

the  
VISION

PART  
**Two**



## 4.0 MANDURAH FORESHORE VISION

Part Two of this report details the proposed Mandurah Foreshore Focus 2020 Vision and recommendations that have been adopted by Council which followed the outcomes of the preliminary stakeholder and community consultation, literature research, site analysis, case study analysis, and concept options. The various chapters of Part Two outline: The Vision and Urban Design Themes; Strategic Principles; Precinct Proposals and Character Guidance; Key Development Issues relative to each Precinct; and Implementation.

These recommendations constitute Phase 1 of the development of the Vision. The purpose of this Phase 1 report is to provide the Vision reflecting outcomes of Council's adopted plan. This first phase is also intended to provide a comprehensive framework for Phases 2 and 3, which will involve the formulation of a Scope of Works & Implementation Strategy and Detailed Precinct Plans & Design Guidelines for each precinct within the Study Area, to guide the development of built form and the public realm.

The Vision is illustrated in **Figure 4.1**. The rationale for the Vision is provided by the three urban design themes and eleven Strategic Principles outlined in Section 4.3. The proposals for each precinct are explained in Chapter 5.0.

The purpose of the Vision is to establish an agreed framework for the future detailed planning within the various precincts in terms of land use, public realm structure and design, built form structure and design, infrastructure requirements, and environmental outcomes. It is a firm requirement of this Vision that a detailed Development Concept Plan ultimately be prepared for each precinct as implementation unfolds. Each Development Concept Plan should be prepared with input from relevant stakeholders and interest groups and be advertised for public comment.

Achieving the desired character of future development in the precincts is addressed through the provision of broad-level design guideline objectives. The guideline objectives have been prepared in the same context as the Vision itself – as a framework for development and subject to future planning of the finer details. The Vision recognises that the future development of the precincts will be the product of different developers, architects and designers over the next 15-20 years.

It is therefore proposed that, at this stage, the character guidance for the precincts be articulated largely in the spirit of guiding principles, with the City of Mandurah maintaining the opportunity to formulate more detailed design guidelines in the future. In the interest of promoting built form, land use and access compatibility within and between the precincts, design guideline 'suggestions' will be provided for height, land use, vehicle access and parking.

### 4.1 APPROACH

The human and financial capital to be invested in the creation of the world-class foreshore environment desired by Council demands a comprehensive urban design response to the opportunities and constraints of the Study Area. Furthermore, the 2020 horizon for the Vision necessitates the need to plan for the growth of Mandurah's population, potential changes in demographics, potential changes in community needs and desires, and growing visitor numbers. The Vision proposes a comprehensive approach to achieving the best possible outcomes for the upgrading and development of the foreshore area for the long-term future.

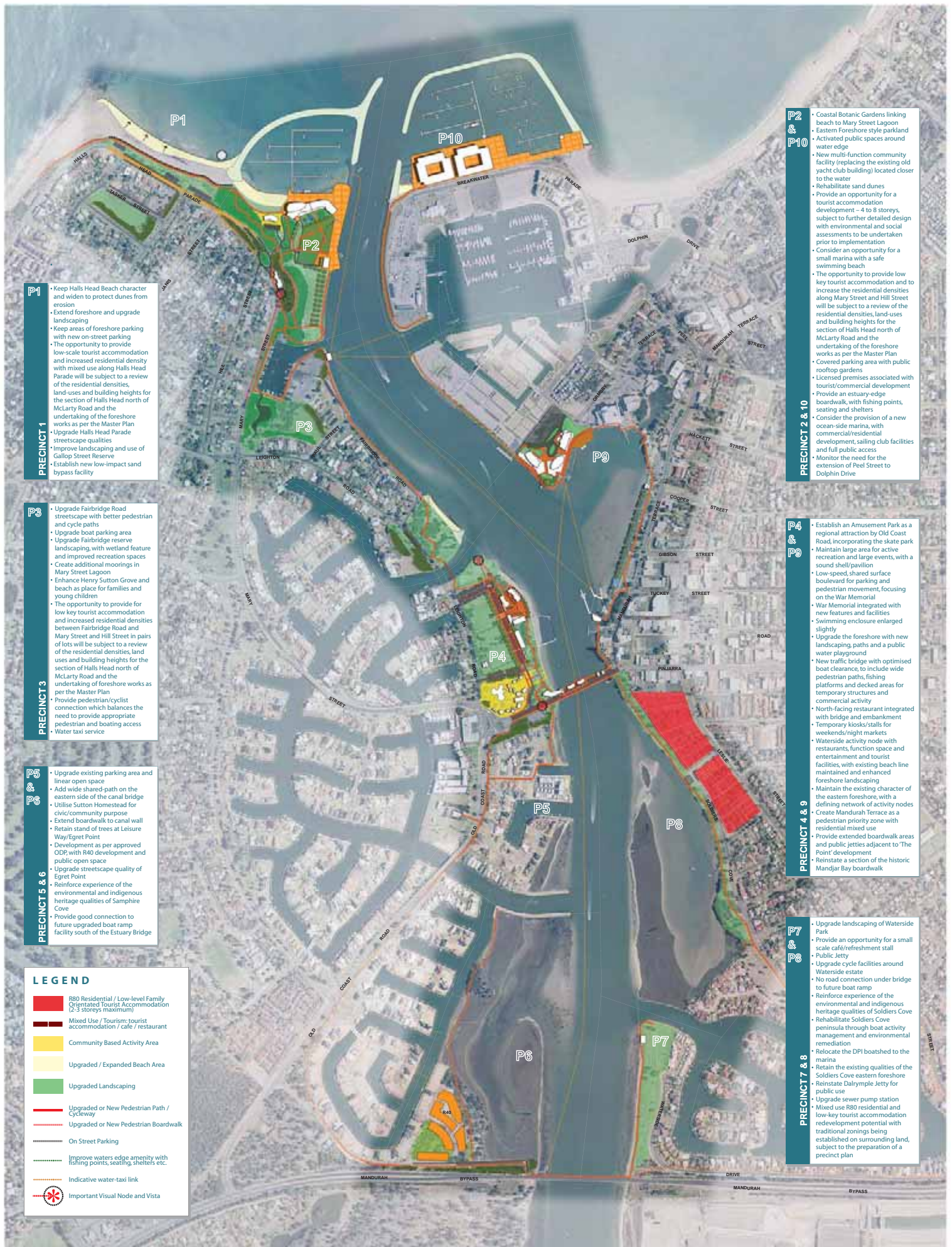
A key concern in preparing the Vision was to ensure that an appropriate balance was achieved between keeping the essential environmental, landscape and recreation values of the foreshore intact whilst providing a strategic selection of active leisure nodes that provide interest and variety for people and assist with the economic sustainability of the foreshore upgrades. In this sense, it is the importance of achieving a balanced outcome of social, environmental and economic sustainability achievements that underpins the approach of the Vision.

Additionally, to enable the best possible long-term outcomes for the Study Area, the approach is guided by the recommendations of the *Peel Waterways Management Plan* (PWMP). In relation to the Study Area, as outlined in Part 1, the PWMP provides the framework for achieving the sensitive balance between using and sustaining the waterways and foreshore areas. The PWMP also gives direction for the scope of any development and intensification of activity within the various policy areas.

In adopting the Vision, Council acknowledged that:

- a. the redevelopment of the Mandurah Foreshore areas will add to the amenity of Mandurah and thus make Mandurah a more enjoyable place in which to live, work, visit and recreate;
- b. the Master Plan will require more detailed design work to be undertaken including further community consultation and assessment of the potential climate change impacts prior to implementation;
- c. more detailed design works will involve comprehensive environmental, social and economic impact assessments in addition to the necessary statutory approvals being satisfied prior to implementation.





- PRECINCT 1**
- Keep Halls Head Beach character and widen to protect dunes from erosion
  - Extend foreshore and upgrade landscaping
  - Keep areas of foreshore parking with new on-street parking
  - The opportunity to provide low-scale tourist accommodation and increased residential density with mixed use along Halls Head Parade will be subject to a review of the residential densities, land-uses and building heights for the section of Halls Head north of McLarty Road and the undertaking of the foreshore works as per the Master Plan
  - Upgrade Halls Head Parade streetscape qualities
  - Improve landscaping and use of Gallop Street Reserve
  - Establish new low-impact sand bypass facility

- PRECINCT 3**
- Upgrade Fairbridge Road streetscape with better pedestrian and cycle paths
  - Upgrade boat parking area
  - Upgrade Fairbridge reserve landscaping, with wetland feature and improved recreation spaces
  - Create additional moorings in Mary Street Lagoon
  - Enhance Henry Sutton Grove and beach as place for families and young children
  - The opportunity to provide for low key tourist accommodation and increased residential densities between Fairbridge Road and Mary Street and Hill Street in pairs of lots will be subject to a review of the residential densities, land uses and building heights for the section of Halls Head north of McLarty Road and the undertaking of foreshore works as per the Master Plan
  - Provide pedestrian/cyclist connection which balances the need to provide appropriate pedestrian and boating access
  - Water taxi service

- PRECINCT 5 & 6**
- Upgrade existing parking area and linear open space
  - Add wide shared-path on the eastern side of the canal bridge
  - Utilise Sutton Homestead for civic/community purpose
  - Extend boardwalk to canal wall
  - Retain stand of trees at Leisure Way/Egret Point
  - Development as per approved OD3 with R40 development and public open space
  - Upgrade streetscape quality of Egret Point
  - Reinforce experience of the environmental and indigenous heritage qualities of Sapphire Cove
  - Provide good connection to future upgraded boat ramp facility south of the Estuary Bridge

**LEGEND**

- R80 Residential / Low-level Family Orientated Tourist Accommodation (2-3 storeys maximum)
- Mixed Use / Tourism: tourist accommodation / cafe / restaurant
- Community Based Activity Area
- Upgraded / Expanded Beach Area
- Upgraded Landscaping
- Upgraded or New Pedestrian Path / Cycleway
- Upgraded or New Pedestrian Boardwalk
- On Street Parking
- Improve waters edge amenity with fishing points, seating, shelters etc.
- Indicative water-taxi link
- Important Visual Node and Vista

- PRECINCT 2 & 10**
- Coastal Botanic Gardens linking beach to Mary Street Lagoon
  - Eastern Foreshore style parkland
  - Activated public spaces around water edge
  - New multi-function community facility (replacing the existing old yacht club building) located closer to the water
  - Rehabilitate sand dunes
  - Provide an opportunity for a tourist accommodation development - 4 to 8 storeys, subject to further detailed design with environmental and social assessments to be undertaken prior to implementation
  - Consider an opportunity for a small marina with a safe swimming beach
  - The opportunity to provide low key tourist accommodation and to increase the residential densities along Mary Street and Hill Street will be subject to a review of the residential densities, land-uses and building heights for the section of Halls Head north of McLarty Road and the undertaking of the foreshore works as per the Master Plan
  - Covered parking area with public rooftop gardens
  - Licensed premises associated with tourist/commercial development
  - Provide an estuary-edge boardwalk, with fishing points, seating and shelters
  - Consider the provision of a new ocean-side marina, with commercial/residential development, sailing club facilities and full public access
  - Monitor the need for the extension of Peel Street to Dolphin Drive

- PRECINCT 4 & 9**
- Establish an Amusement Park as a regional attraction by Old Coast Road, incorporating the skate park
  - Maintain large area for active recreation and large events, with a sound shell/pavilion
  - Low-speed, shared surface boulevard for parking and pedestrian movement, focusing on the War Memorial
  - War Memorial integrated with new features and facilities
  - Swimming enclosure enlarged slightly
  - Upgrade the foreshore with new landscaping, paths and a public water playground
  - New traffic bridge with optimised boat clearance, to include wide pedestrian paths, fishing platforms and decked areas for temporary structures and commercial activity
  - North-facing restaurant integrated with bridge and bankment
  - Temporary kiosks/stalls for weekends/night markets
  - Waterside activity zone with restaurants, function space and entertainment and tourist facilities, with existing beach line maintained and enhanced foreshore landscaping
  - Maintain the existing character of the eastern foreshore, with a defining network of activity nodes
  - Create Mandurah Terrace as a pedestrian priority zone with residential mixed use
  - Provide extended boardwalk areas and public jetties adjacent to 'The Point' development
  - Reinstate a section of the historic Mandjar Bay boardwalk

- PRECINCT 7 & 8**
- Upgrade landscaping of Waterside Park
  - Provide an opportunity for a small scale cafe/refreshment stall
  - Public Jetty
  - Upgrade cycle facilities around Waterside estate
  - No road connection under bridge to future boat ramp
  - Reinforce experience of the environmental and indigenous heritage qualities of Soldiers Cove
  - Rehabilitate Soldiers Cove peninsula through boat activity management and environmental remediation
  - Relocate the DPI boatshed to the marina
  - Retain the existing qualities of the Soldiers Cove eastern foreshore
  - Reinstate Dalrymple Jetty for public use
  - Upgrade sewer pump station
  - Mixed use R80 residential and low-key tourist accommodation redevelopment potential with traditional zonings being established on surrounding land, subject to the preparation of a precinct plan

# MANDURAH FORESHORE FOCUS 2020 VISION MASTERPLAN



## 4.2 VISION STATEMENT

The 'Vision Statement' formulated during the first stage of the project process is that the Mandurah foreshore will be:

*An exciting and friendly place for future generations to celebrate the essence of the Mandurah lifestyle and environment.*

The Vision for the revitalisation of the foreshore Study Area requires a combination of the rejuvenation of the public realm, opportunities for strategic waterside development, incentives and guidance for private redevelopment of existing properties, and highly effective management and marketing of the foreshore area's recreation, leisure, economic, social and cultural resources and activities.

It is worth reiterating the *Mandurah Central Area Revitalisation Strategy's* assertion that the successful implementation of the Vision must have regard for the fundamental principles for place-revitalisation that are practiced throughout the world.

- Leadership, Vision and a Plan.
- Build Community Support.
- Focus on results - not strict zoning regulations.
- Create a public/private partnership.
- Embrace mixed uses.
- Provide places of employment.
- Civic land uses (include, integrate and make the most of them).
- Connectivity (for pedestrians, cyclists and vehicles).
- Create a pedestrian-friendly place.
- Ensure authenticity to the region.
- Provide a network of open spaces.
- Be transit-oriented.
- Provide housing density and variety.
- Implement a Parking Strategy (to share and manage parking).

These principles represent an essential list of objectives to undertake, and are by no means exhaustive. The formulation of the recommendations has been directed by the specific issues pertinent to the foreshore, whilst also taking these best practice principles into account.

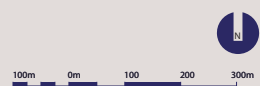
## 4.3 URBAN DESIGN THEMES AND STRATEGIC PRINCIPLES

To guide the transformation of the Mandurah foreshore, three major urban design themes have been defined to drive the delivery of the Vision:

1. Providing locals with a variety of waterside experiences.
2. Creating an integrated network of foreshore places.
3. Optimising tourist attractions and infrastructure.

Directly related to the themes are eleven strategic planning principles that specifically guide the development of the Study Area and form the basis for the Vision. These are the major concepts which deal with the overall patterns of development, the character of the place, and the special opportunities of the location. The strategic principles also serve as the design rationale for the Vision. The strategic principles are outlined under the relevant urban design themes below.







### 4.3.1 Theme 1: Providing Locals with a Variety of Waterside Experiences

Fundamentally, the Mandurah Estuary channel and the foreshore are intrinsically linked to the local community and their ability to use, enjoy and celebrate the focal identity of Mandurah's character. **Figure 4.2** highlights the approach to providing a variety of settings around the foreshore that have different levels of intensity in terms of activity and landscape experience.

#### A place for locals to own and visitors to frequently enjoy

The upgrading and development of the foreshore must involve continued community input into the detailed proposals to ensure relevance to long-term community needs and desires. In doing so, attention must be given to the creation of places that are of an appropriate scale and intensity to be attractive for locals and to attract visitors.

#### Activities and places for all ages and interests

The foreshore needs to accommodate the diversity of the Mandurah community's leisure and recreation needs and desires.

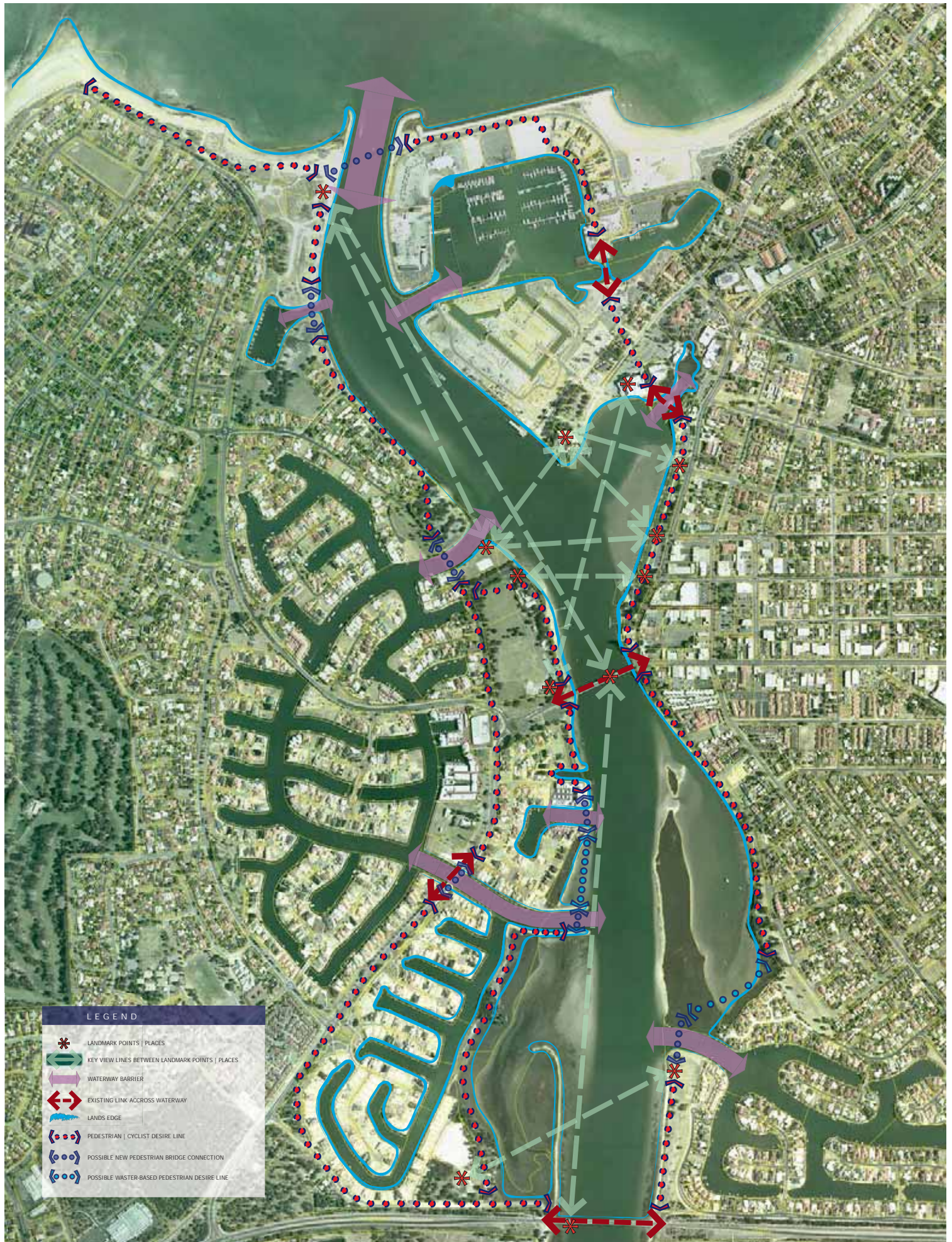
#### Environmental remediation and management

The long-term success and sustainability of the foreshore as a great place to use depends significantly on the ability to remediate the existing environmental conditions and carefully manage the balance between activity and the sensitivity of the environmental features.

#### Balance development and open space

The long-term demands on the foreshore areas from a growing population and visitors, means that large areas of open space, for events and gatherings, must be retained in conjunction with the development of leisure and recreation opportunities that do not currently exist.







### 4.3.2 Theme 2: Creating an integrated network of foreshore places

International best practice examples and theories demand that successful foreshore/waterfront locations have strong linkages between the nodes that people will use and congregate. The ability to move easily through a network of leisure and landscape experiences will be a primary influence on the overall success of the Mandurah foreshore.

If connected across the Waterside Canal entrance, a casual walk from the Mandurah Bridge around the southern half of the Study Area would take approximately 1 hour over 4.5 km. The same situation exists if the northern sector is linked by a bridge at the Estuary mouth. **Figure 4.3** illustrates the potential visual and physical connections between foreshore places.

#### Integrated network of active and passive, intensive and serene places

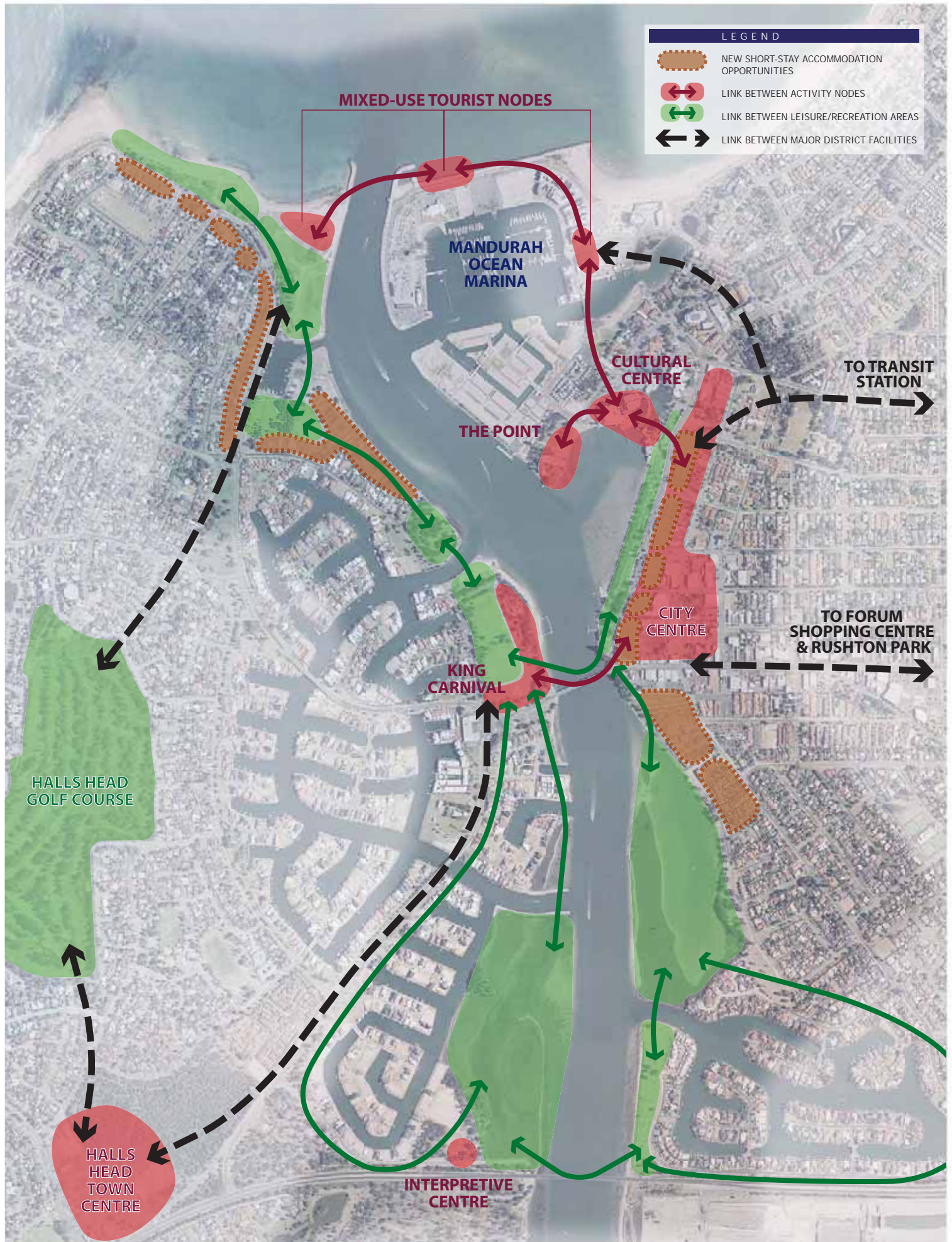
The foreshore currently contains a variety of public spaces and nodes that provide different points of interest. In planning for the long-term use of the foreshore, it will be important to supplement the predominantly passive and serene foreshore areas with strategically located higher intensity nodes. The integration of these different areas enables people to experience the full flavour of what the Mandurah foreshore has to offer.

#### Optimise use and enjoyment of different places – quality of experience and access along the linked network

The ability to enjoy the variety of foreshore places will be strongly influenced by the directness, legibility, features and amenity along the paths and routes that connect these places. Detailed consideration needs to be given to the quality of landscaping, directional and educational signage, pedestrian and cycle paths and structures, direct visual connections between landmark developments and structures, and the ability to provide appropriate access through currently inaccessible areas.

#### Optimise interaction with the water and foreshore

Use and enjoyment of the Mandurah Estuary and foreshore are major factors influencing people to live in and visit Mandurah. People love the water. The Vision seeks to optimise the interaction opportunities with the water and foreshore in relation to individual foreshore nodes and the linkages between the nodes.





### 4.3.3 Theme 3: Optimising tourist attractions and infrastructure

The attraction of Mandurah to visitors from Perth and beyond is clearly discernable, and the sense is that the potential to increase tourist numbers is significant. Tourism is an important part of Mandurah's economic and employment sustainability. Currently, day-trippers account for much of the visitation to Mandurah. The benefits to the overall community become exponential if Mandurah has the attractions and infrastructure to keep visitors staying longer and/or visiting more frequently. **Figure 4.4** illustrates the potential variety of attraction points and the major supporting elements, and the linkages between them all.

#### Focus on the experience of environmental and Indigenous Heritage Qualities

The value of the foreshore experience is founded in the qualities of the physical, flora and fauna environmental conditions and the special significance of the Indigenous heritage. It is important that the Vision build on these qualities to give people a better experience and greater appreciation of this distinctive historic landscape and the stories embedded in it.

#### Accommodate future leisure and recreation demands from a greater population of locals and visitors

The growth of the foreshore as a focus of recreation and leisure use creates the need for careful planning, design and management. Recreation demands need to be accommodated through the retention of large areas of multi-function open spaces. In order to establish Mandurah as a world-class destination, the reconfiguration and creation of leisure activity nodes and facilities needs to be sensitively planned. The supporting infrastructure in terms of accommodation, transport and linkages to facilities is integral to the success of the Vision. Mandurah's attraction as a world-class boating destination should be optimised.

#### Create iconic structures and development at landmark sites

The appeal of Mandurah will be accentuated by creating an atmosphere of innovation and attention to architectural excellence in the built form. Structures and buildings that fit with the foreshore landscape and context whilst providing an appealing point of interest should be provided as part of the network of foreshore places. New built form should compliment the landscape to increase the enjoyment of the foreshore experience. The key built form icons for the Mandurah foreshore could be:

- the commercial developments on each side of the Estuary entrance;
- the new Mandurah Bridge and associated commercial developments.

Holistically, the development of the foreshore path linkages that takes people through the great diversity of environments will perhaps be the defining feature of the Mandurah foreshore. Indeed, it is the **series of bridges** that facilitate the foreshore links that presents the most identifiable and strongest icon theme for the foreshore area: *Mandurah – the City of Bridges*.

#### Design and develop to sustain activity and facilities

The ability for Council to achieve the vision for the foreshore requires strategic financial assistance from projects undertaken in the Study Area. The Vision seeks to provide a small number of new developments that provide public benefit whilst generating some revenue for Council. Additionally, sustaining the foreshore vision requires careful planning to ensure an appropriate quantity of new development, the best locations for exposure and integration with the movement network.

## 4.4 KEY OBJECTIVES

### 4.4.1 Land Use

- Maximise the flow-on benefits gained from the attraction of Mandjar Bay and the foreshore.
- Minimise commercial development within the foreshore area to key activity nodes where strategic social and economic benefits can be justified.
- Provide opportunities for private redevelopment that will complement and support the development of key activity nodes and the improvement of the urbanism around the foreshore.
- Locate active leisure/commercial facilities to ensure the best possible integration with the urban structure and limit the negative commercial effects of geographic isolation where possible.
- Consolidate compatible land uses to generate a critical mass of activity and vitality.
- Arrange the variety of private and public redevelopment opportunities to spread the benefits of activity in nodes and along movement paths, and to minimise undue competition between uses to ensure economic sustainability.
- Plan to allow for the effective staging of new development and works that delivers the Vision in the most economically and socially sustainable manner.
- Connect all land use activity nodes together as part of an integrated movement network.
- Provide a place that encourages people to visit and linger, particularly in the evenings and on weekends.

### 4.4.2 Built Form

- The City of Mandurah has the opportunity to brand itself as a centre of design excellence.
- Architectural projects should adopt contemporary, site responsive and world's best sustainable practice as a minimum.
- Signature projects such as the iconic Estuary pedestrian bridge should be procured through international or national design competitions. This approach gives the City of Mandurah the opportunity to market itself as a progressive world leader and create a world-class destination. All precincts should have guidelines to promote excellent design.
- Architectural projects should be contemporary but diverse in form, materials and approach. Faux architectural 'styles' or 'themes' should be avoided.

- The use of colour to create a local vibrancy should be explored. Precinct definition ('place making') should be accomplished primarily through the landscaping and urban design elements introduced. The architecture can respond to these, particularly through the use of precinct colour palettes. The colour palettes should be derived from the local area and be appropriate to each precinct.
- Built form should be people focused and provide a high level of amenity and connection to its surroundings. Architecture should provide a fine grain of texture and experience through scale and material usage. The interface to the public realm should always be an appropriate scale to promote activation along building edges.
- Redevelopment on private property must be reviewed through comprehensive Precinct Planning to address issues such as land use and zoning, scale and height and must consider development proposals which may required development to be undertaken in lot-pairs as a minimum to ensure comprehensive development proposals.

### 4.4.3 Public Realm and Environment

The following public space design principles have been incorporated into the Vision:

- The cultural heritage of the Study Area should be promoted in the conduct of community art projects expressed as public art in public places.
- Streetscaping within the Study Area is recommended to be upgraded. The use of large, sometimes deciduous, trees is promoted.
- Thresholds into the Study Area are recommended to be further enhanced by the use of public art and landscaping.

For public spaces to work and be used effectively, it is important that they are designed carefully. The following guidelines for the design of public spaces are recommended:

- Where vehicles are allowed, the public space should be pedestrian friendly. Shared surfaces should allow for service access and slow vehicle movement.
- All public spaces should have good safety - well lit, active and overlooked by buildings.
- Public spaces should be bounded by active frontages as much as possible (shops, cafes, offices, housing etc...). Blank, windowless walls should not be permitted. Existing blank walls should be modified to include door and/or window openings if possible.
- Public spaces should be enclosed by buildings as much as possible.



- All public spaces should be accessible to all people day and night. Privatised space that is locked at night should not be permitted.
- Increase the amenity and safety of pedestrian and cyclist movement.
- Improve safety in the public realm, particularly at night.
- Provide elements of visual interest.
- Provide for a range of passive and active recreation opportunities throughout the streets and public spaces.
- Build on the character of the existing public spaces.

The landscape for the study forms the setting for all future expansion and development in the area. With a major focus on recreation and tourism, there is a heavy emphasis on the landscape to generate the setting and amenity for both the existing and the new activities planned for the area.

Throughout the Study Area the existing established landscape elements have been incorporated into the design. Elements such as trees, parkland planting and remnant indigenous flora are important assets and have been retained wherever possible and practicable.

Additionally, the climate of the area makes the establishment of landscapes extremely difficult. Cold salt-laden westerly winds blow over the site in the winter and the hot, dry summer winds dry out the landscape. The skeletal soils of the area also have particular requirements. The combination of all of these elements has an extreme impact upon the landscape.

New landscape plantings will need to draw on the suite of coastal plants which thrive in the area. Many of the indigenous plants such as *Olearia axillaris*, *Scaevola crassifolia*, *Alyxia buxifolia* and *Spyridium globulosum* are suitable. Trees for the broad landscape should include *Eucalyptus gomphocephala*, *Casuarina fraseriana* and *Eucalyptus marginata*.

#### 4.4.4 Movement

- The provision of an integrated movement network is crucial. Whilst the focus tends to be on pedestrian, cyclist and vehicle movement, the provision of good quality bus services around the foreshore with frequent connections to the Transit Station and major commercial centres is important. Furthermore, the provision of a ferry / water taxi service should be fully investigated as another key part of the movement network, particularly for tourists.
- Also as part of the variety of transport modes available around the foreshore, the opportunity for a mini-tram extending from Precinct 2 to Precinct 4 should be investigated. The vehicle would nominally be two-people wide and have around twenty rows of seats. Preferably powered by electricity, this vehicle could charge a minimal fare to transport people along the foreshore and be particularly attractive for tourists.
- Improve the personal safety of pedestrians by focussing pedestrian movement in safely designed pedestrian environments.
- With the creation of activity nodes the objective for the traffic network is to create connectivity between the activities. There is a particular focus on non-motorised transport so that the foreshore retains its current characteristic of a tranquil and safe place to visit.
- All pedestrian and cyclist networks should be designed in accordance with the principals of universal access to create an enabling environment for pedestrian movement.
- It is intended that the pedestrian and cyclist network be a major recreational path, with regular group rides and heavy and concurrent use in both directions. A 4m path would accommodate this.
- The public transport network is to be encouraged and integrated into the foreshore, giving access for residents and tourists alike.
- Current access patterns for both boat and vehicular traffic are to be maintained, where possible.

## 5.0 PRECINCT PROPOSALS

### 5.1 PRECINCT 1

Precinct 1 contains one of the best beaches in Mandurah and is a clear recreation focus for the city. The northern orientation and child-friendly nature of Halls Head Beach, and the attraction to Roberts Point for surfing, create an excellent environment for public enjoyment. Furthermore, the close proximity of Gallop Street Reserve provides an additional choice for people seeking a different recreation and leisure experience in the area. The recommendations for the precinct focus on providing for better public use and enjoyment by enhancing the qualities of the existing conditions, and providing development opportunities that would benefit locals and visitors.

#### 5.1.1 Key Design Principles

Refer to **Figure 5.1**.

1. Keep Halls Head Beach character and widen to protect dunes from erosion
2. Extend foreshore and upgrade landscaping
3. Keep areas of foreshore parking with new on-street parking
4. The opportunity to provide low-scale tourist accommodation and increased residential density with mixed use along Halls Head Parade will be subject to a review of the residential densities, land-uses and building heights for the section of Halls Head north of McLarty Road and the undertaking of the foreshore works as per the Master Plan
5. Upgrade Halls Head Parade streetscape qualities
6. Improve landscaping and use of Gallop Street Reserve
7. Establish new low-impact sand bypass facility.



Figure 5.1



### 5.1.2 Built Form Objectives

Significant community concern was raised with respect to the proposal to increase the residential density to R80 and include low-key tourist accommodation in existing residential areas as shown on the draft Masterplan, adjacent to the foreshore. While these concepts are supported in principle, their introduction may be more appropriately undertaken via a Precinct Plan.

Therefore, Council resolved to modify the plan and ensure that the following notation is provided in regard to land use and built form in this Precinct:

*“The opportunity to provide low-scale tourist accommodation and increased residential density with mixed use along Halls Head Parade will be subject to a review of the residential densities, land-uses and building heights for the section of Halls Head north of McLarty Road and the undertaking of the foreshore works as per the Master Plan”.*

There are two main reasons why these modifications are suggested:

1. In recent times concerns have been raised within this northern section of Halls Head with respect to residential density increases, provision of short stay accommodation and building height within existing residential areas. The two sites where concerns have been articulated by the community have been Lot 306 Halls Head Parade (within Precinct 1) and the Blue Bay Motel (located on Oversby Street). The concept of the increase in the density and the provision of the low-key tourist accommodation remains strongly supported, but the provision of the detail of heights and densities would be more appropriately addressed via a Precinct Plan to deal sufficiently with these issues. It is recommended that this occur north of McLarty Road. This approach would allow for a more holistic approach to be taken on these issues, rather than adding them onto the Vision. The key element from the Vision perspective is that the private development along Halls Head Parade needs to add value to the proposed foreshore works.

Additionally, whilst the principle of upgraded built form, density and land-use is acceptable in suitable locations, the plan is too specific in its reference to “R80” development, which has not only raised some concerns, but also potentially raised unrealistic expectations (as experienced generally with potential land owners and not necessarily reflected in submissions).

2. Given the commitment to further community consultation prior to the implementation of the foreshore works, it would not seem appropriate for these sites to be rezoned until after the works on the foreshore have obtained the necessary statutory approvals. The suggested sequencing of events would be as follows:

- a. Approval of the Vision
- b. Detailed design and consultation for the individual precincts
- c. Statutory approvals for precinct works
- d. Rezoning of privately owned land, following the preparation of a precinct plan which included a review of residential densities, land-use and building heights.



### 5.1.3 Public Realm Objectives

#### Widening of Halls Head Beach and Foreshore Reserve

Improving beach amenity and the mitigation of the storm erosion risk to the foreshore reserve requires building the beach forward of its existing position to provide a suitable width of beach for public amenity and the creation of a suitable erosion buffer (in the order 15m) to its entire length. This would require a 20m to 30m extension of the existing groyne. Some form of training of the Roberts Point lobe may also be required to hold this end of the beach more predictably. It is estimated that around 40,000 to 50,000m<sup>3</sup> of sand may be required to build this beach.

The ready source of this sand is the naturally occurring longshore drift which would be allowed to build up against a groyne or marina breakwater structure in Precinct 2. However, any accumulation here would have to be matched with renourishment of the beach to the north of the Mandurah Ocean Marina from terrestrial sources.

The widening of the foreshore reserve will provide additional space for public amenities such as seating, shelters, barbeques and play equipment. The foreshore reserve will be the subject of a detailed landscape concept plan to improve the amenity and useability of the area.

#### Gallop Street Reserve

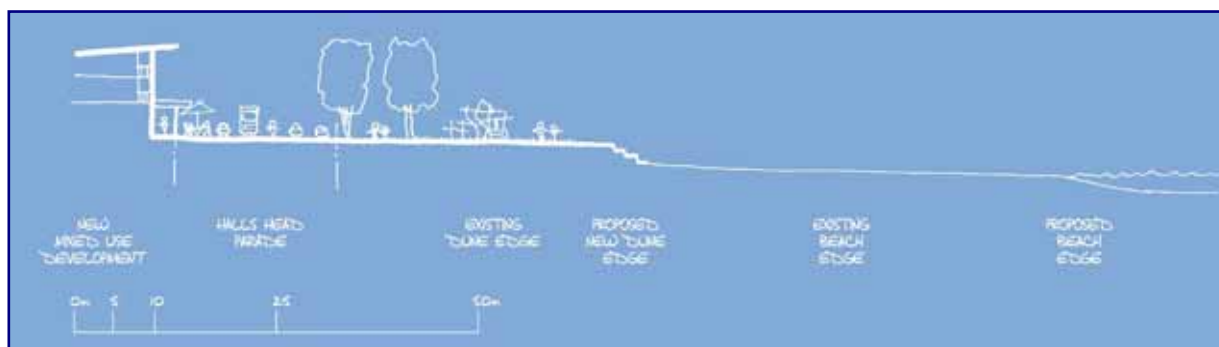
The Gallop Street Reserve provides an opportunity to provide equipment and facilities for residents and visitors seeking a leisure and recreation alternative to the foreshore area. The reserve will be the subject of a detailed landscape concept plan to improve the amenity and useability of the area.

#### Sand Dune Rehabilitation

This area currently requires annual sand renourishment to protect existing infrastructure which includes a car park, toilet, shelters, mature parkland trees and Halls Head Parade. Therefore reconstruction of the dune system with sufficient width to accommodate the erosive forces of winter storms is an important objective for this area.

#### Halls Head Parade

The Halls Head Parade streetscape will be upgraded with new footpath and roadway paving and landscape planting to emphasise the area as a special character precinct. The streetscape upgrades will be undertaken to integrate with future redevelopment of the Halls Head Parade properties.





## 5.1.4 Movement & Parking

### Halls Head Parade

Halls Head Parade will be treated to reduce vehicle speed and provide a more pedestrian-friendly environment. The foreshore side of the street will include some areas of angled parking to compensate for the slight reduction of parking bays on the foreshore reserve. Any modifications to the street will ensure good levels of safety for drivers, pedestrians and cyclists.

### Bus

There is an existing bus service that runs up Janis Street and then into Mary Street. It will be important to coordinate the bus stop locations and the footpath network to allow easy access to this precinct and the beach. This should include pedestrian crossing points on Halls Head Parade and Mary Street. Bus shelters will be provided as part of the street scaping.

### Parking

It is proposed that one area of foreshore parking be relocated to on-street parking, to enable a greater area of foreshore for public enjoyment.

Informal parking will be provided in Tasker Street along the Gallop Street Reserve edge, as overflow parking.

A recreational path will be provided to form a hard edge between the grass reserve and the foreshore.



## 5.2 PRECINCT 2 & 10

Precinct 2 contains the eastern end of Halls Head Beach and the underutilised expanse of Victor Adam Park, which extends some 450m south to Mary Street Lagoon. Combined with the location on the western side of the Mandurah Estuary channel entrance, the precinct has great prominence and the potential to become a major leisure and recreation focus for locals and visitors.

The recommendations for the precinct concentrate on maintaining the vast majority of the area for a variety of new public landscape and activity experiences whilst providing an opportunity for a higher intensity built form development that benefits the local community and supports the economic sustainability of the overall Vision.

The recommendations for Precinct 10 are essentially borne from the clear need to provide additional boating facilities in Mandurah and the desire of the boating/sailing community to examine the opportunity for an expanded marina in the precinct area. The recommendations seek to balance the provision of new boat moorings on the ocean side of the existing marina with the need for commercial development, to help economically sustain the project, appropriate parking facilities, the views from existing residences and high quality public realm features.

Strategically, the provision of leisure development in Precincts 2 and 10 represents the only additional intensive foreshore development to the existing activity nodes at the eastern foreshore (Precinct 9) and Hall Park (Precinct 4).

### 5.2.1 Key Design Principles

Refer to **Figure 5.2**.

1. Coastal Botanic Gardens linking beach to Mary Street Lagoon
2. Eastern Foreshore style parkland
3. Activated public spaces around water edge
4. New multi-function community facility (replacing existing old Yacht Club building) located closer to the water
5. Rehabilitate sand dunes
6. Provide an opportunity for a tourist accommodation development – 4 to 8 storeys, subject to further detailed design with environmental and social assessments to be undertaken prior to implementation
7. Consider an opportunity for a small marina with a safe swimming beach
8. The opportunity to provide low-key tourist accommodation and to increase the residential densities along Mary Street and Hill Street will be subject to a review of the residential densities, land-uses and building heights for the section of Halls Head north of McLarty Road and the undertaking of the foreshore works as per the Master Plan
9. Covered parking area with public rooftop gardens
10. Licensed premises associated with tourist / commercial development
11. Provide an estuary-edge boardwalk, with fishing points, seating and shelters
12. Consider the provision of a new ocean-side marina, with commercial/residential development, sailing club facilities and full public access
13. Monitor the need for the extension of Peel Street to Dolphin Drive.

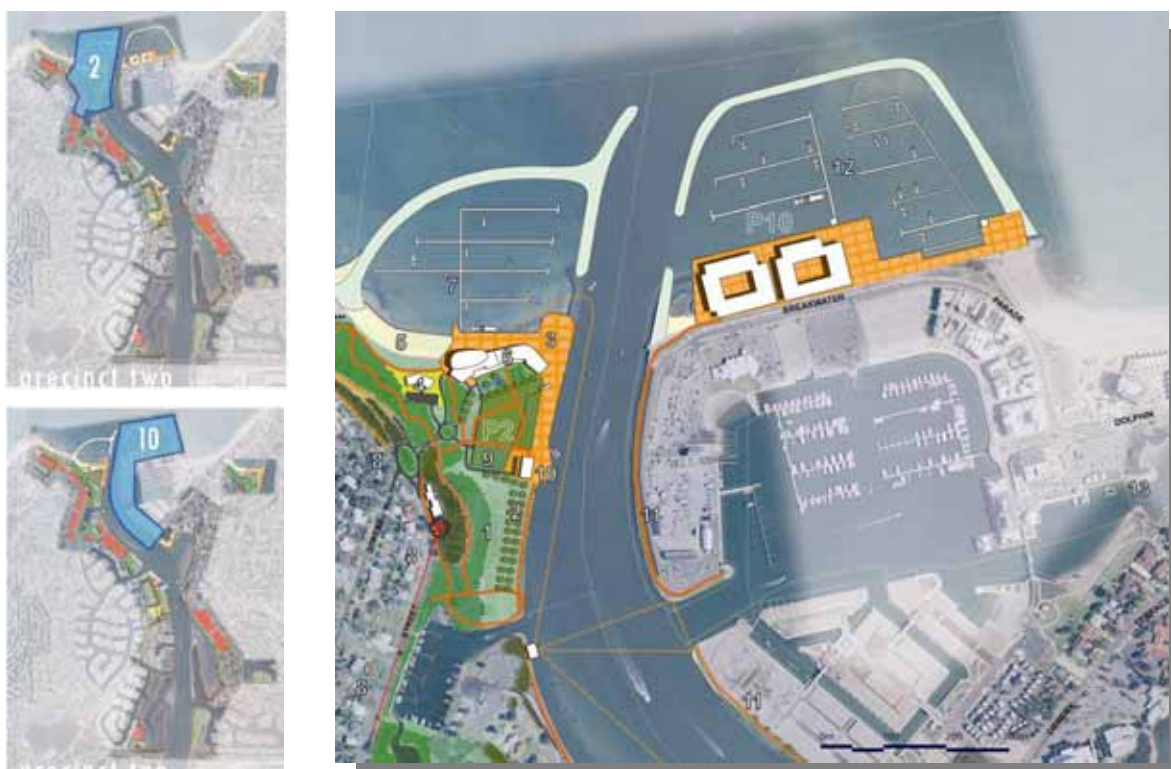


Figure 5.2



## 5.2.2 Built Form Objectives

### Resort/Commercial Development (Precinct 2)

The Vision provides for the built form development of a resort/commercial opportunity within Precinct 2, where there is an opportunity for a tourist accommodation development – 4 to 8 storeys, subject to further detailed design with environmental and social assessments to be undertaken prior to implementation

This outcome achieves the following objectives:

- **Iconic /Landmark Building :** Facilitate the development of an iconic building(s) of excellent design to assist in the creation of an important nodal point for the Mandurah Estuary. The approach to the heads from both the water and from the eastern foreshore should be highlighted with this building.
- **Sustainable Design:** Develop guidelines to ensure the development of a world-class sustainable building.
- **Promote Pedestrian Activity:** Ensure the ground plane encourages pedestrian activity and is fully integrated with the public zone through appropriate commercial development (restaurants and cafes' etc).
- **Carparking Strategy:** Promote the adoption of a green topped carpark to maximise open space opportunities and maximise pedestrian usability of the site.
- **Environmentally Sensitivity:** Buildings shall be designed and constructed to minimise detrimental environmental impact to the site.
- **Public Access:** Full public access to the water edge and parklands surrounding the development sites and on top of the green-topped carpark is guaranteed.
- **Tavern:** A tavern, associated with the resort development, is proposed along the water edge. This facility adds to the diversity of leisure opportunities and will work well as another activity point along the foreshore network.

### Ocean-Side Marina Mixed Use (Precinct 10)

Should the proposal for a new oceanside marina proceed, the need to financially assist the marina with a development site is imperative. The Vision indicates the provision of new built form to the west of the existing residential development, to ensure that ocean views from the residences are maintained.

The mixed use development could provide floorspace for sailing club facilities with any residential and short-stay accommodation land use. The ground-floor areas fronting Breakwater Parade, the plaza and the marina must be activated with as much commercial and restaurant activity as possible. Full public access around the perimeter of the development site must be provided.

Buildings may be permitted up to five storeys. with six storeys permitted along the northern edge. Design guidelines should ensure the development of world-class sustainable buildings.



### Small Marina (Precinct 2)

The built form also incorporates the proposal for a small marina. Depending on the final design, the marina could accommodate in the order of 200-300 vessels. The walls of the marina would accommodate full public access. The marina will also provide for a sheltered public swimming beach adjacent to the resort. The rationale for the marina is further explained in Section 7.2.

### Multi-function Community Facility

The Vision proposes the removal of the existing Yacht Club and the provision of a new community facility that can better accommodate a wider range of activities and uses. The relocation of the facility closer to the water edge enables a better outlook from the building and grounds, better access to the water for watercraft, and the improved amenity for public and private functions. The removal of the existing clubhouse also enables a better outcome for the proposed coastal botanic park.

### Increased Development Potential

In regard to opportunities to increase the development potential for lots on Mary Street and Hill Street, Council resolved to modify the draft plan and ensure that the following notation is provided in regard to land use and built form in this Precinct:

*“The opportunity to provide low-key tourist accommodation and to increase the residential densities along Mary Street and Hill Street will be subject to a review of the residential densities, land-uses and building heights for the section of Halls Head north of McLarty Road and the undertaking of the foreshore works as per the Master Plan”.*

Given the commitment to further community consultation prior to the implementation of the foreshore works, it would not seem appropriate for these sites to be rezoned until after the works on the foreshore have obtained the necessary statutory approvals. The suggested sequencing of events would be as follows:

- a. Approval of the Vision
- b. Detailed design and consultation for the individual precincts
- c. Statutory approvals for precinct works
- d. Rezoning of privately owned land, following the preparation of a precinct plan which included a review of residential densities, land-use and building heights



View of Built Form looking south-west across public plaza in front of proposed 4-8 storey commercial/resort development





### 5.2.3 Public Realm Objectives

This location is comprised of a range of landscapes with the overall linking theme being the Botanic Park.

#### Coastal Botanic Gardens (Precinct 2)

The Botanic Park is the linking element of the precinct and builds upon the existing vegetation cover, which is comprised mainly of *Eucalyptus gomphocephala* – Tuart and other scattered indigenous trees and understorey shrubs. The objective of the concept is to build on the existing planting and to create parkland of indigenous coastal plants of the Mandurah area.

The park would provide habitat, walkways and be an education resource as well as an important buffer. Paths, elevated decks and resting points would be included to allow people opportunities to fully explore and appreciate the new recreational area.

#### Victor Adam Park and Estuary Edge

This open treed park provides a flexible space adjacent to the inlet and to the rear of the deck forming the edge of the waterway. The formal planting of trees once again contrasts with the natural form of the Botanic Park. Broad lawns and sheltering trees offers an opportunity for organized or casual recreation across small and large groups of people.

The adjacent Botanic Park provides the buffer and screen between the residential area and the recreation areas within the park. The formal planting of trees could be Australian or exotic but the trees will need to have a proven performance in coastal zones.

#### Resort/Commercial Development (Precinct 2)

This new development would contrast with the Botanic Park and provide a parkland tourist facility of open lawns, pools and sheltered gardens. The complex has a promenade to the east, separating it from the marina, which then follows the inlet. The paved plaza looks to the east and north and incorporates seating, tree cover and a broad paved space for a range of activities related to the tourist focus of the area.

A significant feature of the development is the underground car park which provides the opportunity to create a broad and luxuriant open parkland landscape over the roof. Trees will be limited, but the rolling lawns will contrast with the adjacent Botanic Park.

#### Beach Front (Precinct 2)

This landscape is an extension of the Botanic Park and will incorporate the most robust and hardy coastal plants within the primary dune system. There will be few, if any, trees in this landscape. It will be dominated by dune plants such as *Spinifex*, *Rhagodia* and *Alyxia*.



These hardy, resilient plants provide the coastal landscape along the Western Australian coast. Low growing, with many of them showing grey foliage, they provide the quintessential coastal environment. Once established this resilient landscape will provide a protective buffer and sand stabilizer.

### Halls Head Parade and Mary Street

The landscape of this area will be an expansion of the existing street planting of the suburb with the focus on creating treed boulevards.

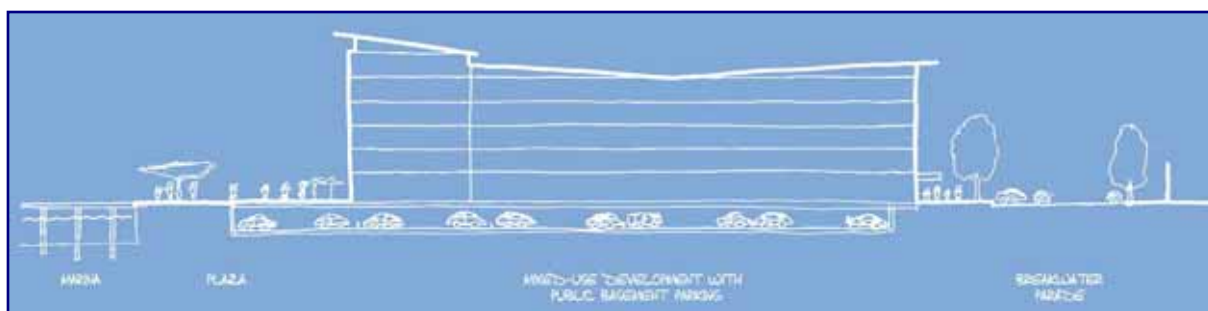
### Estuary Edge (Precinct 10)

The edge along the Estuary, from The Point to the new marina, should be upgraded to provide for better public use and enjoyment. A boardwalk over the Estuary rock wall would be a significant improvement. Fishing points and shelters should be integrated with the boardwalk.

### Ocean-Side Marina (Precinct 10)

The public spaces around the marina will essentially be hard-paved, multi-function areas. The western and northern edges should contain seating, lighting and landscaping relief. The buildings should be set back approximately 10m from Breakwater Parade to provide suitable space for landscaping and high levels of east-west pedestrian movement interacting with the activity generated in the mixed use buildings.

The key public space will be the plaza on the eastern side of the development, which provides a northern aspect whilst being reasonably sheltered from the sea breeze. The plaza should be landscaped to provide shade and amenity whilst not adversely interrupting views from nearby residences. The space must be capable of accommodating large gatherings and events but not be barren during quieter times. Public art and lighting should be a feature of all spaces around the marina.





### 5.2.4 Movement & Parking

Halls Head Parade and Mary Street will function as a low speed environment. The proposed tourist accommodation will generate pedestrian traffic crossing to the foreshore. The roads will need to provide crossing points for pedestrians.

A network of pedestrian paths will be provided in the Botanic Gardens, with the start of the major recreational network following the Estuary foreshore.

A roundabout at the intersection of Mary Street, Hill Street and Halls Head Parade could be used to assist with the traffic turning movements generated by the development. There is the potential for high pedestrian, cyclist and vehicular conflict in this area and the precinct should be designed in a pedestrian-oriented way. The pedestrian entries to the precinct should be located away from the roundabout and clearly signed.

Each commercial development would need to provide on-site parking. As this precinct will attract high levels of vehicular traffic in the peak and there are a number of uses, with mixed land ownership between private and local government, it is appropriate to provide a public carpark, financed by contributions from land owners. A 300 bay car park could be accommodated in approximately 6,500 m<sup>2</sup>, below ground.

#### Ocean-Side Marina Mixed Use

This development presents the greatest challenge for car parking. The new oceanside marina, with commercial/residential development, sailing club facilities and full public access, will generate a large parking demand. It may be possible to accommodate up to 1,000 cars beneath the proposed buildings and plaza. The proposed development will be on reclaimed land and therefore basement parking is an expensive option and will need to be made viable for the project to proceed. However, the provision of a large at-grade car park goes against the objectives of creating active space and will be difficult to achieve in the limited space available.

Additional on-street parking should be provided along the Estuary edge of Breakwater Drive.

#### Dolphin Drive

The pedestrian and cycle network will connect with the existing network in this area. Continuity of standards and signage will be required. An Estuary-edge boardwalk, with fishing points, seating and shelters is proposed alongside Breakwater Parade. This will be a destination, rather than part of a circuit as the marina entry will not be bridged. A ferry connection could be made across to the southern side with a continuation of the path.



View of Built Form looking north from the restaurant across public parkland to proposed marina.



With this development there will be increased traffic and a need to monitor the traffic on Dolphin Drive. The design of Dolphin Drive should be re-examined to enable emergency vehicles to gain access along the edge of the road reserve past two lanes of traffic. This may overcome the need to provide an additional road bridge connection. Should the traffic situation on Dolphin Drive become untenable, a second access from Peel Street, possibly as part of a one-way system, could be considered for the additional traffic flow. It is important that any engineering solution be examined in the context of the desire to maintain the amenity and character of the Dolphin Inlet environment.

## 5.3 PRECINCT 3

Precinct 3 contains the Mary Street Lagoon and is 'book-ended' by two areas of parkland – Mary Cooper/Kingsley Fairbridge Reserves and Henry Sutton Grove. In the context of the study, the precinct serves as the critical link between the proposed activity nodes at Hall Park and Victor Adam Park. As such, the recommendations for the precinct gives attention to providing infrastructure to better accommodate direct north-south pedestrian/cyclist movement and enhancing the leisure and recreation opportunities in the existing open spaces. As with Precinct 2, the Vision seeks to provide an opportunity in Precinct 3 for a higher intensity built form development that benefits the local community and supports the economic sustainability of the overall Study Area

### 5.3.1 Key Design Principles

Refer to **Figure 5.3**.

1. Upgrade Fairbridge Road streetscape with better pedestrian and cycle paths
2. Upgrade boat parking area
3. Upgrade Fairbridge reserve landscaping, with wetland feature and improved recreation spaces
4. Create additional moorings in Mary Street Lagoon
5. Enhance Henry Sutton Grove and beach as place for families and young children
6. The opportunity to provide for low-key tourist accommodation and for increased residential densities between Fairbridge Road and Mary Street and Hill Street in pairs of lots will be subject to a review of the residential densities, land uses and building heights for the section of Halls Head north of McLarty Road and the undertaking of the foreshore works as per the Master Plan
7. Provide pedestrian/cyclist connection which balance the need to provide appropriate pedestrian and boating access
8. Water taxi service.

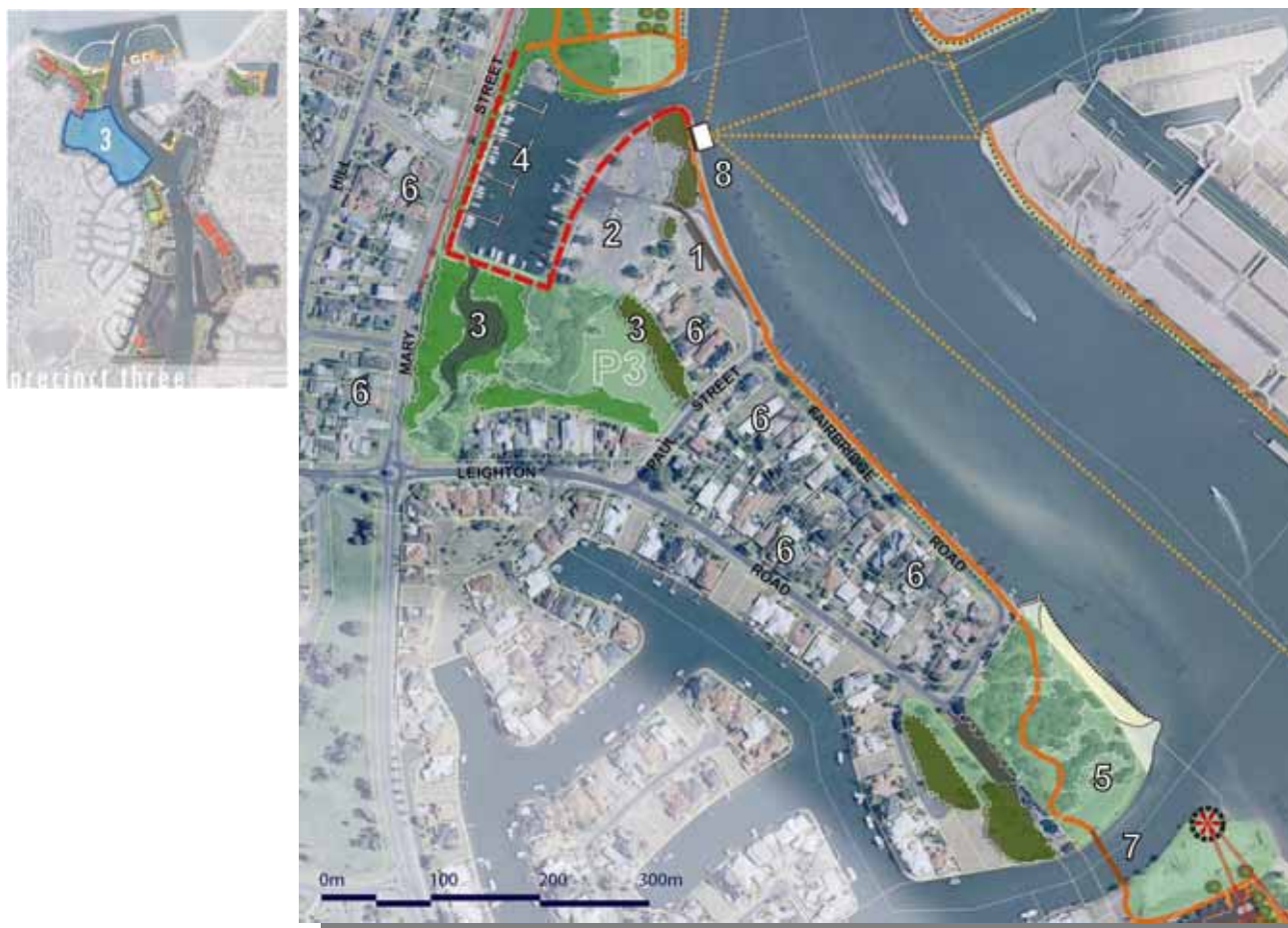


Figure 5.3



### 5.3.2 Built Form Objectives

#### Increased Development Potential

In regard to opportunities to increase the development potential for lots on Mary Street and Hill Street, Council resolved to modify the draft plan and ensure that the following notation is provided in regard to land use and built form in this Precinct:

*“The opportunity to provide for low-key tourist accommodation and for increased residential densities between Fairbridge Road and Mary Street and Hill Street in pairs of lots will be subject to a review of the residential densities, land uses and building heights for the section of Halls Head north of McLarty Road and the undertaking of the foreshore works as per the Master Plan”*

Given the commitment to further community consultation prior to the implementation of the foreshore works, it would not seem appropriate for these sites to be rezoned until after the works on the foreshore have obtained the necessary statutory approvals. The suggested sequencing of events would be as follows:

- Approval of the Vision
- Detailed design and consultation for the individual precincts
- Statutory approvals for precinct works
- Rezoning of privately owned land, following the preparation of a precinct plan which included a review of residential densities, land-use and building heights

#### Pedestrian Connection

The entry to the Port Mandurah canals requires a connection that allows larger vessels to access the canals. Any proposed navigational clearance under the trafficable bridge will match the existing road bridges crossing the canals - approximately 5.5m. An opening bridge span over a navigational width would be required to enable higher vessels to pass through. This opening may take the form of a lifting cantilever span, or a horizontal rotating bridge deck, to present a navigable channel. The opening cycle may be timed or by demand of the passing vessel. Approach ramps and staircases at each end of the bridge span will enable users to select the most appropriate access to cross the bridge.

#### Ferry/Water Taxi Terminal

Should a ferry service be economically feasible, Precinct 3 would provide a good location for a terminal building because the boats could be moored in the upgraded Mary Street Lagoon and the location is central between the activity nodes in Precincts 2 and 4. The terminal building should be designed in simple, contemporary architecture, with the ability to replicate the form as a theme for shelter structures at other ferry/water taxi stops around the Estuary.



View of Built Form looking south-west across public plaza in front of proposed 4-8 storey commercial/resort development



### 5.3.3 Public Realm Objectives

#### Kingsley Fairbridge Reserve and Mary Cooper Reserve

Construction of a freshwater wetland adjacent to Mary Street Lagoon, in Mary Cooper Reserve, will fulfil multiple design objectives including passive recreation and landscape value, wildlife habitat and stormwater management. Kingsley Fairbridge Reserve will be upgraded to provide better leisure opportunities and landscape enjoyment for locals and visitors. The retention of the existing trees is important.



#### Henry Sutton Grove

This park is an important place for families and young children and will be upgraded to provide better leisure and play facilities. The water edge will be upgraded to provide better play and swimming conditions. The carpark will be relocated to the existing Leighton Road reserve to provide additional open space area.



#### Fairbridge Road and Estuary Edge

The condition of Fairbridge Road for pedestrians and cyclists will be improved by changing the nature of the roadway to provide more room for pedestrian paths and a better treatment for cycle activity. The opportunity also exists to provide a boardwalk over the rocks to create an appealing pedestrian environment.





### 5.3.4 Movement & Parking

#### Pedestrian Connection

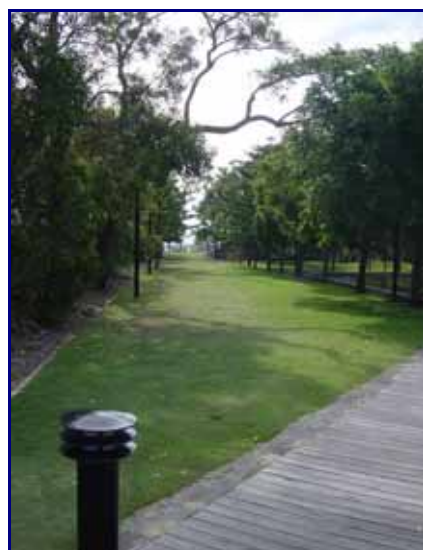
The current lack of connectivity between Precinct 3 - Henry Sutton Grove, and Precinct 4 - Hall Park, is a constraint on the network as the journey from one precinct to the other is circuitous and includes approximately 1.5 km of travel on Mary Street. Therefore, a pedestrian connection is proposed.

#### Pedestrian and Cycle Network

The pedestrian and cycle network should follow the foreshore in this area. At Fairbridge Road the path should be on the foreshore side to avoid crossing Fairbridge Road.

#### Water Taxi/Ferry Service

A water taxi service could provide a public transport connection between the commercial developments in Precinct 2 and the Eastern Foreshore Reserve, with the existing retail developments on Mandurah Terrace. The location of the terminal should be within walking distance of the Precinct 2 commercial developments. Other routes can be considered based on patronage.



## 5.4 PRECINCT 4 & 9

Precinct 4 is the major focus for active leisure and recreation within the foreshore Study Area. In order to achieve the best long-term outcomes for the local community and visitors, the existing character of the Precinct has been retained and enhanced through a new composition of land use activities, the enhancement of existing features and the addition of new leisure opportunities that fit well with Mandurah's existing features. Improving the experiences along the water edge is a key outcome of the Vision recommendations.

An amusement park, such as King Carnival and the multi-function open space of Hall Park remain key elements of the Precinct, balancing the active nature of the Precinct is the serene and emotive character of the War Memorial, which is both respected and better integrated in the Vision. Above all, the Precinct remains prioritised for pedestrians, cyclists and as a place for people of all ages.

Precinct 9 was addressed in the Mandurah Central Revitalisation Study, and remains a fundamental component of the overall foreshore experience. The recommendations, as adopted by Council, seek to minimise impacts on the recreational nature of the Eastern Foreshore by removing the 'development' elements as described in the Revitalisation Strategy.



Figure 5.4

### 5.4.1 Key Design Principles

Refer to **Figure 5.4**.

1. Establish an Amusement Park as a regional attraction by Old Coast Road, incorporating the skate park
2. Maintain large area for active recreation and large events, with a sound shell / pavilion
3. Low-speed, shared surface boulevard for parking and pedestrian movement, focusing on the War Memorial
4. War Memorial integrated with new features and facilities
5. Swimming enclosure enlarged slightly
6. Upgrade the foreshore with new landscaping, paths and a public water playground
7. New traffic bridge with optimised boat clearance, to include wide pedestrian paths, fishing platforms and decked areas for temporary structures and commercial activity
8. North-facing restaurant integrated with bridge and embankment
9. Temporary kiosks / stalls for weekend / night markets
10. Waterside activity node with restaurants, function space and entertainment and tourist facilities, with existing beach line maintained and enhanced foreshore landscaping
11. Maintain the existing character of the eastern foreshore, with a defining network of activity nodes
12. Create Mandurah Terrace as a pedestrian priority zone with residential mixed use
13. Provide extended boardwalk areas and public jetties adjacent to 'The Point' development
14. Reinstate a section of the historic Mandjar Bay boardwalk.





### 5.4.2 Built Form Objectives

The relocation of the amusement park will allow better public utilisation of the foreshore whilst improving the exposure and economic sustainability of the existing King Carnival. The Vision proposes to provide for an amusement park with a larger site area to provide additional rides and facilities. This larger site area will also incorporate an upgraded skate park.

The location at the end of the Mandurah Bridge will create the conditions for a new amusement park to establish a landmark presence, with the ferris wheel, rides and structures highlighting the life and vitality of the precinct. The location also has a very strong synergy with the activity in the town centre and along the eastern foreshore.

#### Mandurah Bridge

The replacement of the existing Mandurah Bridge with a new structure will need to occur within the next decade. It is most desirable for the new bridge to be on the alignment of the existing structure to avoid impacts on Pinjarra Road and the areas to the south. The ability to achieve this depends on available finances and community support for the necessary disruption of traffic across the Mandurah Estuary. The clearance of the bridge should be optimised within the physical constraints of achieving appropriate access to each side of the bridge.

Retaining the existing bridge alignment would require a construction method that allows the deck of the new bridge to be constructed alongside the existing bridge. The existing bridge would then be demolished and the piers for the new bridge constructed. During this time there would be no access across the Estuary at Mary Street. In the final stage, the new bridge deck would be slid into place on the new piers. This method would minimise the time that there was no access.

- **Integrated concept:** The bridge and associated permanent and temporary facilities should be designed as part of an overall living bridge concept and read harmoniously throughout, creating a true sense of place. They should not be resolved independently.
- **Interpretation of existing bridge:** The existing rhythm expressed in the bridge has become an integral part of the memory of locals and travellers passing through Mandurah. The repetition of the black and white posts should be interpreted in any new design for the Mandurah Bridge.
- **Fishing platforms** should extend below the bridge and act as an element to tie-in the adjacent proposed structures. These should be fully accessible.

#### Activity Node

The plan provides for a waterside activity node with restaurants, function space and entertainment and tourist facilities, with existing beach line maintained and enhanced foreshore landscaping.

- **Active pedestrian environment:** The buildings composing the new activity node should promote an active pedestrian-based environment and be fully accessible.
- **Appropriate scaled buildings.** The buildings should generally be single-storey with a second storey option to a portion of the development.
- **Water-based amenity:** Shaded areas should be implemented at the edges of buildings to maximise amenity to patrons of the restaurants/cafes and to create maximum access to the waters edge.
- **The buildings should interpret Mandurah's water-based lifestyle** in a contemporary manner.

#### Temporary Commercial Stall/Kiosk Facilities

- **Temporary structures** should be designed for expedient assembly and disassembly.
- The purpose of the structures is to provide shaded and protected enclosed open space along the bridge for market stalls and other uses.
- They should be colourful, vibrant and integrated into the overall bridge design strategy.
- Movement of people around these structures should be free-flowing and accessible.

#### Bridge Restaurant

- **The bridge restaurant** should provide 24-hour public access to the bridge from the foreshore level on the northern side. This creates potential for increased passing trade to the restaurant and an excellent view for pedestrians to the eastern foreshore. The building could be one or two levels at the lower northern end of the building and a single level from the bridge height.



### Sound Shell/Pavilion

- **International Quality:** The sound shell/pavilion should be designed to host a range of events of an international standard.
- **The building should be contemporary in design** and provide an exciting backdrop to the large multifunction open space. By comprising an outstanding building design, the building itself becomes a reminder to visitors (during non-performance periods) of the quality of Mandurah's cultural connection.
- **Public toilets** should be integrated into the sound shell design which should be available to the general public at all times.



View west from new Mandurah Bridge to new amusement park site, water playground and enlarged swimming area



View south along the foreshore edge



### Jetties/Boardwalks

- New jetty structure provided adjacent to 'The Point' development, to provide a base for a boat hire operation and informal public use.
- Widening of the boardwalk adjacent to The Point to create a 20-30m deck for public and private gatherings.
- Construction of a 30-40m long public boardwalk jetty to reinterpret the historic Mandjar Bay boardwalk.



### 5.4.3 Public Realm Objectives

#### Precinct 4

The landscape focus for this area compliments and supports the activities planned for the area. The focus on entertainment, sport and youth will result in the retention of broad swathes of lawn and large shade trees.

#### North-South Boulevard

The shared pedestrian space forms the spine of the precinct. It links the War Memorial at the northern end with the festival space to the east. The landscape along this spine will be dominated by boulevard trees and lawns planted to provide shade and amenity whilst ensuring a range of activities can be accommodated.

#### Amusement Park and Skate Park

This is a dedicated space and as such the landscape will be incidental, with trees for shade and select areas of shrub planting. The predominance of the space will be paved and detailed to enhance the carnival activity of the area.

The upgraded skate park area is a major focus for local youth and requires a robust landscape of lawns and trees with shelter provided for the heat of the summer. Large trees and rolling lawns will comprise the landscape.

#### Activity Node

The node will incorporate a formal plaza that will provide space for outdoor dining and informal activity, and formal events such as markets, displays and public meetings. The plaza will be attractively designed to provide good shading, seating and public art whilst being flexible to allow large groups of people and structures to fill the space.

#### Foreshore and Estuary Edge

The landscape of this area is also simple and dominated by trees and lawns. This zone will be subject to high pressure from large numbers of people using the landscape and as such it needs to be simple, robust and resilient.

A particular feature of the foreshore edge is the provision of a public water playground that merges with the Mandurah Estuary. The intention is for this activity area to link with the activities in the new amusement park.

The south-eastern landscape adjacent to Mandurah Bridge differs from the remainder of the precinct and is made up of a detailed garden with a circulation system to allow people to contemplate the space and spend time in a protected space.

- Minimise the use of chemicals (pesticides, herbicides, and fertilisers) by designing for diversity, careful species selection, and by using appropriate planting details and specifications.





- Use endemic plant species where possible to enhance local biodiversity.
- Select plant material that requires the least amount of irrigation. Ensure that mulching is used to increase in-ground water retention.
- Reinststate a narrow strip of indigenous foreshore vegetation along erosion-prone areas to protect the foreshore against further erosion, with public access points at nodes.
- Assess the source of any imported soil and other material for contamination and weeds.
- Generally maximise the amount of 'soft' landscape areas to increase stormwater infiltration.

### Hall Park

This area also has a simple landscape and is formed by a range of fringing trees, providing the edge definition of the spaces. The trees should be indigenous species such as *Eucalyptus gomphocephala* (Tuart) and a range of smaller trees. Whilst the edge of the space will be clearly defined by the planting, filtered views will remain to ensure surveillance of the area is maintained.



## Precinct 9

The foreshore is the dominant recreation area in the Central Area and has the potential to be further enhanced for public enjoyment through the creation of a network of activity nodes. The public realm objectives provided below are detailed in the *Mandurah Central Area Revitalisation Study* report.

### Mandurah Bridge to Smart Street

- Existing boardwalk connection.
- Reconfiguration of steps to include disabled ramp to intersection of Pinjarra Road and Mandurah Terrace.
- Integration of a lookout area with the proposed steps and ramp to end of bridge.
- Feature shrub planting.
- Public art and associated paving to emphasise vehicular entry to Mandurah Terrace and pedestrian entry to Mandurah Bridge.
- Emphasise connection with Dalrymple Park.



### Smart Street to Gibson Street

The foreshore area between Smart Street and Gibson Street is one of the major public space projects vital to the rejuvenation of the Central Area. In conjunction with the improved character of Mandurah Terrace, this area of the foreshore will provide a focal point of activity with a variety of recreation, leisure, commercial and civic features.

- New water feature landscape at the end of Tuckey Street, connecting to Mandjar Bay. The water feature will incorporate different elements such as interactive fountains, children's play pool, and landmark water fountains with special feature lighting.
- New paving and landscaping, including around the new raised, shared-surface carpark.

### Gibson Street to Cooper Street

- General upgrade to waterfront promenade with additional tree planting/bench seating.



## 5.4.4 Movement & Parking

### Precinct 4

#### Leighton Place

Leighton Place is to be retained as an access road for canal-side properties and as the entry to the parking nodes in Hall Park. The treatment of Leighton Place should be upgraded in conjunction with the Hall Park works.

#### North-South Boulevard

With the relocation of King Carnival, there is an opportunity to create a north-south boulevard, accessed from Old Coast Road and the War Memorial carpark. The boulevard would provide on-street parking and shared space for pedestrians, cyclists and vehicles with a speed zone of 10 kph. Wide footpaths will also be provided on each side of the boulevard. For a major community event the boulevard could be closed to vehicles.

#### Pedestrian and Cycle Network

The pedestrian and cyclist network needs to focus on the functional transport network in this area providing connection to public transport and to areas frequented by non-drivers.

This precinct is aimed, in part, at teenagers and so good cycle connections are vital. End of trip facilities for cyclists, for example adequate provision of bike racks, are required. The cycle network at the roundabout of Mary Street and Old Coast Road and across the bridge needs careful consideration so that pedestrians and cyclists do not have to make too many crossings and there is adequate provision where they do cross.

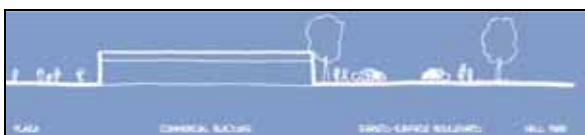
#### Public Transport

Good public transport links to this area are important because of the number of non-drivers attracted to this precinct. Also, at times of large community events public transport will be required to minimise the amount of traffic and parking required.

#### Parking Nodes

There is an opportunity to relocate some of the existing car parks away from the foreshore. In particular, the existing car park located east of the skate ramp area is proposed to be provided on the northern side of King Carnival, extending between Leighton Place and the north-south boulevard. Overflow parking for major events could be provided along the western edge of Hall Park.

Tree planting must be included in car parks to reduce heat load of hard stand surfaces



### Precinct 9

#### Mandurah Terrace

The improvement of Mandurah Terrace to achieve the desired pedestrian-orientated, slow-speed character involves a number of street treatments:

- Provision of flush-kerbing between Pinjarra Road and Peel Street, with carriageways and cycle lanes delineated by a range of elements, wherever appropriate, such as paving, painted lines and bollards.
- New street cross-section to reduce the width of the vehicle travel lanes.
- Existing carpark between Tuckey Street and Gibson Street to be raised level with the shopfront footpath and built as a shared-surface area. The carpark area and section of Mandurah Terrace can be closed for use during special events.
- New and upgraded on-street parking, with 60-90 degree angle parking adjacent to the foreshore and a mix of angled and parallel parking on the eastern side of the street.
- Defined pedestrian-priority crossing points at all intersections and opportunities for pedestrian refuge in kerbed or painted medians.
- Traffic speed to be posted at 40 kph between Pinjarra Road and Peel Street.
- The removal of the Tuckey Street roundabout to expand the footpath and facilitate easier pedestrian crossing to and from the foreshore.
- New roundabout intersection at Hackett Street.
- New footpaths on the eastern side of the street.
- New street tree planting.



## 5.5 PRECINCT 5 & 6

Precinct 5 is a transition area from the intense activity in Precinct 4 through to the more tranquil environmental experience of Precinct 6. The Precinct contains 'Samphire Point' – the northern section of Samphire Cove now segregated by the Port Mandurah canal.

Within Precinct 6, the existing boardwalk and bird-hides already begin to offer an experience of the area. The recommendations for the precinct build on the environmental and Indigenous heritage features to provide a different type of experience for locals and visitors. Combining environmental management and the adjacent development opportunities is also a key consideration.

### 5.5.1 Key Design Principles

Refer to **Figure 5.5**.

1. Upgrade existing parking area and linear open space
2. Add wide shared-path on the eastern side of the canal bridge
3. Utilise Sutton Homestead for civic/community purpose
4. Extend boardwalk to canal wall
5. Retain stand of trees at Leisure Way / Egret Point
6. Development as per approved ODP, with R40 development and public open space
7. Upgrade streetscape quality of Egret Point
8. Reinforce experience of the environmental and Indigenous heritage qualities of Samphire Cove
9. Provide good connection to future upgraded boat ramp facility south of the Estuary Bridge



Figure 5.5



## 5.5.2 Built Form Objectives

### Pedestrian Bridges

With the increased use of 'gophers' in Mandurah, the existing pedestrian facilities on the Old Coast Road canal bridge are inadequate. A pedestrian bridge on the eastern side of the Old Coast Road canal bridge, with a 2.0m clear width, would allow two gophers to pass. A cycle lane of 2.0m, in addition to this width, would allow two cyclists to pass. The location of a new bridge on the eastern side will enable people to travel without crossing Old Coast Road and greatly assist the appeal of the circuit link around the foreshore. It is likely that a separate structure, rather than an addition to the existing bridge, would be more economical to construct.

### R40 Residential

The R40 site should be developed to provide good passive surveillance over Samphire Cove and the pedestrian environment. The built form should be of a simple, contemporary architecture that fits well with the environmental context.

### Water Taxi/Ferry Stop

The opportunity exists to provide a water taxi/ferry stop underneath the Estuary Bridge, providing good tourist access to the precinct. The jetty should include a shelter structure consistent with the architectural theme for the ferry stops.



## 5.5.3 Public Realm Objectives

### Northern Parking Area

Should the future new Mandurah Bridge retain the existing alignment, the parking area to the south of the bridge should be upgraded with new paving and tree planting.

New paths through the linear open space and along Old Coast Road should be provided for better pedestrian access and movement.

### Estuary Edges

Salt marsh areas adjacent to Rialto Place are to be managed for conservation, including management of uncontrolled human access from adjacent urban developments.

### Samphire Cove and Estuary Edge

Samphire Cove Nature Reserve will continue to be managed by the Department of Environment and Conservation for conservation and interpretation. Developments adjacent to the site should be managed so that the potential for offsite impacts are minimised.

The extension of the existing boardwalk north to the canal wall is recommended, to optimise the public experience and enjoyment of the environmental qualities. Considering the significance and sensitivity of the area, any additional access in close proximity to salt marsh areas will be carefully planned based on precautionary principles to minimise potential disturbance.

If erosion of the salt marsh area from boat wash becomes evident in the future (from increased boat traffic), protective measures should be investigated by the Department of Environment and Conservation which may include floating baffles. Involvement of Indigenous groups and environmental interest groups should be a key part of the public realm design of the precinct.



### Leisure Way Park

The retention of the existing trees is an important feature of the precinct. The landscaping of the park should provide public amenities and public art to reflect the indigenous heritage of the area.

#### 5.5.4 Movement & Parking

The retention of the current Mandurah Bridge alignment would allow the retention of the parking area, which is well located for the proposed amusement park site. Access to this parking area will only be available for left-in/left-out movement. A pedestrian crossing point on Mary Street is required as part of the pedestrian and cyclist network.

With the expected increase in pedestrians and cyclists, a pedestrian bridge is required adjacent to the Old Coast Road canal bridge.

#### Pedestrian and Cycle Movement

The pedestrian and cyclist network would follow Old Coast Road, Leisure Way and Egret Point before connecting with the Estuary Bridge. The walkway/cycle paths should provide maximum safety and minimise interruptions.

#### Egret Point

Egret Point extends east from Leisure Way through to the southern side of the Estuary Bridge. This road will be an important connection to the future urban development and upgraded boat ramp facility to the south. There is a need to ensure the safety of pedestrians/cyclists and people visiting Samphire Cove and the ferry stop. In order to limit vehicle speeds and provide good access to facilities, Egret Point should be designed with on-street parking, appropriate carriageway treatments and high quality landscaping.

The provision of on-street parking for the proposed ferry stop will be kept to an appropriate level and monitored to ensure that parking demand is met





## 5.6 PRECINCT 7 & 8

Precinct 7 is essentially concerned with Waterside Park and its potential as a key leisure opportunity within the foreshore network. The recommendations seek to remove the isolation of the area and better integrate the park with the system of foreshore experiences. There is the opportunity to provide leisure facilities for locals and visitors if it becomes viable and allows Waterside Park to become a valuable leisure and recreation focus between Samphire Cove and Soldiers Cove.

The feature of Precinct 8 is the ability for pedestrians and cyclists to experience the physical and fauna characteristics of Soldiers Cove along its eastern edge. The recommendations propose to retain the existing character of the eastern foreshore area and provide the opportunity to experience the southern or western edges of Soldiers Cove. Building on the different experience the precinct offers is also part of the rationale for improving infrastructure for tourists.

### 5.6.1 Key Design Principles

Refer to **Figure 5.6**.

1. Upgrade landscaping of Waterside Park
2. Provide an opportunity for a small scale café/refreshment stall
3. Public Jetty
4. Upgrade cycle facilities around Waterside estate
5. No road connection under bridge to future boat ramp
6. Reinforce the experience of the environmental and Indigenous heritage qualities of Soldiers Cove
7. Rehabilitate Soldiers Cove peninsula through boat activity management and environmental remediation
8. Relocate the DPI boatshed to the Marina
9. Retain the existing qualities of the Soldiers Cove eastern foreshore
10. Reinstall Dalrymple Jetty for public use
11. Upgrade sewer pump station
12. Mixed use R80 residential and low-key tourist accommodation redevelopment potential with transitional zonings being established on surrounding land, subject to the preparation of a precinct plan.



Figure 5.6

## 5.6.2 Built Form Objectives

### Public Jetty and Ferry Stop

The provision of a small public jetty will be beneficial for a ferry stop and to enable greater enjoyment of Waterside Park by visitors.

### Small-Scale Café/Stall

The scale and architecture of the structure or building should be as unobtrusive as possible. Should a permanent building be established, the toilet facilities should be available for public use.

### R80/Short-Stay Accommodation

Mixed use R80 residential and low-key tourist accommodation redevelopment potential with transitional zonings being established on surrounding land, subject to the preparation of a precinct plan should be considered in Precinct 8. Such development would be well located adjacent to the foreshore and close to the major activity nodes in Precincts 4 (Hall Park) and 9 (the town centre). Furthermore, a reasonable proportion of the existing development is already at R40. Any new development should have adaptable ground floor designs to meet changes in market demands and changes of use over time.





### 5.6.3 Public Realm Objectives

#### Waterside Park and Estuary Edge

Waterside Park is a reasonably large area of open space that should be upgraded to incorporate additional garden and landscape areas to expand the passive and active leisure opportunities. The open nature of the park should be continued, as it works well in providing for gatherings and views to water.

A narrow strip of indigenous foreshore vegetation along erosion-prone areas should be reinstated to protect the foreshore against further erosion, with public access points at nodes.

As Waterside Park is remote from the commercial activity on the network, planning for trip facilities is important. A water fountain and a shaded area are required, as a minimum.

#### Soldiers Cove and Estuary Edge

Developments adjacent to the site should be managed so that the potential for offsite impacts are minimised.

Considering the significance and sensitivity of the area, any additional access in close proximity to salt marsh areas should be carefully planned based on precautionary principles to minimise potential disturbance.

If erosion of the salt marsh area from boat wash becomes evident in the future (from increased boat traffic), protective measures should be investigated by the Department of Environment which may include floating baffles.

#### Dalrymple Park

Retaining the existing character of Dalrymple Park rests largely with the ability to establish the future Mandurah Bridge in the alignment of the existing bridge. Once the new bridge location is determined, work can begin to rebuild Dalrymple jetty for public use.



### 5.6.4 Movement & Parking

A path through Waterside Park would allow the network to stay adjacent to the foreshore, connected to an upgraded pedestrian and cyclist facilities on Waterside Drive and Blackwood Parade to maintain connectivity and improve legibility.

Any additional parking required for a commercial facility can be provided in the form of on-street bays along Waterside Drive.

There is also a need to upgrade the pedestrian and cyclist facilities in Heron Street, particularly for improving legibility and safety of movement.





## 6.0 PRIORITY PROJECTS

This chapter outlines the projects that demand attention for implementation as a result of their strategic importance in achieving the objectives of the revitalisation strategy. The projects are mostly those relating to public realm improvements. Some projects, though, have inherent private development requirements. The rationales for the various projects have been described in previous sections, and will not be reiterated here.

The projects are identified in a general order of importance; however, the implementation of some projects will overlap and some projects may be commenced before higher order projects if there is a strong demand or particular funding becomes available. Public art and key streetscape improvements may occur independently of the priority projects. The costing and funding arrangements for these priority projects and key public space projects are outlined in the sections to follow.

The suggested implementation of the priority areas of the Vision are as follows:

### Priority One - Old Mandurah Traffic Bridge

- 2007/08 Community engagement, planning and concept design
- 2008/09 Community consultation, Local and State Government acceptance
- 2009/10 Detailed design and documentation
- 2010/11 Commencement of construction

### Priority Two - Hall-Park / Henry Sutton Grove

#### Precinct 4

- 2009/10 Detailed design / Community engagement
- 2010/11 Approval / Funding
- 2011/12 to 2016/17 Implementation

### Priority Three - Halls Head Beach / Marinas

#### Precinct 1, 2 and 10

- 2011/12 to 2013/14 Detailed design / Community engagement
- 2014/15 to 2015/16 Acceptance / Approval
- 2016/17 to 2022/23 Construction

These time frames and priorities will need to be incorporated into the City's 10 year Capital Plan, taking into consideration that the priorities within Vision will need to line up with the priorities within the Mandurah Central Revitalisation Strategy. When considered together, the first priority is the extension of Sutton Street, followed by replacement of the old traffic bridge.

## 7.0 KEY DEVELOPMENT ISSUES

### 7.1 PRECINCT 1

#### Sand Bypass Facility

Upgrading the land use of the Precinct 2 foreshore will require modification of this management technique and may include relocating an enhanced method of bypassing sediment to Precinct 1. Therefore one of the major issues to be resolved in the development of Precinct 1 is the amenity of bypassing operations. Bypassing operations generally fall into three categories:

1. Water-based mobile plant (e.g. floating dredges);
2. Land-based mobile plant (e.g. plant currently used); and
3. Fixed or semi-fixed systems on trestles or breakwaters.

Options to improve the amenity of current operations include:

- providing electrical power to reduce noise and emissions (currently proposed);
- confining the size of the sand trap to reduce the length of beach being impacted (this would also result in an increase in bypassing operation frequency); and
- reducing the scale of earthmoving activity through the use of floating, fixed or semi-fixed mechanical sand pumping systems.

With the limited area available, the second option would not be appropriate in Precinct 1. Fixed and semi-fixed bypassing plants remove smaller amounts over longer periods of time which can result in a more stable shoreline. The plant is often driven by relatively quiet electric motors, can be programmed for off-peak use and automatic operation to reduce operating costs. The disadvantage is in the capital cost of system implementation, however, this is offset against the mobilisation costs of other methods. Examples in Australia include the Nerang and Tweed River entrances, and the Port of Portland.

In recent times, innovative techniques with more mobile and efficient systems have been developed and include submerged fluidiser pickups (Noosa City Council, 2005 & Slurry Systems 2003). Trial applications are in place in Lakes Entrance in Victoria and in Noosa, Queensland for back-passing of sand to nourish the city's main beach. The Noosa example gives an indication of the possible application at Mandurah. Plant rooms could be integrated into precinct landscaping and recreational infrastructure such as kiosks. The excavation components are submerged in the beach and alongside the extended groyne structure or marina walls, where any additional work can be focussed to manage sediment leakage past the pickup.

It is important to note that best practice dictates that bypassing systems should not be limited to the rate and reliability with which sediment arrives at the pickups, and it is important to locate these in the areas of highest littoral drift. Experience elsewhere has also shown that systems with increased mobility and flexibility are more effective. Multiple pickups and mobile platforms are often used and a combination of methods may be employed.

It is also very important to realise that management may also include episodic intervention by conventional floating or land-based dredging plant. In the layouts proposed, such intervention could be confined to the outer training wall adjacent to the ocean entrance.

#### Short-Stay Accommodation

The planned improvements to Precinct 1 will work to create one of Mandurah's premier beachside areas. The new groyne (Precinct 2) will expand the existing Halls Head Beach area and also create a second and more protected beach strip within the marina more suitable for safe swimming for young families. Therefore the potential for tourist accommodation would be most suitable for affordable family-oriented short stay holiday accommodation.

Therefore, the Precinct Plan for this area should provide for a recommended scale and scope of tourist accommodation is around eighty 3½-star equivalent, fully self-contained units either in apartment or villa format. While Precinct 1 offers impressive ocean vistas, the headland is more exposed to prevailing winds than other precincts and is considered the most appropriate location for the mid-range family-oriented commercial accommodation venture. An estimated project investment cost (by proponent developer) is assumed at \$10.5 million (in constant year 2005 dollars) with an expected room revenue generating capability of \$1.5 million per annum.

### 7.2 PRECINCT 2 & 10

#### Resort Commercial Options - Short Stay Accommodation

Precinct 2 offers tremendous development opportunity for upmarket short stay tourist accommodation. A large scale 4-star equivalent resort-style property should be created and under both options could encompass a development of up to 140 upmarket, self-contained units (apartments and/or townhouses). A proponent capital development cost of between \$25 million to \$30 million is assumed and would have the room revenue generating capacity of \$4.2 million to \$6.6 million per annum.

The precinct is well located on prime real estate fronting Mandurah Estuary and would take advantage of its close proximity to the newly created marina and its associated services and within easy walking distance to the beaches of Halls Head and the safe swimming beach of the marina.

### Small Marina

At present, the beach in Precinct 2 forms the trap to collect sediment for transfer to the north of the marina when the plant is mobilised. Such large-scale disruption of the beach is perceived as an unwarranted interruption of user amenity, however, it is a fundamental component of the management of the Mandurah Ocean Entrance navigability and forms part of the entrance training design. A cost-effective method of mobilising a land-based plant to the beach has been developed to successfully maintain navigation access through the ocean entrance. However, increasing the efficiency of the operation is indicated as the trap often becomes overfull before being emptied and sand is carried into the entrance.

A marina situated in Precinct 2 would in effect form the sand trap for bypassing operations transferring these to the Precinct 1 beach. The breakwater would eliminate the need for extending the groyne and provide additional management storage for bypassing system leakage past the pick-up points.

Implementation of such a scheme allows development of an enclosed marina to enhance the foreshore for development of an iconic landmark development site as proposed here. With demand for another two marinas the size of Mandurah Ocean Marina identified, there is scope for a modestly sized marina to enhance the activity at this site and to also cater for the larger motor yacht market.

The protection provided by the enclosed wall of the marina would allow for:

- development of a protected beach; and
- a large open public foreshore boardwalk precinct to maximise public access to the development foreshore.

### Ocean-Side Marina (Precinct 10)

The creation of a new marina will work to meet the demand for increased boat mooring facilities. There is also opportunity for the creation of built visitor attractions and a similar development to that of Hillarys Boat Harbour. Additional tourist facilities could include one or more of: a water theme park, extensive retail markets, amusement park, underwater world, or similar type facilities that would attract visitor activity (predominantly family-based) and encourage visitors to spend longer time in the Mandurah region.

Development of a marina at this site requires relocation of the Mandurah Ocean Entrance to the outer wall of the new facility. This could be done prior to development of Precincts 1 and 2, with the extension of the existing training wall.

The development of this node with a new marina would generally require the following issues to be addressed during detailed planning:

- Maintaining northward movement of an average 120,000m<sup>3</sup> of sediment annually through bypassing from the western beach, renourishment from terrestrial sources to the east of the marina or from basin dredging;

- Greater exposure to storm waves during redevelopment of entrance ebb tide bar redevelopment requiring larger protective armour; and
- Hydrodynamic modelling of the revised entrance

## 7.3 PRECINCT 3

### Short Stay Accommodation

There is the potential, through Precinct Planning, to establish a small number of prestigious yet low key tourist accommodation facilities along Mary Street within Precinct 3. Reflecting the low key nature of development, it is recommended that this short stay tourist accommodation be in the style of free-standing high quality townhouses/bungalows. Assuming that some twenty upmarket fully self-contained townhouses could be developed and would offer 5-star equivalent facilities reflecting the planned general improvements to the surrounding areas. Twenty units would be developed at a cost of around \$5.5m and estimated to generate \$1.14m in room revenue per annum.

## 7.4 PRECINCT 4

### Amusement Park

The Mandurah area is generally lacking good quality built visitor attractions and it is proposed to create a vibrant, experienced-based focal point within Precinct 4. Family-oriented activities will be a major feature and include the relocation and improvement to the existing King Carnival attraction and the creation of safe swimming opportunities such as a family water park facility. A multi purpose public open space could be utilised for festivals, concerts and other community-based events.

### Bridge Restaurant

An opportunity exists to create a landmark food and beverage facility as part of the redevelopment of Mandurah Bridge. Available research reveals that “eating out at restaurants” rates as the second most important motivation for visiting the Mandurah area after “visiting friends and relatives”. “Foodies Travel” is a growing trend in general tourism and the creation of iconic and unique food and beverage venues will work to establish Mandurah with a strong profile for travellers with an appetite for gourmet experiences. An indicative capital cost of \$1.5m to \$2m would be required and assumes the facility would be part-built over water.



## 7.5 PRECINCT 7

### Small Scale Café/Stall

This area is removed from other traditional tourist-based precincts, however would attract recreational use of the open public space of Waterside Park. There may be an opportunity to establish a small café or refreshment stall that would keep visitors in the area longer and generate additional revenue. Access to the café via water-based travel would create an additional stopping point and feature for those undertaking leisurely cruising of the Mandurah waterways.

## 8.0 IMPLEMENTATION

The purpose of this section of the report is to provide guidance on how the findings of this study may be implemented and to provide a strategy for incorporating initiatives into the City of Mandurah Town Planning Scheme No.3.

The Vision represents a pivotal element in the implementation process, particularly given the existing characteristics of the Foreshore Area. The plan is intended to provide the framework to guide the detailed planning of the area by identifying major community infrastructure requirements, road networks and proposed land uses.

It is important that this framework is established and adopted by the community, Council and the relevant government agencies, to ensure that there is a clear and common understanding of the requirements for community infrastructure which must be respected at the more detailed planning stage.

The following flowchart (**Figure 8.1**) summarises the implementation process for the study.

Delivery of the 'Mandurah Foreshore Focus 2020 Vision will broadly be achieved in accordance with a 5-step implementation strategy

There are six key phases of the implementation process, plus a consultation strategy, necessary to progress from the implementation of the findings of this study, following the adoption of the Mandurah Foreshore Focus 2020 Vision by the City of Mandurah

- Preparation of a Scope of Works/Implementation Strategy
- Masterplan Business Case
- Preparation of a Consultation Strategy
- Detailed Precinct Business Case
- Ongoing Studies and Other Initiatives
- Statutory Implementation
- Public Works/Development Coordination

The following is a more comprehensive description of the implementation strategy proposed.

## 8.1 ADOPTION OF VISION

In order for the Vision to fulfil its function as a formal component of the planning framework, it has been endorsed by the City of Mandurah in April 2007.

Town Planning Scheme No 3 does not prescribe a particular process for the adoption of a Vision. Accordingly it is the role of this report to outline the approval process that has been undertaken that takes into account the extensive Study Area and the consequent level of public interest that has been generated by the Vision.

The general process for adopting an outline development plan (as prescribed by Scheme 3) has been considered appropriate for the endorsement of the Mandurah Foreshore Focus 2020 Vision, however this was on the proviso that the process was tailored to be more consultative. Therefore an additional step was included in the process in order to give proper voice to the community and the various stakeholder groups who were centrally involved in the preparation of the Vision.

The proposed process for adoption was as follows:

- A draft Master Plan was lodged with the City of Mandurah.
- The draft Master Plan was reviewed by the Technical Working Group to determine its suitability for advertising.
- The City of Mandurah adopted the draft Master Plan as being suitable for advertising and resolved for it to be publicly advertised.
- The City of Mandurah & its consultancy team to presented the draft Master plan to the local community and invite comment.
- Comment period closed. Technical Working Group and the City's consultancy team considered submissions and recommended modifications to the plan as required.
- The Mandurah Foreshore Focus 2020 Master Plan was presented to Council for final approval.

Prioritising projects and their funding implications also need to be carefully documented and agreed upon by Council, the community and the private sector stakeholders.

The contents of this report and subsequent recommendations reflect Council's adoption of the Vision in April 2007.

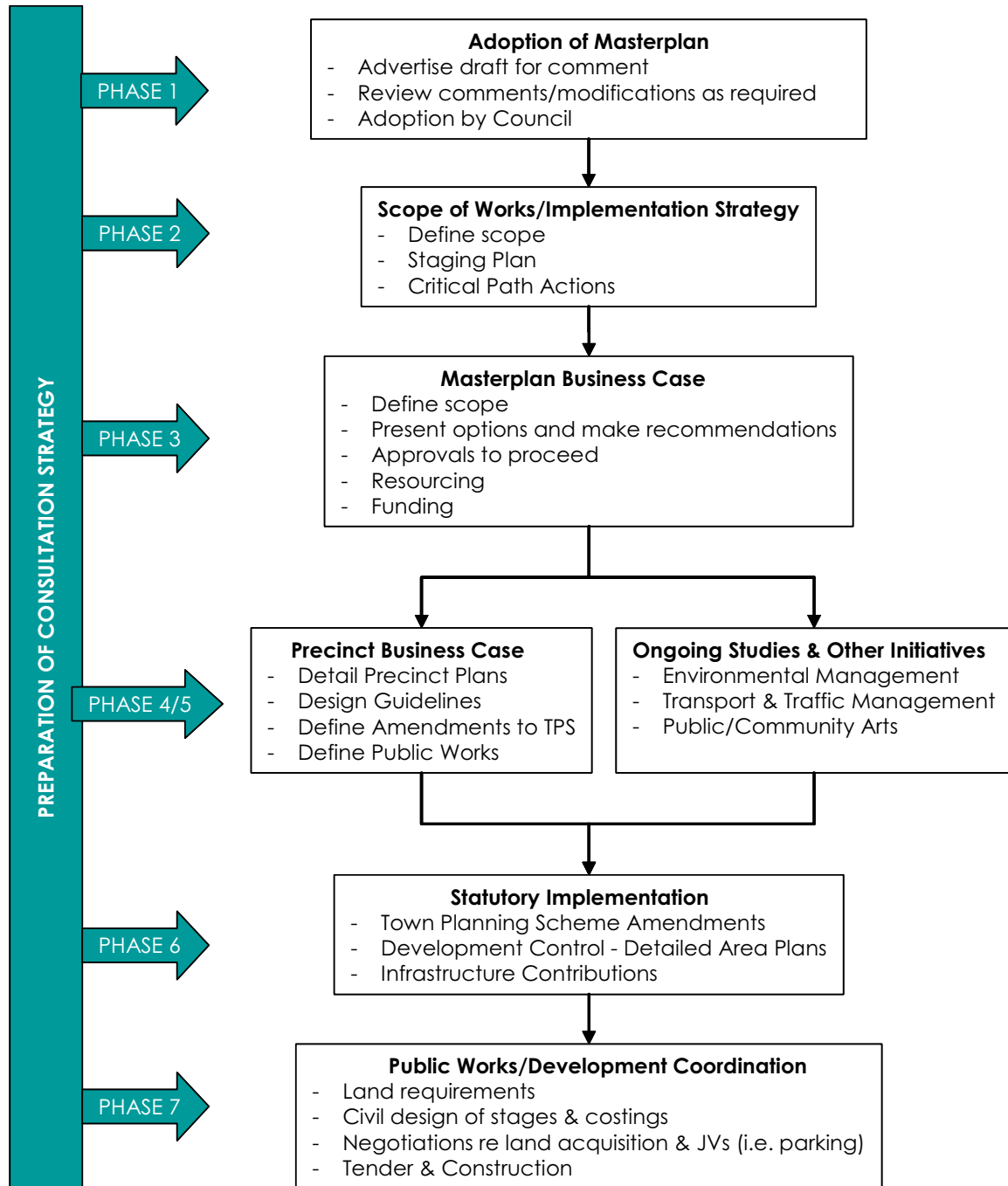


Figure 8.1



## 8.2 SCOPE OF WORKS/IMPLEMENTATION STRATEGY

### 8.2.1 Defining the Scope of Works

The level of detail included in the Vision is necessarily broad. Whilst the Plan illustrates the major initiatives for each precinct it cannot also specify the various statutory procedures that must be undertaken to achieve delivery. For this reason a more detailed 'Scope of Works and Implementation Strategy' should be prepared by the City of Mandurah.

The Strategy should define the full suite of works proposed for each precinct, and then document the statutory actions required to enable the works to occur. By way of example, a new multi-function community facility is proposed in Precinct 2 within an existing 'Conservation & Foreshore' reserve. It is presently unclear whether the use may be developed within the context of the existing planning framework, or whether the building footprint will need to be excised from the reserve and rezoned. The Scope of Works Strategy will resolve this type of detail and in doing so will prove an invaluable tool for developers and the Council in unfolding the Vision.

### 8.2.2 Staging

Staging will be heavily influenced by the outcomes of the business case assessments and consultation outcomes associated with the detailed works for each precinct. Whilst the Vision proposes an appropriate prioritisation of projects for staged implementation, it is difficult at this time to specify a definitive order of priority for delivery. Instead it will be the role of the 'Scope of Works and Implementation Strategy' to define the sequence in which works will occur, and to set broad timing parameters and milestones for key infrastructure investment.

### 8.2.3 Actions on the Critical Path

Under its planning powers, the City of Mandurah is unable to direct the development or subdivision of individual sites. However, it is able to influence staging through its ability to:

- undertake critical public works (that may otherwise prevent development from occurring);
- provide strategic guidance to individual developers regarding the City's vision for key development sites, creating a positive climate for investment; and
- initiate changes to the existing planning framework, particularly in the area of amendments to the local town planning scheme, development control through design guidelines and detailed area plans.

With this in mind, the 'Scope of Works and Implementation Strategy' will identify key actions that may be undertaken by the City prior to the preparation of the Detailed Precinct Plans. Specifically, a series of scheme amendments could be initiated for key development sites where sufficient development detail is already known. Initiation of Peel Region Scheme and Structure Plan Amendments should also be contemplated at an early stage of the Vision's delivery given the processing and approval timeframes associated with each of these processes.

## 8.3 VISION BUSINESS CASES

Upon completion of the Implementation Strategy, it is necessary to complete a business case for the Vision. The Business Case is a useful tool used to assess the pros and cons of proposed projects or to assess the options for a project that has already had resources allocated. The Business Case presents the business issue, identifies project options, benefits, costs, risks and defines the scope. Overall the Business Case's function is to help gain approval for a project to proceed to address the stated issue or need and/or to obtain common agreement on exactly what the project will deliver.

With respect to the Vision, the Project Business Case is developed to:

- define the scope of the project;
- present options and make recommendations;
- gain approval to proceed with one or more projects;
- identify and obtain resourcing for a project or projects; or
- where resourcing is already available, to document what the project can accomplish for the funding and how;
- seek additional funding external to the Council; and/or
- where resourcing has already been allocated and the decision to proceed has already been made by Council, to document what the project will accomplish and what the benefits will be.

The Business Case will enable the resources to be committed to analyse the rationale for the project, assess the economics of the project (both financial and strategic), analyse the impact of the project and compare these against other factors, such as the major risks and the prevailing political environment.

The Vision Business Case can also be used as a tool to prioritise the various project initiatives. This prioritisation may be achieved by comparing the projects competing for funding based upon their benefits, costs and risks.

## 8.4 PREPARATION OF CONSULTATION STRATEGY

Significant commitment has already been demonstrated by the City in engaging the local community and involving it in the preparation and adoption of the Vision. In the spirit of continuing this cooperation it is important that the local community, stakeholders and interest groups are informed of progress towards full implementation of the Vision. It is therefore recommended that the City commission the preparation of a Consultation Strategy, valid for the life of the Vision project and the full completion of works within each precinct.

In summary, the consultation strategy should generally address the following elements:

1. Identify project stakeholders – the following stakeholder groups should generally be consulted:
  - Government ministers and local members
  - Local, state and federal government departments
  - Organisations and interest groups
  - Directly impacted individuals and
  - General community
2. Awareness raising – define the methods and timeframe for distributing project information to the community i.e. letters, forums, information sheets, open days, web site, press releases etc.
3. Direct contact with key stakeholder – meetings with key stakeholders.
4. Data analysis.
5. Consultation report.

This information will be tailored and applied as appropriate at individual phases of the project.

## 8.5 DETAILED PRECINCT BUSINESS CASES

The precinct business cases will focus the level of detail on the outcomes of the detailed precinct plans and more detailed design and analysis in order to produce a more accurate outcome. The following inputs will be required to form the basis of the detailed precinct business cases:

- Detailed precinct plans
- Detailed precinct feasibilities
- Planning Framework modifications

### 8.5.1 Preparation of Detailed Precinct Plans

Detailed Precinct Plans shall be prepared as a means of articulating the total suite of redevelopment works proposed for each precinct. The Precinct Plans will function in a similar manner to an outline development plan but will also include additional guidance on built form issues and the design of key community sites. It is considered that design guidelines should be integral to each of the Precinct Plans thus development controls will be prescribed together with parameters for character and theming.

The content of each Precinct Plan should be prescribed by the City of Mandurah. The City should regard the preparation of Detailed Precinct Plans as a prerequisite to the further subdivision or development of land within any of the precinct areas.

Expert technical reports will be required in support of the various precinct plans. Until such time as the 'Scope of Works and Staging Strategy' has been prepared a comprehensive list of additional studies cannot be defined, however the following sections provide an overview of the expected works.

### 8.5.2 Precinct Feasibility

With respect to the Precinct Business Case, the feasibility is to be developed to:

- define the scope of the projects;
- present options and make recommendations;
- gain approval to proceed with one or more projects;
- identify and obtain resourcing for a project or projects; or
- where resourcing is already available, to document what the project can accomplish for the funding and how;
- seek additional funding external to the Council; and/or
- where resourcing has already been allocated and the decision to proceed has already been made by Council, to document what the project will accomplish and what the benefits will be.

The business case will enable the resources to be committed to analyse the rationale for the project, assess the economics of the project (both financial and strategic), analyse the impact of the project and compare these against other factors, such as the major risks and the prevailing political environment.

The precinct level feasibility will be based on the detailed precinct plans, which would have more closely examined site requirements, design outcomes and construction requirements in order to provide an accurate level of detail to formulate a detailed precinct feasibility.

The feasibility should identify potential funding sources that can occur through property sales, rating, via some other local government funding mechanism, or by grants.

The success of the strategy will depend on the 'various stakeholders' participation in the project including the State Government, City of Mandurah, Peel Development Commission and available allocations within forward budgeting.

Identification of funding sources should also be defined as part of this process.

### 8.5.3 Changes to the Existing Planning Framework

The statutory vehicle that will be used to implement the Vision and its objectives is the City of Mandurah Town Planning Scheme No 3 and its associated policies.

Whilst the specifics of each zoning change are not yet known, it is anticipated that the following scheme amendments will be identified as part of the Scope of Works and Implementation Strategy.

#### Precinct 1

1. Keep Halls Head Beach character and widen to protect dunes from erosion.
  - Modification to the town site boundary to accommodate the reclamation.
  - Include unzoned, newly created land within Regional Open Space Reservation.
2. Extend foreshore and upgrade landscaping.
  - Include unzoned, newly created land within Regional Open Space Reservation.
4. Opportunity to provide low-scale tourist accommodation and increased residential density with mixed use along Halls Head Parade.
  - Modifications to TPS as required to facilitate low scale tourist accommodation, mixed use and increases in residential densities to form part of a Precinct Plan.

#### Precinct 2

3. Activated public spaces around water edge.
  - Modifications to TPS as required to facilitate activation of public spaces.
4. New multi-function community facility located closer to the water.
  - Modifications to TPS as required to facilitate new multifunctional community facility.
6. Provide an opportunity for a tourist accommodation development – 4 to 8 storeys, subject to further detailed design with environmental and social assessments to be undertaken prior to implementation.
  - Modifications to TPS as required to facilitate tourist accommodation development.
7. Consider an opportunity for a small marina with a safe swimming beach.
  - Modifications to town site boundary.
8. Opportunity to provide low-key tourist accommodation and to increase the residential densities along Mary Street and Hill Street
  - Modifications to TPS as required to facilitate low scale tourist accommodation, mixed use and increases in residential densities to form part of a Precinct Plan.
10. Licensed premises associated with tourist / commercial development.
  - Modifications to TPS as required to facilitate development associated within tourist commercial development.

The majority of uses proposed within Precinct 2 can be accommodated by the existing planning framework and extensive zoning changes are not anticipated. However, two areas within the 'Conservation & Foreshore' reserve may be required to be excised and zoned 'Tourist' to facilitate the development of a multi-function community facility and a tourist node (including short stay accommodation, restaurants, cafe, tavern, and residential development to an R80 coding).

#### Precinct 4

10. Landmark restaurant site with new bridge.
  - Modifications to TPS as required to facilitate restaurant site.

#### Precinct 10

2. Consider the provision of a new ocean-side marina, with commercial/residential development, sailing club facilities and full public access.
  - Modifications to TPS and townsite boundary required.



## Design Guidelines

The generic development controls of Council's Town Planning Scheme applicable within the Study Area, in many instances are in conflict with the objectives of this study. Section 5.0 of this report defines the design principles and built form objectives for each of the Vision's Precincts, which will form the basis of detailed design guidelines. These design guidelines shall address the following as a minimum:

- Built Form – Landuse, Setbacks, Heights, materials, facades, colour, signage, access
- Civic Spaces – streets, squares, plazas, foreshores, parks, public art, access

It is important that this level of detail comprises the third tier of control with respect to each of the precincts. In this regard, detailed design guidelines should be prepared and implemented by way of policy.

### 8.5.4 Public Works

For Council, a critical outcome of the detailed precinct plans will be the identification of a series of public works comprising upgrading to existing roads, new roads, the upgrading and introduction of new streetscapes and landscape programs for public spaces. Staging and funding of these works will be an important element of defining the business cases for the detailed precinct plans.

## 8.6 ONGOING STUDIES & OTHER INITIATIVES

Implementation of the Vision will require further, more detailed studies to be undertaken in support of various land use and development proposals. At the present time it is anticipated that the following will be required:

### 8.6.1 Environmental Management

#### Halls Head Beach Dune Rehabilitation Plan

Once widening of Halls Head Beach has occurred through extension of the existing groyne and sand renourishment, reconstruction of the sand dune will require a detailed Rehabilitation Plan detailing sand requirements, volume and shape of earthworks, site preparation, planting schedules and follow up planting and weed control.

#### Halls Head Environmental Noise

The relocation of the Sand bypassing operations to the centre of Halls Head Beach has the potential to contribute to the noise levels of the surrounding urban areas. The design of an alternative bypassing system will need to take into account *Environmental Protection (Noise) Regulations 1997*.

#### Samphire Cove and Soldiers Cove Environmental Assessment

Development applications for proposed developments in proximity to Samphire Cove and Soldiers Cove (including adjacent urban development and boardwalks) will need to be referred to the Department of Environmental Protection to determine the level of environmental assessment required. Due to the conservation significance of the Peel Inlet, development proposals will need to be consistent with the *Environmental Protection (Peel Inlet – Harvey Estuary) Policy 1992* and may be referred the Commonwealth Minister for Environment to be assessed under the *Environmental Protection and Biodiversity Protection Act 1999*. The environmental assessment may be required to address stormwater management, water quality, noise management, contamination, management during construction phase and waste management.

### Environmental Management of Marinas

The development of the marinas in Precincts 2 and 10 will require an Environmental Management Plan which addresses management of the waterway and foreshore reserve areas, and describes how acceptable water quality will be maintained. The Plan may be required to detail:

- Water quality management;
- Nutrient management;
- Sediments and sedimentation;

- Dredge and spoil disposal;
- Structural soundness and condition of entrance and waterway walls;
- Acid Sulfate Soils management;
- Management and rehabilitation of the foreshore reserve; and
- A schedule for reporting of monitoring results

### Fresh Water Wetland

The proposed constructed fresh water wetland adjacent to Mary Street lagoon will fulfil multiple design objectives including, passive recreation and landscape value, wildlife habitat and stormwater management. Construction of the fresh water wetland will need a detailed wetland management plan in order to fulfil the multiple design objectives of this wetland and will need to consider:

- Design guidelines for stormwater treatment processes;
- Design guidelines to mitigate against mosquito production;
- Habitat and visual amenity;
- Wetland vegetation;
- Maintenance; and
- Monitoring.

### Marinas

Development of the Precinct 2 and 10 plans will require careful management of longshore drift to the beaches north of the entrance. This will require careful coastal hydrodynamic modelling of the new entrance features using modern computer based numerical models at the project development stage and ongoing monitoring and management of the following:

- entrance feature surveys including the Fairbridge Road Bank and the outer bar;
- beach surveys to the west and north of the developments; and
- bypassing operations.

### 8.6.2 Public Arts and Community Arts

Public art helps create a visual sense of community. It speaks to residents and visitors alike, offering an insight into the personality of a place and its connection to the past and present.

Closely tied with public art, community art aims to achieve similar physical outcomes, but through the use of community participants to inform and produce artworks.

The study recommends that public art and community art be variously incorporated into different locations throughout the Study Area.

The conception and design for each of these landmark installations should be informed by community cultural development processes to ensure that works have relevance and the acceptance of the community. It is important when commissioning public art that the technical aspects of the piece meets maintenance and safety parameters, that the piece has integrity and sits well in its site and, if required, reflects the history or culture of the community.

In addition to the opportunities for more significant works, a number of opportunities also exist to incorporate low key art elements within streets and public spaces. Such elements may include:

- Mosaic works
- Ceramic or metal works incorporated into paving
- Street furniture elements (such as public art based seats, bollards, etc)
- Small sculptural elements
- Murals
- Temporal works such as lighting or aural sculpture

It is strongly recommended that “art in the streets” elements be conceived and developed through community cultural development processes.

## 8.7 TRANSPORT AND TRAFFIC MANAGEMENT

### Bus

There is scope to introduce a Central Area Transit (CAT) bus with the opening of the new Transit Station. However, the cost is currently prohibitive and a turn around of 15 minutes for the bus to leave the station and arrive back is not easily achievable. The Cities of Fremantle and Perth fund their CAT buses through paid parking in the CBD areas.

### Train

The expansion of the rail network from Perth to Mandurah will improve public transport for commuters and day-trippers. However, the station is approximately 2.5 km from the foreshore and within the foreshore area public transport is currently restricted to bus and taxi services.

A new train station will be opened, adjacent to the bus station in 2007 that will run trains every 10 minutes in the peak and take 48 minutes to Perth. It will connect to the Clarkson Line, servicing the northern suburbs. The train service is unlikely to have a major impact on the Study Area.

### Ferry / Water Taxi

There is an opportunity to run a ferry service in the peak times to connect the proposed activity nodes. This continues the waterways theme that has emerged from the public consultation. The service could be either a fixed service with regular timetables and stops, or a taxi on demand service. The provision of a ferry service would need to be coordinated with the provision of pedestrian bridges and could be used to complete any missing links in the proposed circuit around the foreshore.

The introduction of a ferry service would need to be considered along with any changes to the pedestrian network.

A ferry service from Perth to Mandurah has been considered. The main issues are:

- the restricted access into the estuary, both the width of the entry and the draft available;
- the effect of the current and winds on the ferry;
- the availability of a suitable mooring point and exit strategy for the return trip; and
- with the large size of the ferry there will be an increase in wash affecting the banks of the estuary.

With the introduction of the rail service to Mandurah in 2007 a patronage study would be required to measure demand, as these two modes of public transport would be in competition for the limited number of patrons using public transport between Perth and Mandurah.

## 8.8 STATUTORY IMPLEMENTATION

### 8.8.1 Amendment to TPS and PRS

Modifications to the Peel Region and City of Mandurah Town Planning Scheme will be required as a prerequisite to development. Given the timeframe required to facilitate these processes, it is anticipated that the Scope of Works/Implementation Strategy will identify these as critical action items as an outcome for Phase 1 of the project.

### 8.8.2 Development Control – Detailed Area Plans

Detailed Area plans will be required and prepared based on the detailed Precinct Design Guidelines for individual projects within the Detailed Precinct Plan areas. Private landowners will be required to submit detailed area plans to demonstrate how the requirements of the detailed design guidelines will be address on individual properties. Detailed Area plans will deal with lot level detail and may include but not be limited to the following:

- Setbacks
- Access
- Building envelopes
- Height

Detailed Area plans will require the approval of the City of Mandurah.

### 8.8.3 Infrastructure Contributions

The Detailed Precinct Plans should provide the framework to determine infrastructure items to be the subject of cost sharing calculations, if any. This should be determined concurrently with Council's works program and budgeting and staging plans.



## 8.9 PUBLIC WORKS/DEVELOPMENT COORDINATION

The preceding chapters have outlined a series of public works comprising upgrading to existing roads, the acquisition for and construction of new roads, the upgrading and introduction of streetscape and landscape programs for public spaces, and modifications and improvements to the movement network as a result of this study.

To achieve the long term visions defined for the Study Area, public works should be undertaken on a progressive basis, having regard to identified priorities within each of the precincts, in accordance with an overall implementation strategy.

To provide a basis for detailed planning and budgeting, this study recommends the categorisation of priorities in 3 key projects for each of the precincts:

1. Upgrades to existing roads and improvements to existing streetscapes and areas of public spaces generally reflects various upgrades to existing streets, (including streetscapes - pathways, lighting, street trees and car parking) and existing public spaces that can occur without the need for acquisition/resumption.
2. Construction of new roads and streetscapes are longer term projects that rely more heavily on redevelopment by private and government land owners. They may require resumption or acquisition and are dependant upon market influences, servicing constraints, and relocation of undesirable land uses.
3. Construction of new public spaces are longer term projects that rely more heavily on redevelopment by private and government land owners. They may require resumption or acquisition and are dependant upon market influences, servicing constraints, and relocation of undesirable land uses.

These key projects do not assume that all public works and land acquisition will be borne solely by the City of Mandurah.

Staging of development on privately owned land is expected to occur gradually and progressively over a longer period of time.

It is further recommended that Council includes further community consultation and workshopping in the design of detailed public works project to allow details (eg, paving designs, tree species, furniture selection, public art, cyclist facilities, etc).

## 8.10 RECOMMENDATIONS

This study has established a number of clear initiatives, the principles of which need to have the support of the Working Group, the City of Mandurah and the local community. Accordingly, it is recommended that, due to Council having endorsed the Vision, that:

- to endorse the principles of the Study as a basis for seeking community support to the Vision, Council initiates the formulation of a statutory framework that provides the essential legislative tools necessary to progress the preparation of precinct plans and design guidelines for the Study Area;
- the Vision should undergo a consultation process with the public, affected landowners and businesses, as a part of the preparation of more detailed precinct plans, design guidelines and detailed design;
- Council initiates and adopts an amendment to their Town Planning Scheme for the purposes of introducing a Precinct Plan into the Scheme and necessary zoning changes as recommended;
- Council to initiate studies to support the recommendations of the Vision and associated development controls to form the basis of Precinct Plan;
- Council prepare, advertise and adopt built form design guidelines as part of the Precinct Plan for the Study Area based on the principles identified in the study; and
- refine and pursue funding options in relation to the implementation of major infrastructure works in the Study Area.