead will erode the designated area more. It would be utilised more by all community members not just a select few teenagers if revegetate/ parklands and provide a picnic area with plenty of ample parking for travelling tourists who can walk to Russ Cottage/ toilet fact and along the Irwin River Walking Trail Amenity Upgrades Masterplan or into town.
Irwin River Walking Trail Amenity Upgrades Masterplan	01 Intro	First para, last sentence – it would be better to say the Irwin River Walking Trail Amenity Upgrades Masterplan connects or links the two towns, rather than divides them – the Masterplan needs to reinforce a holistic sense of the greater estuary area as a distinctive place in its own right rather than as a boundary on the edge of two other places.
Irwin River Walking Trail Amenity Upgrades Masterplan	01 Intro	We generally support the key aims (although perhaps the 5th point could be better expressed as 'recognising its, at least, regional significance')
Irwin River Walking Trail Amenity Upgrades Masterplan	02 Background	We generally support the objectives.
Irwin River Walking Trail Amenity Upgrades Masterplan	02 Background	We note the summary of public consultations, including preference for any footbridge to be located in the vicinity of Walton's Ford not Armstrong Street; need for maintenance of built facilities; and support for nature conservation areas.
Irwin River Walking Trail Amenity Upgrades Masterplan	03 Analysis (p4)	We support the recommendation, repeated from numerous earlier reports, for the whole area to be managed as a crown reserve.
Irwin River Walking Trail Amenity Upgrades Masterplan	03 Analysis (p4)	We note the freehold areas defined as problematic (due to tenure) – unfortunately there is no corresponding action for a solution, such as Shire or philanthropic acquisition of these areas, or land-swaps with Shire owned land, and so on.
Irwin River Walking Trail Amenity Upgrades Masterplan	(p5)	The Heritage Map is very useful and we support its inclusion (although there is a slight error with the maternity home location). This is the sort of map that would have been useful in the Foreshore Masterplan Masterplan.
Irwin River Walking Trail Amenity Upgrades Masterplan	(p5)	Environment – we support the statement that development needs to anticipate flood events, and we support the statement that unfiltered road run-off impacts on Irwin River Walking Trail Amenity Upgrades Masterplan water quality.
Irwin River Walking Trail Amenity Upgrades Masterplan	(p5)	Infrastructure – we support the observations about the condition of the boardwalk and some tracks.

Irwin River Walking Trail Amenity Upgrades Masterplan	(p5)	Heritage/Culture – we support the observations about limited or lacking interpretive signage, and the identification of Wattandee and colonial heritage places.
Irwin River Walking Trail Amenity Upgrades Masterplan	(p6)	We support the observations that nature-based experiences need to be balanced with controlling access and reducing disturbances, such as dogs, and need to retain a 'natural feel' to the trails.
Irwin River Walking Trail Amenity Upgrades Masterplan	04 Design Principles	Generally, we support the design principles, especially consideration of the cultural value of some weed species; all the 'celebrate heritage/culture' principles including archaeology; universal access at key access points; a place naming strategy, and balancing more lighting with ecological and light pollution issues.
Irwin River Walking Trail Amenity Upgrades Masterplan	04 Design Principles	We strongly support the principle of creating a single continuous crown reserve for the area.
Irwin River Walking Trail Amenity Upgrades Masterplan	05 Masterplan	We generally support the precincts defined on the map, and the inclusion of the area east of the bridge – this is a more logical precinct arrangement than in the draft plan.
Irwin River Walking Trail Amenity Upgrades Masterplan	05 Masterplan	We support the inclusion of Russ Cottage and its grounds in the plan.
Irwin River Walking Trail Amenity Upgrades Masterplan	05 Masterplan	We support reviving the term 'Old Port', but would prefer the historic terms 'track' or 'path' rather than 'trail', as discussed in our submission on the original plan.
Irwin River Walking Trail Amenity Upgrades Masterplan	06 Central (Civic)	We generally support the design strategies, but with regard to pedestrian bridges, we do not support a Denison House-Armstrong Street or Denison House-Church Street bridge. The concept was sketched as a student design exercise 25 years ago, and its realisation since has remained problematic. We think it is time to end the fantasising about such a structure and to remove it once and for all as a consideration. Any bridge built at the Walton's Ford site, or below the road bridge structure, should be capable of rapid removal in case of anticipated flooding – ideally a floating structure that will not impact historical archaeology or natural features.
Irwin River Walking Trail Amenity Upgrades Masterplan	06 Central (Civic)	We support the filtering and better management of road run-off (which ideally would not be entering the Irwin River Walking Trail Amenity Upgrades Masterplan at all), especially with the recent large increase in hard surfaces at the east end of Moreton Terrace that will increase the volume of polluted run-off into the river.
Irwin River Walking Trail Amenity Upgrades Masterplan	07 Eastern	We note the Society has a direct interest in this precinct through its management of Russ Cottage House Museum and grounds, which is within the precinct.
Irwin River Walking Trail Amenity Upgrades Masterplan	07 Eastern	We note the need in para 1 for freehold land to be transferred to the reserve – an alternate approach may be to develop some sort of agreement between the reserve managers and freeholders to allow the land to be managed as part of the reserve, father than focus on tenure, although this will require active leadership by the reserve manager.
Irwin River Walking Trail Amenity Upgrades Masterplan	07 Eastern	North Bank. We do not object to the idea of a walking track on the north bank, but would need to be engaged with developing the concept to understand its impacts, including connections with the Extended Entry Statement.
Irwin River Walking Trail Amenity Upgrades Masterplan	07 Eastern	South Bank. We can support the 'adventure theme' for the area between the river bank and St Dominic's Road as a use that interprets the historical use of much of this area as playing and sports fields for the Dominican Ladies College.
Irwin River Walking Trail Amenity Upgrades Masterplan	07 Eastern	South Bank. We support better connections between Russ Cottage and the river bank area generally; we note that we have just invested considerable resources in building a universally accessible toilet at Russ Cottage; we do not object to the idea of a café/kiosk in the vicinity of Russ Cottage, but would need to be engaged with developing the concept to understand its impacts.
Irwin River Walking Trail Amenity Upgrades Masterplan	07 Eastern	South Bank. We support interpretive approaches to flooding history, including lost buildings and structures, and Wattandee history.
Irwin River Walking Trail Amenity Upgrades Masterplan	07 Eastern	South Bank. With regard to bushfire risk and sight lines, see our comments at '15 Bushfire Management'.
Irwin River Walking Trail Amenity Upgrades Masterplan	08 Old Port Trail	We support making the Old Port Road the key historic interpretive underlay in this precinct.
Irwin River Walking Trail Amenity Upgrades Masterplan	08 Old Port Trail	Note our comment in '07 Eastern' about freehold/reserve management.
Irwin River Walking Trail Amenity Upgrades Masterplan	08 Old Port Trail	Bridge to Denison House. We generally support these strategies, and emphasise the need for archaeological investigation to precede any works.
Irwin River Walking Trail Amenity Upgrades Masterplan	08 Old Port Trail	Bridge to Denison House. We note fencing that will be acceptable for the interface between the reserve lands and new residential development will need to be defined and managed through the Local Planning Scheme or related planning documents. The Shire will need to take a leading role in implementing such a strategy.
Irwin River Walking Trail Amenity Upgrades Masterplan	08 Old Port Trail	Riverbend. We generally support these strategies, and emphasise the need for archaeological investigation to precede any works around the harbourmaster's house site.
Irwin River Walking Trail Amenity Upgrades Masterplan	08 Old Port Trail	River bend. A local name for this area is The Elbow, which may be a better precinct name than Riverbend.
Irwin River Walking Trail Amenity Upgrades Masterplan	09 Lagoon	We generally support these strategies, including rationalisation and better management of informal walking tracks and paths; and a new bird hide that is universally accessible.
Irwin River Walking Trail Amenity Upgrades Masterplan	09 Lagoon	We do not support replacing the boardwalk unless it is replaced like-with-like and is properly maintained in the future. The simple, rustic style of the boardwalk is suited to the setting and should be maintained in any replacement structure. The current boardwalk condition is a result of poor/no maintenance.
Irwin River Walking Trail Amenity Upgrades Masterplan	10 Dunes & Lookout	We generally support these strategies, including rationalisation and better management of informal walking tracks and paths.

Irwin River Walking Trail Amenity Upgrades Masterplan	10 Dunes & Lookout	We do not object to the idea of replacing the lookout with something architecturally significant, but would need to be engaged with developing the concept to understand its impacts. The images on page 19 suggest interesting possibilities.
Irwin River Walking Trail Amenity Upgrades Masterplan	10 Dunes & Lookout	we do not object to the idea of creating a link to the cemetery, but would need to be engaged with developing the concept to understand its impacts
Irwin River Walking Trail Amenity Upgrades Masterplan	11 Planting palette	We generally support the proposed palette, note our comments on '13 Weed Management'.
Irwin River Walking Trail Amenity Upgrades Masterplan	11 Planting palette	With regard to bushfire risk and sight lines, see our comments at '15 Bushfire Management'.
Irwin River Walking Trail Amenity Upgrades Masterplan	12 Material palette	We generally support the proposed palette.
Irwin River Walking Trail Amenity Upgrades Masterplan	13 Weed Managem't	We generally support the recommendation, although noting that new planting approaches will need to accommodate some pragmatic level of weed co-habitation – widespread reliance on the use of poisons, especially sprays, to try and control weeds has the potential for further negative impacts, as does continually disturbing areas that, in effect, keep creating new seed beds for weed species, and in turn a continuing cycle of weed removal and regrowth. It would be worthwhile to investigate other methods for long-term weed control and regeneration of native species, such as Integrated Weed Management using a variety of techniques including flaming, grazing, mulching and slashing. Ideally, widespread herbicide use should not be the first choice, and this will require dedicated leadership from the reserve manager.
Irwin River Walking Trail Amenity Upgrades Masterplan	14 Surfaces & Drainage	We generally support the approaches as illustrated.
Irwin River Walking Trail Amenity Upgrades Masterplan	15 Bushfire Managem't	We generally support the approaches discussed. We note that the descriptions of desirable higher-level and discontinuous tree canopies, interspersed with non-flammable mulches, are similar to descriptions of the area in the 1850s and 60s when the old Wattandee fire management regime was in place. This was specifically banned in 1870 and enforced by local police. Photographs from the early-mid 20th century still suggest a more open landscape, probably due to intensive grazing by town livestock (horses, milk cows, goats, chickens, etc) and household and industrial firewood gathering. This makes the present landscape of densely-mixed native and weed species a fairly recent form. The reserve manager has an opportunity to engage with Wattandee knowledge holders to reinstate older fire management regimes.
Irwin River Walking Trail Amenity Upgrades Masterplan	15 Bushfire Managem't	We do have some concern that the 'selective clearing', as described in this section, could simply facilitate the spread of weeds that thrive by colonising disturbed areas (see comments on '13 Weed Management') and ultimately be counter-productive. The reserve manager will need to take a strong leadership role in successfully and sensitively integrating fire management and the other land management needs identified in this masterplan.
Irwin River Walking Trail Amenity Upgrades Masterplan	16 Costs	Central – item 6.00, it would be helpful to have some breakdown of the $1 million costing for a footbridge.
Irwin River Walking Trail Amenity Upgrades Masterplan	16 Costs	Old Port Trail – item 2.05, boardwalk remediation for $20,000 suggests minimal maintenance works are to be undertaken – is this correct?
Irwin River Walking Trail Amenity Upgrades Masterplan	16 Costs	Lagoon – item 2.01, boardwalk across water + item 2.02, thick concrete paving to replace boardwalk, of 1200m2 = total $240,000 – there is no obvious reference to this in the design strategies for this precinct, either replacing the timber boardwalk with a steel and concrete structure or building a new, separate structure somewhere else in the precinct – this needs much further explanation of what is intended, and how it is consistent with the design principles and considerations for the precinct.
Irwin River Walking Trail Amenity Upgrades Masterplan	16 Costs	Dunes – item 1.06, 20m3 of rock excavation within the precinct for $7,000 - there is no obvious reference to this in the design strategies for this precinct – this needs further explanation of what is intended, including the site of the excavations.
Irwin River Walking Trail Amenity Upgrades Masterplan	General	There are several initialisms used in the document that could have been defined for a general public audience to make it easier to read. These are RV, WSUD and SPP.
Irwin River Walking Trail Amenity Upgrades Masterplan	General	I would love to see large expanses of reticulated grassy areas, picnic facilities etc. On the Irwin River Walking Trail Amenity Upgrades Masterplan Foreshore Masterplan east and west of the bridge. Somewhere to hang when the southerly is in.
Irwin River Walking Trail Amenity Upgrades Masterplan	General	1. Developing new trails and sheltered picnic areas for both sides of the Irwin River Walking Trail Amenity Upgrades Masterplan on the east side of the town bridge should be given a high priority. I fully endorse the "Eastern Master Plan" that would create new trails and picnic spots. Revegetation plantings will help stabilise the ground, much of which becomes a messy "mud hole" during winter.
Irwin River Walking Trail Amenity Upgrades Masterplan	General	2. The list of weedy plant species to be controlled along the entire Irwin River Walking Trail Amenity Upgrades Masterplan zone should be realistically prioritised. African boxthorn should top the list... plus three others: Japanese pepper, Fountain grass, and Ice plant. Attempted control of most of the other species listed on the "Masterplan" is very difficult and will only result in large investments of toxic herbicides that will eventually affect the aquatic life of the Irwin River Walking Trail Amenity Upgrades Masterplan and estuary. Last year, I reported a fish . kill in the estuary to the Dept. of Fisheries. The cause was undetermined but appeared to be connected to the flooding of the berm. However, I am concerned about the effects of toxic bioaccumulation to the shoals of young fish found in the estuary and lower Irwin River Walking Trail Amenity Upgrades Masterplan and will continue to monitor these areas for any signs of undue fish mortality.. Control of the weeds on my shortened list is an attainable goal that does not necessitate large doses of toxic chemicals, especially "Roundup."

Irwin River Walking Trail Amenity Upgrades Masterplan	General	3. I am not in favour of a foot bridge across the Irwin River Walking Trail Amenity Upgrades Masterplan. Firstly, it is simply not needed. The bridge was originally a casual idea generated by a member of a group of visiting architecture students many years ago. Sensibilities have changed over time. What is most appreciated by many users of the Irwin River Walking Trail Amenity Upgrades Masterplan trail, including myself, is the "natural feeling" of the place. A new bridge spanning the Irwin River Walking Trail Amenity Upgrades Masterplan will create a visual break in the natural scene. Walkers right now can normally hike both sides of the Irwin River Walking Trail Amenity Upgrades Masterplan by simply crossing the berm at the mouth of the estuary. Secondly, there is the issue of public liability, because the bridge will most likely create a situation legally known as an "attractive nuisance." I can easily imagine kids dropping objects, such as pebbles and rocks, onto pedestrians using the trails below. Plus there is always the sophomoric dare for teenagers to "jump off the bridge into the water." Lastly - and this my the most important concern about this proposed bridge - is the impact that a bridge may have on the roosting colony of cormorants. All species of cormorants are protected in WA, yet their numbers have experienced sharp declines in many part of their range. We are fortunate to still host a large number of cormorants here during their daily and nightly roosting sessions. The roosting sites along the south side of the Irwin River Walking Trail Amenity Upgrades Masterplan meet the bird's requirements of being both predator-free and undisturbed. What the sight and noise of a bridge being constructed will do to the nearby colony, I can only guess. But disturbances such as these around other cormorant colonies have resulted in complete abandonment of the sites.
Irwin River Walking Trail Amenity Upgrades Masterplan	General	4. I'm glad to see that an increased number of kayak launch points are planned along the Irwin River Walking Trail Amenity Upgrades Masterplan.
Irwin River Walking Trail Amenity Upgrades Masterplan	General	5. Repair of the estuary boardwalk is my strong recommendation. It would have the least impact on the wildlife of the estuary and would be the most cost effective of the alternatives of replacement or removal. There are very few "mobile-berm" Irwin River Walking Trail Amenity Upgrades Masterplan-mouth estuaries in WA. We are very lucky to live next to one and we need to do all we can to protect it.
Extended Entry Statement Masterplan	General	1. I am highly in favour of the idea of developing a palette of native species that are posted with informative signs. The twin towns ofDongara-Port Denison sit on the edge of a world-class biological hotspot for plant evolution known as the "kwongan." More than 48% of the some 8,400 known species of native plants in this region are found nowhere else on Earth. Yet, due to agricultural clearing, less than 3% of the native habitat remains. (I consider the Beekeeper Reserve, for example, to be a national treasure. And it's here, practically right in our backyard.)
Extended Entry Statement Masterplan	General	2. Developing a sweeping view of the Irwin River Walking Trail Amenity Upgrades Masterplan, complete with interpretive signage, would add greatly to the attractiveness of the entry area. I think such a view should be a priority.
Extended Entry Statement Masterplan	General	3. At the moment, a casual trail between Moreton Bay Estates and Dongara's CBD crosses through the main entry "park" behind the big lobster. This footpath has created an easement that eliminates the need to walk along the dangerous highway to round the entry road corner. Pedestrians will continue to use this shortcut after the new "Entry Statement" is completed. The master plan drawings indicate a meandering footpath through the "Native Trees" area. I suggest that this path be redesigned to also accommodate the pedestrian traffic going to/from Moreton Bay Estates.
Extended Entry Statement Masterplan	General	4. Why not have a universally assessable toilet at this site? That in itself would make travelers more appreciative of this "rest stop."