



# **BANDY CREEK DISTRICT STRUCTURE PLAN**

**September 2010**

Prepared by Urbis and the Department of Planning for the  
Western Australian Planning Commission and the Shire of Esperance



Government of **Western Australia**  
Department of **Planning**

**urbis**

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# Executive Summary

The Bandy Creek District Structure Plan (DSP) has been developed to guide the sustainable expansion of Esperance to the east. Physical and environmental factors mean that this area will need to accommodate the majority of the town's growth into the future. The DSP provides the district context and structure for the development of the Bandy Creek Boat Harbour into a mixed use harbour precinct, and provides a framework to guide detailed planning over individual land holdings within the area.

The DSP applies the design and spatial layout principles of *Liveable Neighbourhoods* in the context of the specific opportunities and issues in the study area. The spatial layout and design identifies the boat harbour as the key focal point for development. The plan responds to land use issues and identifies compatible uses within the context of the existing landscape and necessary buffers. The plan is robust and can respond to changing economic and social conditions. Environmental assets are capitalised on and are a key feature for the development of the area.

In summary the DSP:

- Identifies an appropriate district structure for the eastern expansion of Esperance that responds to the environmental constraints and assets of the area;
- Describes the vision for the Bandy Creek boat harbour to become a key node for a range of water front recreation and tourism activities, that provides a point of difference to the rest of Esperance;
- Identifies key movement network linkages and an appropriate road hierarchy, in particular to provide high levels of connectivity and access to the boat harbour and the coast, as well as manage district and local traffic movements;
- Maintains the Esperance Town Centre as the primary commercial and retail centre for the Shire;
- Identifies an adequate number of retail centres of an appropriate scale to service the anticipated population, with priority for a mixed use waterfront centre at the boat harbour to service the local needs of residents as well as tourists;
- Ensures good connectivity for pedestrians and vehicles into and around the boat harbour precinct, including proposed activity and recreation nodes;
- Provides criteria for the strategic selection of open space areas, and direction in terms of their role and function;
- Responds to constrained land with buffer requirements and provides direction for the identification of compatible land uses within buffer areas ;
- Retains and enhances employment opportunities;
- Identifies the areas where specific land use and design requirements are necessary to manage interface between different uses;
- Identifies additional community facilities such as schools and district level recreation requirements, commensurate to the needs to the future population of the DSP area; and
- Ensures that short to medium term development is undertaken in a way which does not preclude longer term development.

Subsequent detailed planning in the area will need to incorporate environmental and engineering investigations in respect to vegetation assessment; flood plain mapping; hydrology; coastal setbacks; foreshore management; acid sulphate soils risk; cultural heritage; and infrastructure and servicing requirements.

Once adopted by the Shire and the Western Australian Planning Commission, the implementation of the DSP will be through the development of detailed local structure plans (or outline development plans) by individual land owners, which will be assessed through the usual statutory processes. The DSP will provide the context for this assessment.

# PART ONE: BACKGROUND

# 1 Introduction

## 1.1 Project Overview

The Bandy Creek District Structure Plan has been prepared by the Department of Planning (DoP) in collaboration with the Shire of Esperance. The District Structure Plan (DSP) will guide the development of a significant area of land along the eastern extent of Esperance that will accommodate the long term growth needs of the town.

The purpose of the DSP is to identify the district context within which development around the Bandy Creek Boat Harbour can be placed, to ensure a coordinated and integrated planning approach.

The following issues are to be addressed through this process:

- Coordination of the development of government owned land around the Bandy Creek Boat Harbour;
- Maximise opportunities for tourism and recreation which leverages off the harbour and coastal location; and
- Facilitate the delivery of a new type of urban development for the community of Esperance.

Detailed environmental and engineering assessments were not part of the brief for this study. It is intended that these investigations be undertaken at the local structure planning (or Outline Development Plan) stage.

## 1.2 Study Area

The area of investigation is approximately 10 kilometres east of the Esperance town centre in the vicinity of the Bandy Creek Boat Harbour (**Figure 1**). Wylie Head is located four kilometres east of the harbour. The Shire of Esperance's Flinders Estate and the Esperance racecourse is along the western boundary. Existing key roads within the study area include Bandy Creek Road and Daw Drive, which provide access to the eastern and western sides of the harbour, Wylie Bay Road and Fisheries Road.

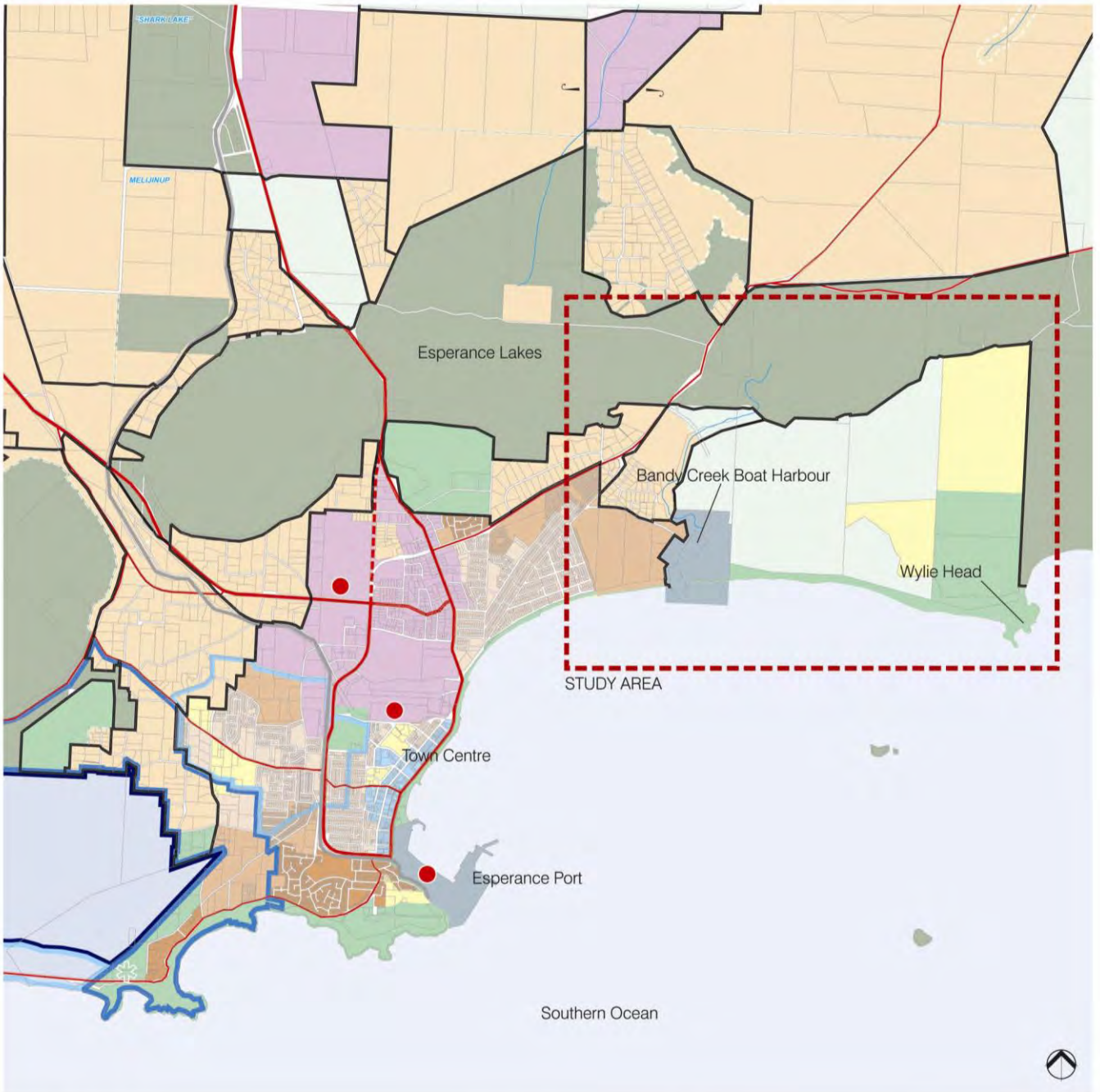
The majority of the study area is zoned for rural purposes, with a Harbour zone encompassing the harbour itself. There are reserves for Parks and Recreation along the coastal foreshore, the Esperance Lakes system to the north, and along the Bandy Creek foreshore. Public Purpose reserves for the town's landfill site and a future wastewater treatment plant are located adjacent to the eastern boundary of the study area. The study area is largely uncleared coastal rural land and lot sizes are consistent with this use.

Bandy Creek Boat Harbour is located at the confluence of Bandy Creek and the ocean in Esperance Bay. The harbour was constructed by the Western Australian Government, opened in November 1983 and is now managed and operated by the Department of Transport (DoT) with input from the Bandy Creek Maritime Advisory Committee. It is a small harbour that caters for commercial fishing vessels, marine tourism and pleasure craft, and provides facilities such as boat launching ramps, jetties, vessel servicing, and wharves. Picnic facilities are located at Summy's Park.

The east side of the harbour consists of a commercial area with 28 commercial pens and a land backed service wharf. The west side of the harbour provides a recreational boating community, including twenty pens and a boat ramp and is also the site for the Esperance Deep Sea Angling Club. Although a short distance across the harbour, there are several kilometres between one side of the harbour and the other by road, which impacts on connectivity.

The area immediately surrounding Bandy Creek Boat Harbour is government owned land which will primarily focus on marina development in and around the harbour. Planning for this area will be undertaken by DoT's Coastal Infrastructure Branch, and will be guided by the principles and recommendations in the DSP.





**FIGURE 1**  
 BANDY CREEK DISTRICT STRUCTURE PLAN

DATE 16.07.2009

DWG NO 001

REV A

SCALE NTS

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**FIGURE 2: AERIAL PHOTO OF STUDY AREA**  
BANDY CREEK DISTRICT STRUCTURE PLAN

DATE 16.07.2009 DWG NO R00580 REV A SCALE NTS  
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## 1.3 Rationale for the District Structure Plan

Several landowners in proximity to the harbour have expressed interest in bringing forward land around the harbour for development, and this has generally been supported by the Shire of Esperance. To ensure that individual development proposals are coordinated to achieve an appropriate outcome for the Harbour and surrounds, it has been decided to prepare an overarching DSP.

The growth potential of Esperance is physically constrained by environmental factors such as the Esperance Lakes System (including wetlands of international significance) to the north, the coast to the south and public drinking water supply catchment to the west. While there are some redevelopment and infill sites within the town's existing urban form, many of these areas are constrained. The Shire's Flinders Estate on the western side of the harbour will accommodate the short term growth needs of Esperance. The provision of additional housing supply needs to be balanced with employment opportunities to ensure sustainable development principles are met.

There is in-principle support from government agencies and the Shire for development in the vicinity of the harbour, provided that it is not a continuation of the existing suburban development that typifies most of the town. This presents an opportunity to create a new type of development that effectively „book-ends“ the town, and provides a defined edge between urban expansion and the town's rural hinterland.

While development further east of the harbour is a longer term proposal, the DSP will identify the key movement network linkages, location of centres, community facilities and environmental protection areas at a district level, which will need to be considered at the subsequent detailed planning stage.

## 1.4 District Structure Plan Objectives

The DSP will set the broad principles for development of the Bandy Creek Boat Harbour into a mixed use harbour precinct, and will guide the preparation of more detailed local structure plans for individual land holdings around the Harbour and to the east.

Based on extensive consultation undertaken with landowners, agencies and the Shire of Esperance, the following objectives for the DSP have been identified:

- Provide a framework for the preparation and assessment of more detailed local structure planning by proponents in the DSP area;
- Provide housing choice and diversity and a permanent population contribution to Esperance;
- Establish an identity that is different yet complementary to the established Esperance town site, and that capitalises on and enhances government investment and infrastructure in the harbour;
- Ensure that development and expansion of the town occurs in a sustainable manner and responds to the need for environmental protection;
- Facilitate the creation of an enhanced and sustainable local economy;
- Guide quality urban design outcomes; and
- Identify legible connections for cars, pedestrians and cyclists.

## 1.5 Operation

The DSP will set the broader development principles for the harbour and its surrounds, guiding the preparation of more detailed local structure plans for specific precincts. This detailed planning will be undertaken by individual landowners and their representatives.

The DSP Map generally identifies:

- Land classifications to facilitate residential, commercial and other development.
- Public, community and civic areas that provide for social activation of the area.

- Conservation areas where environmental protection is required.
- Important connections for cars, pedestrians and cyclists.

The DSP is broad in nature and identifies planning principles and objectives to guide decision making. It does not identify specific zoning classifications and is not able to be “scaled off”.

This report provides the rationale for the DSP. It explains how the DSP meets the project objectives and addresses the issues identified through investigations and consultation with stakeholders.

## 1.6 Summary of Implementation

Implementation of the DSP will be through the formulation of more detailed local structure plans by individual land owners, groups of landowners, or the local government, which will be assessed through the usual statutory processes with the DSP forming the basis for this decision-making.

Once adopted by the Shire and the Western Australian Planning Commission (WAPC), the DSP will perform a complementary function to the Shire’s Planning Scheme, which will provide the basic foundations for development control and related planning matters.

An approved local structure plan is required, prior to subdivision and/or development, for each land area to enhance, elaborate and expand on the information contained in the DSP. In particular, local structure plans need to address:

- Interface
- Connectivity
- Densities
- Built form
- Movement network
- Public open space
- Urban water management
- Environment
- Servicing

A local structure plan is to be generally in accordance with the DSP. Variations from the DSP may be considered where the variation would not prejudice the orderly and proper planning of any other areas within the precinct, surrounding precincts, the overall DSP area or surrounding areas.

In addition to a local structure plan being required for each land area, the land subject of the local structure plan must be rezoned under the local planning scheme to an appropriate zone to allow for development in accordance with the plan. The local structure plan will be considered in support of the rezoning process.

## 1.7 Consultation

The preparation of the DSP involved consultation with landowners and government agencies, undertaken in two phases. Consultation in Phase 1 was lead by DoP and included workshops with the Shire of Esperance, agencies and key landowners to identify a project vision, objectives, and parameters to guide the development of the DSP. These were incorporated into a Parameters Document prepared by DoP.

In the formulation of the DSP (Phase 2), further consultation with agencies including relevant officers from the DoP, Shire of Esperance, LandCorp, DoT (Coastal Facilities), Department of Environment and Conservation, and the Department of Water was undertaken as part of the initial investigations and

ground-truthing of issues. Individual meetings were also undertaken with the owners of land adjacent to the harbour to determine development issues and intentions.

The outcomes of these investigations informed the development of the DSP, and a draft concept plan was presented for feedback to landowners and the Shire at a workshop in April 2009. Key themes from that workshop included connectivity between the harbour and surrounding area; the need for and location of a creek crossing; interface between harbour development and adjoining landholdings; location and extent of buffers for the landfill site and wastewater treatment plant; location of green corridors; and provision of services. Landowners also expressed a desire for more consultation and greater involvement in the development of the harbour concept plan prepared by the DoT.

### 1.7.1 Public advertising

The DSP has undergone a formal advertising period. Comments received during that period have been considered by Council and the WAPC prior to endorsement of the final DSP and its adoption under the Shire of Esperance Town Planning Scheme No. 23.



## 2 Planning Context

This section sets out the planning context and framework for the preparation of the DSP. The State, regional and local planning frameworks are examined. This assists in developing an understanding and appreciation of the higher-level planning that has guided and facilitated the preparation of the DSP.

### 2.1 State Planning Framework

#### 2.1.1 State Planning Strategy

The State Planning Strategy, released in November 1996, provides the strategic framework for planning and development across Western Australia. The Strategy is implemented through the application of triple bottom line strategies and policies for the period up until 2029. The Strategy adopts a whole-of-government approach to ensure that change can be pursued cooperatively. Strategic issues and environmental management are key focuses of the Strategy.

The key elements of the Strategy are to prepare for:

- Significant population growth;
- An expanding economy;
- A changing and vibrant community; and
- A sustainable future.

The Strategy is based on the following key principles:

**Environmental** – to protect and enhance the key natural and cultural assets of the State and deliver to all Western Australians a high quality of life which is based on environmentally sustainable principles.

**Community** – to respond to social changes and facilitate the creation of vibrant, safe and self-reliant communities.

**Economic** – to actively assist in the creation of regional wealth, support the development of new industries and encourage economic activity in accordance with sustainable development principles.

**Infrastructure** – to facilitate strategic development by making provision for efficient and equitable transport and public utilities.

**Regional Development** – to assist in the development of regional Western Australia by taking account of special assets and accommodating the individual requirements of each region.

**Sustainable Development** – sustainable living is becoming increasingly important as human activity grows and concentrates in regional centres across Western Australia.

**Managing Growth and Diversity** – accommodating growth is a major issue raised in the Strategy and one which is related closely to residential development. Estimated population growth has the potential to place significant strain on regional residential centres. The location and type of housing will be integral to the overall delivery of the Strategy.

Housing diversity is another major element of the Strategy, as it plans to provide a range of housing opportunities (low, medium and high density) catering for a diverse community. Monitoring housing availability and demand by the development of strategies focusing on the quantity and quality of housing in regional areas is a key goal of the Strategy.

**Social Enhancement** – the State Planning Strategy identifies that lifestyle and settlement choices are one of the strongest forces shaping future development in Western Australia. It is suggested that land use planners and urban designers should be more concerned with creating places and spaces which are conducive to human interaction. In this regard, one of the key principles of the Strategy is to respond to social changes and facilitate the creation of vibrant, accessible, safe and self-reliant communities.

### 2.1.2 State Sustainability Strategy

The aim of the State Sustainability Strategy (2002) is to change the way in which the State is governed, and the activity of government agencies. This is proposed to occur by establishing 11 principles for sustainability and over 300 supporting actions to be undertaken by Government agencies in both the short and the long-term.

The Strategy has significant implications for coastal development, especially due to the increased number, complexity and variability of environmental issues associated with the coast. This, coupled with the social values and economic aspects of coastal development, creates a particularly complex situation.

In this regard, coastal structure planning will need to respond to the objectives, proposed actions and targets demonstrated in the Sustainable Coastal and Marine Environments section of the Strategy. This will ensure alignment with the overarching intent of the State's sustainability framework.

### 2.1.3 State Planning Policy 3 - Urban Growth and Settlement

The WAPC prepared State Planning Policy No. 3 – Urban Growth and Settlement (SPP 3) to encourage the concentration of urban development in and around existing settlements, particularly those with established infrastructure and services.

SPP 3 acknowledges the impacts that the spread of urban development has on the availability of land and water resources; resource consumption for transport and housing; and infrastructure provision and costs. As such, the Policy promotes more compact and efficient patterns of development.

The policy identifies the need for orderly planning of urban growth and settlement through the development of structure plans. This level of planning is required to take into account the strategic and physical context of the locality, provide for the development of safe, convenient and attractive neighbourhoods, and facilitate logical and timely provision of infrastructure and services. In this regard, structure plans may take a hierarchical approach, ranging from broad district structure plans to more detailed plans for neighbourhoods and precincts.

### 2.1.4 State Planning Policy 2.6 – State Coastal Planning Policy

The State Coastal Planning Policy is a broad policy adopted by the WAPC which addresses land use planning and development issues specifically as they relate to the protection and management of the coast. The Policy entails three broad objectives dealing with the protection, conservation and enhancement of coastal values, promoting public foreshore areas and access to these, and the identification of areas suitable for coastal development.

Since its introduction, the Policy has aimed to create more sustainable futures for the coast by identifying appropriate areas for development in coastal environments, encouraging public use in an environmentally sound manner, and applying relevant development controls on coastal development.

SPP 2.6 plays a vital role in the management of coastal residential development. The Policy identifies setbacks and building height limits for residential development in coastal environments:

1. **Setbacks** – although the policy states that the required setback measurement will differ according to the individual residential lot, a general horizontal datum measurement of 100m is expected. The increasing desire to reside by the coast means that development proposals will have to wholly consider the impact of physical processes outlined in the Policy.
2. **Building height limits** – these apply to all residential development within 300m of the horizontal setback datum of the coastline. The Policy states that the height of buildings should be limited to a maximum of five storeys (and not exceeding 21 metres) in height. Local governments may specify lower and higher (up to eight storeys) maximum height limits in certain localities in order to achieve outcomes which respond to the desired character, built form and amenity of the locality.

The Policy also has a strong reference to ensuring the identification of appropriate areas for sustainable residential development. Although a site may be in accordance with the setback and building height requirements, the area may be unsuitable for development due to a number of factors:

- Areas susceptible to extreme weather conditions/coastal hazards;
- Areas of heritage significance;
- Indigenous sacred sites;
- The protection of views and vistas of other properties; and
- Threatened species and ecological communities.

The Policy acknowledges the demand for multi-unit or multiple dwelling development on the coast, and whilst it does not impede such development, it does generally restrict the height of such development to five storeys.

In terms of development on the coast, it is imperative that good design outcomes are achieved. Good site planning and development which responds to context needs to be encouraged and rewarded. This is particularly relevant in coastal areas where developments can potentially have a significant effect on the surrounding environment. This has the potential to attract high levels of opposition from the community and lobby groups.

### 2.1.5 Liveable Neighbourhoods

Liveable Neighbourhoods is an operational development control policy which guides the design and assessment of regional, district and local structure plans, detailed area plans and subdivision applications for new development areas in metropolitan and country areas. Structure plans are required to be prepared in accordance with the requirements of Liveable Neighbourhoods.

Liveable Neighbourhoods takes account of various matters relevant to broad-acre planning including:

- Overall community design;
- Movement networks;
- Lot layout;
- Public parkland;
- Urban water management;
- Utilities;
- Activity centres and employment; and
- Schools.

Liveable Neighbourhoods promotes development of walkable neighbourhood precincts, each consisting of an approximate 400m radius from a centre containing commercial, community and/or mixed-use development. In terms of residential development within these precincts, Liveable Neighbourhoods aims to achieve the following:

- A diversity of lot sizes and dwelling types;
- Medium density residential development in close proximity to centres; and
- Medium to high density residential and mixed-use development within centres.

### 2.1.6 Development Control Policies

Although structure planning is required to be undertaken in accordance with Liveable Neighbourhoods, it remains pertinent to consider the requirements of certain issue-specific Development Control (DC) Policies.

With regard to the Bandy Creek DSP, the following DC Policies are relevant:

- DC 6.1 – Country Coastal Planning Policy
- DC 1.8 – Canal Estates and Other Artificial Waterway Developments



## **DC 6.1 - Country Coastal Planning Policy**

DC 6.1 provides a succinct guide to coastal planning and management in country areas of the State. It sets out the general principles to encourage orderly and balanced development on and adjacent to the coast consistent with the protection of coastal resources.

The Policy contains basic requirements to help protect, conserve and enhance coastal resources, whilst developing an increased public appreciation of coastal areas by facilitating safe public access. The Policy offers specific guidance on key issues in order to achieve high-quality coastal management in Western Australia. These issues include:

- Coastal land tenure;
- Ecology of the coastline;
- Visual amenity;
- Land preservation;
- Soil protection;
- Water quality;
- Pedestrian access; and
- Roads and parking.

The Policy highlights that land use priorities exist for urban and built development, with essential services such as ports, harbours and marine industries being the top priority due to their ability to attract tourists, leading to potential economic gain in these coastal precincts. The Policy recommends specific procedures for foreshore management to ensure increased recreational use of the foreshore whilst limiting significant degradation of the land, through overall foreshore planning combined with basic management and implementation proposals and requirements.

## **DC 1.8 - Canal Estates and Other Artificial Waterway Developments**

This policy sets out the WAPC requirements for the assessment and consideration of canal estate developments and artificial waterways. The Policy will apply should canal development be pursued at Bandy Creek.

DC 1.8 sets out various guidelines for approval and policy measures for the creation of boat harbours. The Policy also provides a comprehensive guide to the formal approvals process (including environmental approvals) and formal procedures, design guidelines, town planning scheme and subdivision requirements and water quality, aesthetic and general guidelines.

DC 1.8 contains significant detail due to the environmental risks and planning and technical implications of canal estates.

### **2.1.7 Better Urban Water Management**

The *Better Urban Water Management* publication has been designed to facilitate better management of our urban water resources by ensuring an appropriate level of consideration is given to the total water cycle at each stage of the planning process. It was developed through a partnership between the Department of Planning, Department of Water, Western Australian Local Government Association and the Australian Government Department of Environment, Water, Heritage and the Arts and provides guidance on the implementation of *SPP 2.9: Water Resources*.

The document provides the water management requirements for regional, district and local land use planning, as well as subdivision and development phases of the planning process. It requires that a district structure plan be supported by a district water management strategy which demonstrates that the land is capable of supporting urban development and is able to achieve appropriate water management outcomes.

## 2.1.8 Other Relevant State Planning Documentation

### Planning Bulletin Number 64 Acid Sulphate Soils

PB 64 is a policy response to the increasing environmental, social and economic impacts of acid sulphate soils and their potential to cause significant harm to the surrounding environment and infrastructure. The primary purpose of the Bulletin is to provide advice and guidance on matters that should be taken into account in the rezoning, subdivision and development of land that contains or is potentially prone to acid sulphate soils.

PB 64 highlights that coastal development and infrastructure projects are highly susceptible to the presence of acid sulphate soils given the necessary large-scale drainage and excavation works, which expose the soils to air. Acid sulphate soils are commonly found along on the south coast of Western Australia and therefore exist as an important issue and potential constraint to future development within the DSP area.

The investigation area could be affected by acid sulphate soils through:

- Adverse changes to water quality and soils;
- Corrosion of infrastructure;
- Loss of biodiversity;
- Deterioration of ecosystems;
- Human health concerns (swimming, snorkelling etc.); and
- Reduction in aquaculture opportunities.

The emergence of any of these potential impacts would need to be addressed through appropriate management strategies.

## 2.2 Regional Studies

### South Coast Natural Resource Management Strategy

The Shire of Esperance falls within both the South Coast and Rangelands natural resource management (NRM) regions, two of six NRM regions in the State.

The South Coast Strategy for NRM was coordinated by South Coast NRM Inc and accredited in 2005. The Rangelands NRM Strategy was developed by the Rangelands NRM Coordinating Group. The general intent of these strategies is to promote the sustainable use and management of natural resources.

Within the strategies, natural assets were identified, and strategies, targets and actions for the long-term management for these assets were developed. Of particular relevance to the Shire of Esperance are targets and actions relating to climate change, land capability, protection of public water supply, protection of biodiversity, coastal management, regional drainage and protection of agricultural land.

## 2.3 Local Planning Framework

### 2.3.1 Shire of Esperance Town Planning Scheme No. 23

The DSP area is currently generally zoned Rural and Reserved for various Public Purposes (**Figure 1**). Reserves for Parks and Recreation include the Esperance Lakes system, Bandy Creek and the coastal foreshores.

Clause 5.10 of the Scheme deals with the Public Purpose Harbour reserve and requires that an overall plan be prepared and approved by Council in respect of the area prior to Council granting planning consent to development or recommending approval of a subdivision. Planning for harbour infrastructure and associated works is undertaken by DoT.

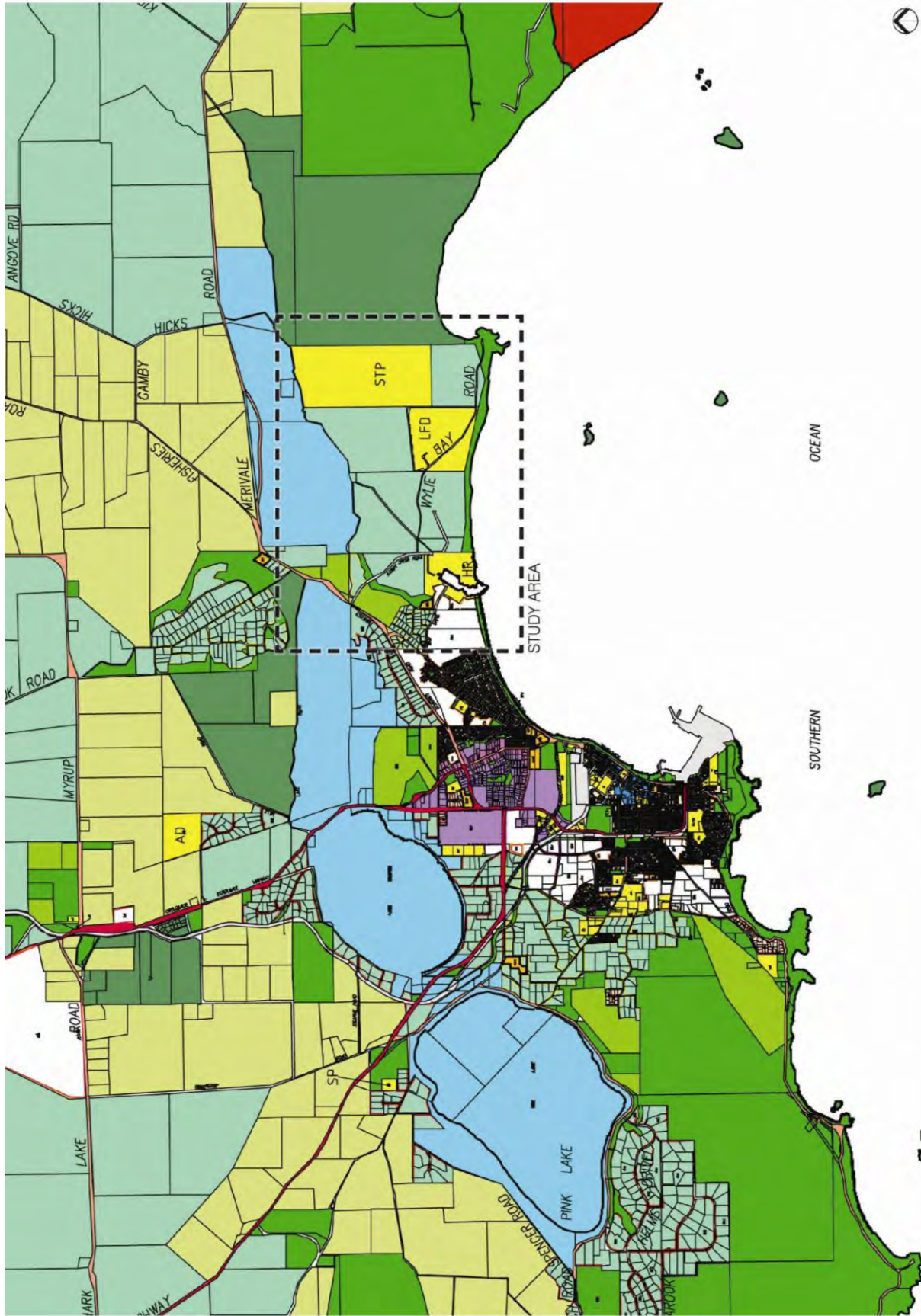
The objective of the Rural zone is to encourage the use and development of land for broad-acre farming and to discourage the subdivision and re-subdivision of established farm holdings. To allow for urban development at Bandy Creek, land currently zoned Rural will require a Scheme Amendment.

### 2.3.2 Shire of Esperance Local Planning Strategy

The Shire of Esperance Local Planning Strategy (LPS) (**Figure 3**) guides the management of population growth, land use planning and development, over a ten to fifteen year period, to balance the needs and expectations for varying lifestyles, economic and community development of the Shire, and to ensure appropriate management of the built and natural environment that makes the Shire of Esperance a unique place to live. The aims of the Esperance LPS are to:

- (a) ensure there is sufficient and sustainable supply of serviced and suitable land for housing, commercial activities, community facilities, recreation, and open space;
- (b) support such expansion as is consistent with the provision and improvement of infrastructure, services and facilities;
- (c) provide for a range of accommodation choices that meets the needs and aspirations of the community;
- (d) provide for convenient, attractive and viable commercial areas and tourist facilities to serve the needs of the residents and visitors;
- (e) encourage the development of businesses that will strengthen the economic base of the central business district;
- (f) ensure the use and development of land does not result in significant adverse impacts on the physical and social environment;
- (g) promote the sustainable use of land for agriculture, forestry and aquaculture whilst accommodating other rural activities;
- (h) protect agricultural areas from inappropriate development and intrusion by urban and semi-rural uses;
- (i) protect amenity and enhance the quality of urban, rural and coastal environments.
- (j) protect and enhance the environment and natural resources of the local government district;
- (k) protect objects and places of outstanding natural, historic, architectural, scientific and cultural (including Aboriginal culture) significance;
- (l) prohibit the use or development of land for certain nuclear activities which may result in:
  - (i) environmental harm;
  - (ii) detriment to any land used for the public benefit or from which the public derives aesthetic enjoyment; or
  - (iii) detriment to the amenity, health or safety of the public.





**FIGURE 3: SHIRE OF ESPERANCE LPS No.23**  
 BANDY CREEK DISTRICT STRUCTURE PLAN

DATE: 16.07.2009  
 DWG NO: RA0380  
 REVA  
 SCALE: NTS

Created: Floor 5/3 Oct at  
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The LPS uses a precinct planning approach to guide future development outcomes across the Shire. Bandy Creek is identified in the LPS as Precinct 37. The LPS was finalised at the same time as the DSP was being formulated. Council therefore determined that the LPS should support the planning intent identified in the DPS, given Council's involvement in its preparation. The objectives for Bandy Creek, as stated in the LPS, are therefore to:

- Facilitate the development of a mixed use harbour that contributes to the town;
- Provide for alternative housing choices based around the harbour;
- Support the use of land for aquaculture, tourism and recreation; and
- Support the use of land in accordance with the planning intent of the Bandy Creek District Structure Plan.

The DSP will need to reflect the overall aims of the LPS in order to comply with Council's intentions for the future development of Esperance.

### 2.3.3 Shire of Esperance Commercial Strategy

The Shire of Esperance is in the process of preparing a comprehensive Commercial Strategy to guide the provision of commercial associated activities within the region during the next 10 to 15 years.

The primary aims of the Commercial Strategy are to:

- Identify the amount of additional shopping floorspace required to service anticipated population growth for a selection of the more probable population growth scenarios, and indicate where this expansion will be most beneficial to the community;
- Establish a clear hierarchical structure to guide sizing and location of major commercial activity centres, identify requisites for growth of major activity centres to cater for existing populations and future population growth;
- Identify and promote development of centres and nodes that provide a wide mix of activities, services and other uses that are complimentary to their retail function and that promote use of the centres by local communities and consolidate complimentary activities within centres;
- Identify strategies to ensure activity centres develop in an integrated fashion;
- Identify infrastructure requirements associated with future commercial activity;
- Identify drivers of change in retailing;
- Examine potential impacts of retailing trends, including deregulation of shopping hours, out of centre retailing, increased diversification, convenience shopping and electronic shopping; and
- Ensure that retail activities that occur away from the town centre involve an aggregation of uses at appropriate locations, and that such development contributes to the net community benefit and does not undermine commercial activity in the central area.

With regard to the potential for commercial uses to locate at Bandy Creek, the LPS provides guidance as to the likely content of the Commercial Strategy, and states the following objectives for Bandy Creek:

- Encourage the development of tourist related commercial uses in the vicinity of the Bandy Creek Boat Harbour.
- Support the development of the Bandy Creek Boat harbour area as a mixed use commercial/recreation/tourism hub for the western part of town.

Any commercial uses in the DSP area should complement rather than compete with the status of Esperance town centre as the Shire's primary shopping and commercial area.

### 2.3.4 Shire of Esperance Engineering Services Policies

The Shire of Esperance has prepared numerous policies dealing with engineering matters. This section presents a review of policies deemed relevant to the preparation of the Bandy Creek DSP. A focus is on the overarching strategic direction of the policies and any relevant specific policy provisions.

#### **Private Connections to Shire Drainage**

This policy has been prepared to ensure that guidelines are in place in relation to applications for private property connections to the Shire's drainage system.

The policy states that the on-site retention of storm water is preferred if site conditions are appropriate in terms of technical and amenity considerations, and provided that the on-site retention will reduce peak discharges downstream.

This principle of on-site retention and disposal of storm water will need to be taken into consideration in preparation of the Bandy Creek DSP, and more particularly during later detailed structure planning, especially in terms of the identification of land for Parks and Recreation, road reserves and other areas with drainage functions.

#### **Flinders Estate Engineering Standards for Residential Development**

The Shire has prepared an engineering policy to ensure the provision of an appropriate quality of infrastructure within the Flinders Estate residential development to complement and drive the anticipated standard of residential development within the Estate.

Although the Flinders Estate is not located within the Bandy Creek DSP area, it does abut the eastern boundary of the site. Given that the estate will link into the DSP area, it will be necessary to have due regard to the design principles adopted for the estate in local structure planning and through subdivision and development applications. This will ensure an integrated development and level of harmony between the two development areas. Notwithstanding this, it will be important to ensure a level of individual character is established for the Bandy Creek DSP area; ensuring that it will not simply be an extension of the suburban development of the town.

### 2.3.5 Shire of Esperance Development Services Policies

The Shire of Esperance has policies dealing with various development matters. The following overview focuses on the overarching strategic direction and relevant provisions of those policies relevant to the Bandy Creek DSP.

#### **Setbacks and Aesthetic Building Controls in Areas Fronting Castletown Quays and Twilight Beach Road Policy**

This policy applies to strips of foreshore properties along Castletown Quays and Twilight Beach Road in Esperance, and has been prepared to maintain and enhance the amenity of, and ensure a high level of construction within, these foreshore areas.

Castletown Quays is the foreshore road that is proposed to connect into the Flinders development, abutting the Bandy Creek DSP area to the east. The policy requires a minimum 7.5m setback for development on properties on Castletown Quays and requires construction to be of brick, stone, cement or masonry.

As the Castletown Quays road is likely to extend into the DSP land, it will be necessary to consider the objectives and intentions of the policy and to consider whether the policy requirements should be incorporated into planning for the DSP area. In this regard, the need or desire for a consistent streetscape must be considered.

#### **Planning for Bush Fire Protection**

The Shire Council has adopted the State planning document titled Planning for Bush Fire Protection as a policy. The document forms the foundation for fire risk management planning within Western Australia at a community and land development level. It provides performance criteria and acceptable solutions to minimise the impact of fire on communities.

The primary focus of the document is on new subdivisions and related development in rural and in urban-rural communities and town sites, particularly where they may be exposed to bush fires. The document addresses a number of important fire risk management and planning issues including:

- The statutory planning process as it related to fire protection;
- Bush fire hazard assessment;
- The definition of bush fire prone areas;
- Fire protection requirements for subdivision and development; and
- Strategies available to limit vulnerability to fire.

Given the quantity of remnant bush land in and around the DSP area it will be necessary to have regard to the provisions of the policy during detailed structure planning of the land. Whilst development within the investigation area will see the removal of portions of the remnant vegetation, it will be necessary to consider fire protection should development occur on a staged basis, and for any development scenario where fringe development abuts fire prone land.

### 2.3.6 Strategic Action Plan 2007-2027

The Shire of Esperance Strategic Action Plan 2007-2027 sets out the guiding principles and specific actions that guide future decision making in the Shire. The Strategic Action Plan is guided by Council's high level aspirations and principles as detailed within the Shire's Essence of Esperance Strategic Plan.

The Strategic Action Plan identifies short, medium and long-term goals based around the themes of:

- People, lifestyle and community
- Environment
- Sustainable development and employment
- Education
- Transport
- Leadership and Governance.

Specifically with regard to the Bandy Creek area, the Strategic Action Plan identifies the following:

- To plan for the extension of the dual-use path system from Bandy Creek to Twilight Beach. This should be done in a manner that complements the environment through which it passes;
- To support the development of aquaculture and fishing industry training and research facilities in the Bandy Creek area. This would assist in encouraging sustainable and diverse economic development in the Shire, but must be compatible with the extension of residential development and tourism within the area; and
- To investigate the feasibility of providing financial and/or planning assistance to the development of a marine research and training facility at Bandy Creek. This would work towards encouraging centres of excellence in education and learning in Bandy Creek.

### 2.3.7 Esperance Coastal Management Plan

The Esperance Coastal Management Plan provides a framework for coastal management within the Esperance region for a 20 year period beginning 2002. The aims of the Plan are to provide a framework for:

- Protection and enhancement of the Esperance coastal and marine environment;
- Equitable, safe and sustainable recreational uses;
- Increasing community awareness of coastal and marine management issues; and
- Future planning for coastal industry, urban growth and tourism.

Due to the coastal location of the Bandy Creek DSP, the findings and recommendation of the Coastal Management Plan and any more detailed studies and plans undertaken subsequently will be vitally important to consider in detailed planning for the area. Whilst development and increases in population and activity in the DSP area will have the potential to increase pressures on the coast, the related planning and implementation will also provide an opportunity to formalise and control access and activity on the coast.

Detailed planning for coastal access and foreshore management will need to be undertaken during local structure planning, subdivision and development of the coastal portions of the DSP area.

### 2.3.8 Esperance Townsite Foreshore Redevelopment Master Plan

The Esperance Townsite Foreshore Master Plan was prepared partly in response to a recommendation of the Esperance Coastal Management Plan and sets out a plan and process to regenerate the Esperance Foreshore from the Esperance Port to Castletown Quays, having regard to the social, environmental and economic needs of the area.

The Master Plan proposes:

- A new small harbour and waterfront that will form a tourist node;
- Revitalised retail areas;
- Recreational areas;
- New road linkages;
- A cultural node;
- Residential development; and
- Tourist accommodation.

If it is determined that a sheltered boat harbour and marina, with associated retail and tourism development, is to be established at the town centre site in accordance with the recommendations of the Master Plan, this may have implications for the feasibility of developing a similar but separate node of activity at Bandy Creek. Consequently, the progression of development on the townsite foreshore will need to be considered when decisions are made on development opportunities for the Bandy Creek DSP area.

### 2.3.9 Esperance Land Release Report 2003

The Esperance Land Release Report was prepared in 2003 and focuses on land use trends, land development activity and infrastructure provisions, principally with a five to ten year outlook. Residential, commercial, industrial and special rural and special residential developments are detailed within the report and short to medium term forecasts were provided for the period to 2008 and longer term projections to 2013. The report concluded that Esperance is expected to continue to grow for the foreseeable future. The rate of this growth was to be dependent on a number of large-scale projects planned in the region.

The report states that a significant amount of residential development is expected within and surrounding the Bandy Creek in the Flinders Estate and Castletown residential developments. It was predicted that the portion of land directly abutting the west of the harbour would be developed by 2008 with the remainder of the Flinders Estate being developed post-2008. At the time of writing however (September 2010) development has proceeded no further east than Ormonde Street. No other land within the Bandy Creek DSP area was identified for development in the Land Release Report.

### 2.3.10 Esperance Enquiry-by-Design Workshop

The Esperance Enquiry-By-Design Workshop was held by the then Ministry for Planning in conjunction with the Shire of Esperance to investigate concept planning for land to the west of Bandy Creek. The land was identified as one of the key sites for future residential growth within the Shire. While the majority of the land considered in the Workshop has been included in the detailed planning of the

Flinders Estate, the outcomes of the Enquiry-By-Design may still be considered relevant as regards the land immediately adjacent to the west of Bandy Creek Boat Harbour.

The main aims of the workshop were to develop a concept town and neighbourhood structure and a concept outline development plan for the area. The workshop produced two development concepts for the site to the west of Bandy Creek Harbour. Both concepts were based on Liveable Neighbourhoods principles and provided for:

- Low and medium density residential development;
- A distribution of parkland areas;
- A connective and permeable road network; and
- Tourism and retail facilities in conjunction with the Harbour.

The major difference between the two concepts was that one provided for a canal development with waterway access from Bandy Creek Harbour. Both concepts have been considered during formulation of the DSP.

### 2.3.11 Bandy Creek Boat Harbour, Esperance – Parameters Document

This document was prepared to set the parameters for formulation of a structure plan for the land surrounding the Bandy Creek Harbour. It set out the options for Government involvement in the process and identifies current landownership, the method by which planning and development is expected to be progressed, the vision for the development, likely opportunities and constraints, and various other matters.

The general key themes and issues identified in the parameters document are summarised below:

- The Harbour and its infrastructure is underutilised;
- Development pressures are evident, especially for canal style development;
- There is in-principle support for development around the Harbour from the Shire, LandCorp and various State Government agencies;
- The Harbour would provide a new product or type of development for the Shire;
- The State Government, as a landowner, is uncertain about preferred development outcomes for its surplus landholdings in the area;

Opportunities and constraints were identified in a very general way in the parameters document, as follows:

- Environmental dimensions – wetlands, rivers, flows and flushing, drainage, flooding, coastal processes, landscape character, terrestrial issues (erosion, flora, fauna), ground water, acid sulphate soils;
- Physical dimensions – harbour infrastructure, maintenance and costs, vehicular access, recreational and other uses;
- Economic dimension – land use mix, commercial viability, cost-neutral development, development contributions, commercial strategy, market research; and
- Social dimension – Aboriginal heritage, perceptions, recreation, multi-use trails, resort development, community access, not establishing a dormitory suburb or lock and leave development, socio-economic mix, balance of public and private space.

The parameters document has formed the starting point for preparation of this DSP.



## 3 Site Characteristics

This section describes the existing environmental characteristics, and social and economic context of the DSP area. Potential opportunities and constraints to future development of the DSP area have been identified and have formed the basis for the determination of the preferred design and layout of land uses and movement network of the DSP. Many of these opportunities and constraints are depicted in **Figure 4**.

### 3.1 Environment

This section provides an overview of the environmental characteristics of the study area based on document review and consultation with the Department of Environment and Conservation. No detailed assessment of landform, flora or fauna was undertaken during preparation of the DSP (due to constraints in the scope of the study), therefore detailed environmental investigations will need to be undertaken as part of detailed local structure planning in order to properly understand and manage the environmental characteristics of specific landholdings.

#### 3.1.1 Topography and Landform

The topography of the area is undulating, reflecting the coastal dune character of the landscape. Ridge lines run in a north easterly direction in response to the prevailing south easterly winds. Natural and man made erosion and environmental damage to the coastal dunes have resulted in dune blowouts between the harbour and the landfill site, with a significant dune blow out near Wylie Head. The stability and minimisation of further dune degradation will need to be considered prior to development of these areas. Outside of these areas the coastal reserve and vegetation is in fairly good condition and is largely uncleared.

The existing coastal landform is significant to the local community, and the prominent ridgelines create landscape differentiation which contribute to creating a distinct sense of place. Any future development on the ridges should consider the impact on visual amenity and view sheds to the coast and from the beach. Valleys between ridges can provide wind shelter for development, and should be considered as an opportunity to provide climatically responsive development.

The undulating topography around Bandy Creek, low lying areas around the harbour, and major boulevards to the harbour provide important view sheds. Significant views west to the port and town centre, and east to Wylie Head can be seen from the beach on the western side of the harbour. Significant views also exist from the high ridges along Bandy Creek and the frontal dune along the coast.

#### 3.1.2 Coast

The south coast is a unique and varied environment. Natural coastal landforms and features of the coastline in the vicinity of the DSP area include:

- High energy sandy beaches;
- Mobile sand dunes, sand sheets and blow-outs;
- Permanent and semi-permanent open coastal lagoons (inlets) and wetlands;
- Coastal lakes;
- Shallow seagrass meadows; and
- Island coastal environments of near-shore islands and island archipelagos.

These matters necessitate proper coastal management, including the identification of appropriate development setbacks, associated coastal foreshore reserves and physical measures such as dune stabilisation.

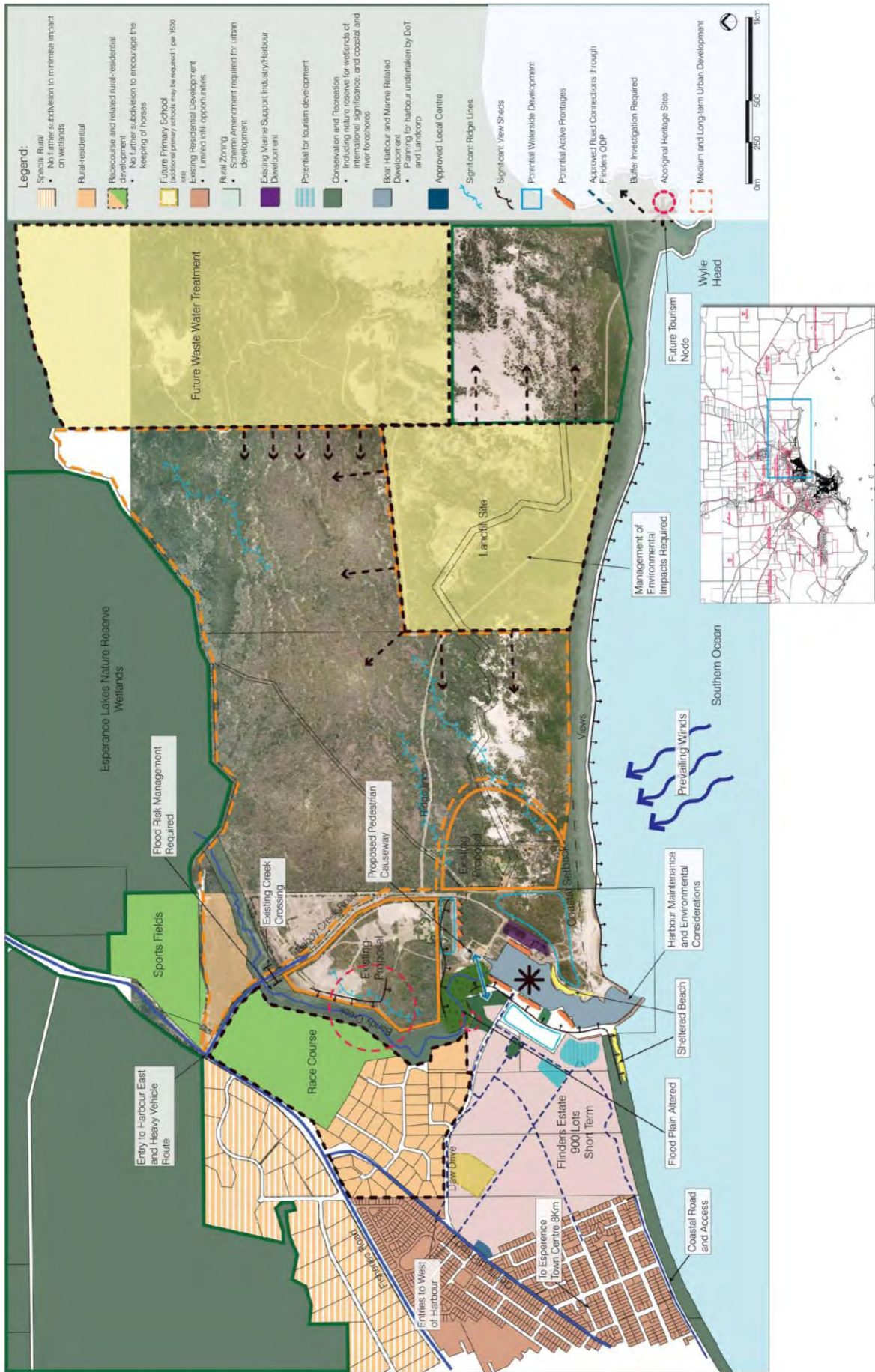


FIGURE 4: OPPORTUNITIES & CONSTRAINTS  
BANDY CREEK DISTRICT STRUCTURE PLAN

The Flinders Outline Development Plan identifies a coastal foreshore reserve connecting to the Harbour from the west. On the eastern side of the harbour there is a Parks and Recreation reserve that runs from the Harbour boundary to Wylie Head. These reserves contribute to the coastal macro corridor which is an important east–west corridor for vegetation and fauna migration.

There are many competing demands for the use of the beach and dunes between Bandy Creek and Wylie Head due to its proximity to Esperance. These competing uses include:

- Potential for the dunes in the area to accommodate aquaculture;
- Four wheel drive and recreational vehicle access;
- Provision for a horse exercise area; and
- General recreational uses such as fishing and swimming.

### 3.1.3 Vegetation

Remnant stands of bushland with potentially high conservation value are identified within existing reserves such as the Esperance Lakes Nature Reserve and Bandy Creek Foreshore Reserve. These areas form part of the South Coast macro-corridor network, a continuous network of remnant vegetation and wildlife corridors found along the South Coast. There are significant areas of uncleared rural land which are likely to include some tracts of remnant vegetation. The quality of vegetation will need to be assessed at the ODP stage. Cleared areas include portions of private land on Bandy Creek Road, near the racecourse, cleared rural land and dune blow out areas between the harbour and the landfill site.

Any identification of good stands of remnant vegetation during detailed planning will provide the opportunity for the strategic selection of such areas for inclusion in public open space. The protection of areas of remnant vegetation has obvious environmental value, but would also bring aesthetic values to the area as landscape features. The existing good condition of vegetation within the coastal and Bandy Creek foreshore reserves will provide amenity for any residential development fronting onto them.

The major threats to the conservation of identified reserves are vegetation clearance; loss of stand and habitat integrity; coastal processes impacts; informal access; the adverse effects of feral animals on native fauna; weed invasion; changes to the hydrological regime, in particular increased inundation along Bandy Creek; and decreased water quality from urban runoff.

### 3.1.4 Wetlands

The Esperance Lakes Nature Reserve is located to the north of the study area. The Lakes are an internationally recognised series of wetlands highly valued for the migratory water birds which they support. Bandy Creek falls within the Esperance Lakes catchment.

Bandy Creek has conservation values due to:

- Remnant riparian vegetation at its fringes;
- The habitat it provides for a rare and endangered species of fish; and
- The vegetation corridor it creates from the coastal foreshore to the Esperance Lakes Nature Reserve.

Bandy Creek is also a major natural drainage channel for the lakes to the north, and as such water quality and nutrient loads are already heavily impacted by both natural and agricultural influences in the upper catchment.

Any proposed development in the vicinity of Bandy Creek, such as bridge crossings and residential development (both water and land based), has the potential to impact on the water quality, quantity and biodiversity of the Creek.

### 3.1.5 Acid Sulphate Soils

Discussions with the Department of Environment and Conservation indicate that there is risk of acid sulphate soils near the wetland areas to the north and potentially around Bandy Creek. These soils exist as an environmental constraint for future development in the area. Acid sulphate soils may

significantly impact on the water quality of Bandy Creek if disturbed. This may impact on fish habitats and subsequently may affect local industries such as recreational fishing and aquaculture.

Initial consultation with landowners indicates that there are varying degrees of acid sulphate soils risk. Where they do exist and are disturbed, the potential impacts on significant natural assets could be high. Investigations will need to be undertaken as part of local structure planning and prior to subdivision and development of the land.

### 3.1.6 Flood Risk Management

In 2007, a one in one hundred year storm event resulted in the flooding of Bandy Creek; significantly altering its course and floodplain. The Creek broke its banks around the weir, with water and sand flooding into the harbour. Due to significant changes in the floodplain of the Creek, the extent of the foreshore reserve will need to be reviewed as part of local structure planning to ensure adequate flood risk management.

Studies by the Department of Environment and Conservation since the flooding have shown that groundwater levels are rising as are the levels of the lakes. It has been identified that detailed technical studies are needed to map those flood-prone areas where it may be inappropriate to construct buildings or significant infrastructure. Although an infrequent occurrence, it will be necessary to consider the effects of significant storm events and plan appropriately to ensure stability. Any future development will need to be appropriately located on stable ground and outside of the flood plain, which will need to be accurately mapped at the more detailed planning stages.

### 3.1.7 Water Quality

Bandy Creek is a low energy environment. This results in issues associated with siltation, nutrient input (particularly from agricultural activity in the Esperance Lakes catchment) and flushing, resulting in potential eutrophication. Eutrophication and deterioration of water quality of Bandy Creek and the Harbour may impact on fish habitats in the creek and seagrass communities near the harbour mouth.

Future development in the DSP area will need to ensure appropriate urban water management and foreshore management is applied to minimise impacts on the water quality of the Esperance Lakes, Bandy Creek and the Harbour. A District Water Management Strategy will be prepared as part of implementation of the DSP, and more detailed Local Water Management Plans will be required at local structure planning and subdivision stages.

### 3.1.8 Bushfire Risk

Bushfire presents a significant issue in Esperance, particularly in the coastal and rural residential areas due to the combination of topography and the characteristics of coastal vegetation. Portions of the DSP area are identified in the Shire's Local Planning Strategy as high bushfire risk areas.

Of course, if these areas were to be developed for urban uses the vegetation would be generally cleared and the bushfire risk would be mitigated. However, it is important that assessment of bushfire risk is undertaken at local structure planning stage for each land parcel in accordance with the Shire's Planning for Bush Fire Protection Policy.

## 3.2 Social and Cultural Context

### 3.2.1 Population Projections

The residential population of the Shire of Esperance as of the 2006 Census was 12,966. According to population projections released by the Western Australian Planning Commission in WA Tomorrow (2005), it was anticipated that the Shire of Esperance would experience modest population growth in the coming years, as shown in the table below. The predicted annual average growth rate is approximately 0.8 percent, which is below the average annual growth rate for the State (1.5 percent). The modest growth potential of the town suggests that development of the Bandy Creek DSP area is a long-term preposition.

Year	2004	2006	2011	2016	2021
<b>Total Pop.</b>	<b>13700</b>	<b>14100</b>	<b>14500</b>	<b>14800</b>	<b>15200</b>

*WA Tomorrow: Population projections for planning regions 2004 to 2031 and local government areas 2004 to 2021*

Esperance recorded an average household size of 2.6 persons on Census night 2006, which is higher than the State average (2.5 persons). There are a significant number of unoccupied private dwellings in Esperance (17.2 percent) compared to the State average of 10.7 percent. This is likely due to the prevalence of holiday homes kept by people who normally reside elsewhere in the Goldfields Region.

### 3.2.2 Existing Residential Land Supply and Housing Demand

Residential development across Esperance is primarily focused on the coast, with Castletown, Central Esperance, West Beach and Blue Haven being directly adjacent to the coast. The suburbs of Nulsen and Sinclair are located to the west of the railway line, behind central Esperance and east of Pink Lake. Although no significant population growth has been projected for the town in the near future, land has been identified for urban development, albeit many of these areas are constrained. Bandy Creek has been identified as an area for the development of a mixed-use harbour that offers alternative housing choices; providing a point of difference and alternative housing typologies.

The Shire's Flinders Estate on the western side of the harbour will accommodate the short to medium term growth needs of Esperance. Existing and approved residential development to the immediate west of Bandy Creek provides limited opportunities for urban infill; therefore additional growth will occur to the east.

Urban development east of the harbour will provide the Town's long term housing supply. It is understood that several landowners are currently progressing planning for the development of land adjacent to the harbour. The rezoning of land for urban purposes will need to be based on sound rationale to ensure future growth occurs in a sustainable and logical manner in the context of existing land release areas, and occurs where it can be effectively serviced by infrastructure.

### 3.2.3 Existing Housing Stock

Housing stock within Esperance is a mixture of styles and ages, with most residential development having occurred since the 1960s. Properties tend to be low density single storey detached houses on lots between 800m<sup>2</sup> and 1000m<sup>2</sup>, indicating a preference for larger residential blocks. Within the LPS the Esperance townsite has been divided into 69 distinct planning precincts to assist in identifying appropriate strategic directions for urban development and the planning provisions through which to achieve these.

Esperance also features a significant quantity of rural residential zoned land. The Esperance Land Release Report identified that, on average, 13 rural residential lots (lots from 2ha to 20ha) were created each year between 1998 and 2003. These areas of rural residential surround the Esperance townsite and are characterised by family oriented single storey detached housing in a variety of styles.

### 3.2.4 Aboriginal Heritage Sites

Indigenous cultural heritage exists throughout the lands and waters of Australia and all aspects of the landscape can be important to Aboriginal people as part of their heritage. Estuaries, creeks and embayments have long served as major meeting places and sources of food for Aboriginal people. Heritage places, historical and cultural sites are an attraction in the region and there is significant potential for tourism in the future.

Two separate areas have been identified along Bandy Creek as sites of significant Aboriginal heritage (both interim and permanent), including a burial ground. The Department of Indigenous Affairs has the legislative responsibility for the administration of the Aboriginal Heritage Act (1972), which details specific responsibilities related to the management and protection of heritage sites.

Further investigations will need to be undertaken as part of the local structure planning process so that the design of new areas adequately addresses the requirements of the Act.



## 3.3 Existing Land Uses

### 3.3.1 Harbour and Related Development

The boat harbour is operated by DPI and serves the local commercial fishing industry, marine tourism and recreational boating community. Jetties, land leases, wharves, fuelling facilities, and vessel servicing facilities are provided.

The harbour is to remain a working harbour for fishing and other marine related industries. Urban development around the harbour that is not directly associated with its function should not compromise harbour operations. The Department of Transport has prepared a concept plan for the harbour, marine related development and immediate surrounds. The concept plan has informed this project, and will need to be informed by the DSP into the future.

Coastal development, artificial breaching of inlet sandbars, dredging and harbour groynes all interfere with coastal processes, coastlines and sedimentation processes. At the harbour this has resulted in the need for dredging to remove sand from the mouth of the harbour, to ensure the harbour can operate safely and to manage depletion of beaches and excess sand deposition. Bandy Creek also has a significant sediment and sand load, exacerbated by the recent flooding. This has a significant maintenance cost and is a key consideration in maximising the use of and intensification of development around the harbour.

### 3.3.2 Rural Land

Land to the east and north-east of the harbour is zoned Rural. Most of the area remains uncleared and is likely to include areas of remnant vegetation. Some clearing for rural uses has occurred along Bandy Creek Road. There are dune blow out areas along the coastal strip. Some clearing and levelling may be required to make this land suitable for development.

### 3.3.3 Residential Development

#### **Flinders Outline Development Plan**

The Shire owns a significant area of land identified for future urban development to the east of Castletown, between Ormonde Street and Bandy Creek, and a small portion of land to the east of Daw Drive. The subdivision and development of this land is guided by the Flinders Outline Development Plan (ODP), which was prepared by the Shire and approved in 2005.

The future Flinders ODP will offer a variety of lot sizes varying between R12.5 and R40. The ODP currently includes a primary school, local retail centre, and aged person's facility, and some tourism development. Development of the area will be in accordance with the approved ODP.

Land owners on the western side of the harbour have indicated a desire for water frontage via an expansion of the harbour. Furthermore, the Shire has indicated that the ODP may be reviewed based on investigations into alternative forms of development, including the potential for water based development. The adopted Flinders ODP does not at this stage reflect this intention, however the DSP does not compromise the ability for such a change to occur. Other modifications to the ODP may also occur separate to the progression of the DSP, however any change is likely to have implications for the DSP area given the proximity of the respective pieces of land.

Key considerations during formulation of the DSP have been the need for accessibility and legible connections between the harbour and the ODP area, and ensuring an appropriate interface between the proposed residential development and harbour side development.

#### **Racecourse Estate**

North-west of the harbour is a rural residential precinct adjacent to the race course. This land is identified for the keeping of horses and other equestrian related activities. It is understood that no further subdivision in this areas will be considered by Council. The existing Bandy Creek foreshore reserve and Daw Drive border this precinct, and provide an interface and transition between this lower scale use and any future intensified in Flinders Estate and around the harbour.



There is an existing access from the racecourse through the Racecourse Estate that facilitates equestrian access to the beach. An action in the Shire's LPS is to relocate the horse riding beach area on the western side of the harbour to between Bandy Creek and Wylie Head. Access for horses through to the horsebeach will be an important consideration of detailed structure planning in the DSP area.

### **Windabout Precinct**

The Windabout Precinct north of Fisheries Road is zoned 'Special Rural'. A Special Control Area under the Scheme prevents the further subdivision of these lots, and promotes the retention of native vegetation, in order to minimise adverse impacts on the wetland catchment.

### **3.3.4 Canal Development Proposals**

It is understood that landowners adjacent to the harbour are currently progressing planning for canal-based residential development with water access off the harbour. The DSP does not seek to resolve the issue of water versus land based development, but provides the district structure with which dry and/or wet lot development will need to conform. Protection of environmental assets, water quality and management, access for pedestrians and vehicles, connectivity, and servicing are key issues that will need to be addressed in any proposal for canal development.

### **3.3.5 Open Space and Recreation**

There are several parks and recreation reserves within the vicinity of the Bandy Creek Boat Harbour. Major reserves include the foreshore reserve around the Creek, the coastal foreshore reserve and the nature reserve to the north, which contains part of the Esperance Lakes system. There is also an existing local park on the western side of the harbour (Summy's Park) with playgrounds, ablutions and barbecues.

On the eastern side of the harbour, south of the existing marine industry area, is a sheltered beach that is currently used for swimming. There is also a sheltered beach on the eastern side of the breakwater that requires formalised access to protect the condition of vegetation and minimise dune degradation.

A strategy in the LPS is to facilitate the creation and maintenance of corridors between nature reserves, open space and the coast, that fulfil a dual role, for passive recreation (primarily walking and riding) and conservation. Open space could also be used as a buffer between conflicting land uses and provide an interface and amenity for more intensified urban development

Areas important for recreation, including safe swimming beaches, as well as areas of high visual amenity should be identified and incorporated into the foreshore reserve. Key open space areas, in particular the creek foreshore, the harbour and the coastal foreshore should be connected with good pedestrian links, and where possible, open space opportunities to facilitate this should be identified.

### **3.3.6 Landfill Site**

The Shire of Esperance has advised that the existing landfill site will remain in its current location in the long-term, given the absence of appropriate alternative sites. It will therefore continue to expand as the Town's waste requirements grow. The site presents as a significant constraint to development. In order to meet the long-term requirements of the Town, the existing landfill operation will need to be remediated and a management plan established to ensure there are no groundwater pollution impacts on Esperance Bay.

The eastern extent of the DSP needs to acknowledge the impacts of the landfill site, and address interface issues and potential land use conflict. The landfill site is a Class II facility under the Environmental Protection Authorities Guidance statement No.3 Separation Distance between Industrial and Sensitive Land Uses. Development within the 500m buffer from the boundary of landfill operations is therefore limited. This has impacts on neighbouring land holdings given that the buffer may not be contained within the area reserved for the land fill. Sensitive land uses including residential, hospitals, accommodation of any sort, schools and childcare centres, shopping centres, playgrounds, and civic buildings are generally prohibited within the buffer areas.

A site specific buffer definition study, based on the ultimate build out scenario, will need to be undertaken during detailed local structure planning to identify an adequate buffer in accordance with Environmental Protection Authority requirements. Appropriate transition land uses which are

acceptable within the buffer area will need to be identified, together with best practice management of the operations itself to manage odour, dust, noise and other emissions.

### 3.3.7 Waste Water Treatment Plant

The Water Corporation has identified an area north of Wylie Head for a future wastewater treatment site and associated buffer. The site is currently used by the Water Corporation for infiltration ponds as part of the Town's wastewater treatment facilities. Excess treated wastewater from the Jetty Road treatment plant is currently being piped to the infiltration ponds. Given the long-term requirements of Esperance, the Water Corporation will continue to operate the Jetty Road plant concurrently with the second wastewater treatment plant that will be developed at their Wylie bay site. Future proposed upgrades including constructing the Wylie Bay operations, are estimated to commence around 2011, and will provide more appropriate and environmentally sustainable infrastructure.

The future wastewater treatment plant at Wylie Bay and the existing infiltration ponds require buffers to be identified as per the EPAs Guidance statement No.3 Separation Distance between Industrial and Sensitive Land Uses, and presents as another significant constraint to urban development to the east. The impact on neighbouring land uses, and identification of an appropriate buffer will need to be considered during local structure planning.

### 3.3.8 Retail

A local centre is currently located in Castletown, and the Flinders ODP currently identifies a future local centre on Goldfields Rd which services the western end of the ODP area. These centres are considered insufficient to service the future population of the Flinders and Bandy Creek area. Additional retail centres, with a more significant centre at the harbour have been considered during formulation of the District Structure Plan, however it is important that any other commercial centre does not detract from the Esperance Town Centre as the town's prime retail and service centre. As such, commercial and retail investigations and modelling should be undertaken during local structure planning to identify the most appropriate commercial provision for each area of the DSP.

## 3.4 Economic Considerations

### 3.4.1 Harbour Expansion and Recreational Boating Facilities

Boat ownership rates in Esperance are reasonably low compared to other regional centres on the coast. This is likely due to the nature of the south coast which is not completely conducive to recreational boating, given extreme winds, significant swells and a lack of sheltered boat launching areas. Bandy Creek represents one of the few safe boat launching areas along the south coast and therefore caters for both the broader Goldfields and local boating communities.

The provision of adequate water and land based boat holding facilities and services to accommodate future regional demand will be considered by the Department of Transport. Issues such as traffic management, location and provision of boat and trailer parking, and the interface between this and adjacent waterside development will need to be considered during the formulation of any plans for the boat harbour and the land immediately adjacent.

### 3.4.2 Marine Related Industry and Land Based Aquaculture

The fishing industry makes a significant contribution to the Shire's economy. A constraint to the extent of waterfront urban development around the harbour will be prioritising any growth in marine industry and commercial activities on the eastern side of the harbour. The interface between marine industry, and more sensitive land uses will need to be considered during the boat harbour local structure planning.

The LPS identifies land further east of the harbour as having potential for land based aquaculture given the occurrence of saline ground water aquifers and its adjacent coastal location. Any such aquaculture developments should be located behind the primary dunes, so that they have minimal visual impact on the beach. Infrastructure and servicing requirements, environmental and groundwater quality impacts, addressing the potential for land use conflict, and the identification of appropriate buffers and interface treatments will need to be considered as part of any aquaculture proposal. Detailed analysis into the

needs of the aquaculture industry and extent of development is not addressed by the DSP and will be subject to future investigation.

### 3.4.3 Tourism Development

While tourism is a mainstay of the Esperance local economy, there is currently limited diversity in accommodation product, with a dominance of low to mid range products. This is consistent with the town's traditional identity as an affordable family holiday location. The Flinders ODP identifies a future caravan park/holiday village adjacent to the Harbour zoned land. Planning already undertaken by the Department of Transport for the harbour includes identification of opportunities for a variety of tourist accommodation and facilities. In addition, the Local Planning Strategy and strategic plans prepared by Tourism WA have identified Wylie Bay as a future tourism node.

## 3.5 Existing Movement Network

### 3.5.1 Roads

#### **Fisheries Road**

Fisheries Road is the major route to the Bandy Creek area from Town, and from the north east. It is classified as a secondary road and is an eastern continuation of South Coast Highway, which facilitates east-west movements to bypass Esperance town.

Fisheries Road is a two lane undivided carriageway in the vicinity of the study area. Localised widening exists at intersections to the west. Traffic counts sourced from the Shire of Esperance indicated approximately 1,800 vehicles per day (vpd) on Fisheries Road, west of Merivale Road (east of Bandy Creek Road) in December 2001. Additional development at Bandy Creek will result in increased traffic on this road.

#### **Bandy Creek Road**

Bandy Creek Road currently provides the only access to the eastern side of the harbour, and the only crossing of Bandy Creek. The road is used by local and tourist traffic accessing the sheltered beach and fishing boat jetty on the eastern side of the harbour. Trucks also use the road for accessing the commercial and industrial uses around the harbour and the landfill site.

Bandy Creek Road is a two lane undivided carriageway along its full extent from Fisheries Road to the north down to the harbour to the south. The Shire of Esperance has indicated that this road carries approximately 600 vpd (data from 2005). Any development to the east of the harbour will add traffic to the road and will need to be considered during local road planning.

#### **Daw Drive and Goldfields Road**

Vehicular access to the western side of the harbour is currently provided by Daw Drive (from Goldfields Road). The Flinders ODP identifies the realignment of Daw Drive, and a future connection south of Daw Drive. This realignment impacts on legibility of Daw Drive as a main boulevard to the western side of the Harbour.

Goldfields Road is currently constructed as a two lane undivided carriageway. Traffic volumes from the Shire indicate that road currently carries approximately 1,600 vpd (February 2009).

#### **Wylie Bay Road**

Wylie Bay Road intersects with Bandy Creek Road north of the harbour and provides access to Wylie Bay and the landfill site. The realignment and function of this road to provide access to urban development to the east have been considered during formulation of the DSP, and will need further consideration during local structure planning.

#### **Merivale Road**

Merivale Road provides access to Cape Le Grand National Park and other coastal attractions to the east of Esperance. The road also acts an alternative route to Fisheries Road to access Condingup.

### 3.5.2 Walking and Cycling

The Department of Transport has recently completed construction of a weir over Bandy Creek at the northern extent of the boat harbour. The weir can be crossed by pedestrians, and can also facilitate emergency vehicle access. The causeway was constructed in the location of the previous weir following the recent flood event, and the design is such that it may become flooded. The weir has improved pedestrian connectivity for both sides of the Harbour; however it is not designed to accommodate general vehicle traffic.

### 3.5.3 Bridle Paths and Equestrian Access

There is an existing bridle path connecting the racecourse to the beach and harbour in the vicinity of Bandy Creek. Providing access to the beach for horses is considered important by users of the race course. The Shire's Local Planning Strategy recommends that the designated horse riding beach area near Flinders be moved to between Bandy Creek and Wylie Head, once the Flinders residential estate has been developed.

## 3.6 Servicing Infrastructure

### 3.6.1 Water and Sewerage

Potable water supply for the town of Esperance is extracted from a bore field extending westward from Wegner Drive to south of Pink Lake in the Esperance water reserve area. The water supply is protected under the Country Areas Water Supply Act (1947).

Esperance groundwater is of reasonable quality and quantity and it is planned to expand the bore field westward as demand increases. The capacity of the system has been recently improved with the construction of extra storage in the form of a 15,000kL elevated storage tank.

The current wastewater treatment facility is located in Central Esperance, in the Brazier Street Industrial area. The Water Corporation has concluded that this facility does not have sufficient capacity to accommodate the future growth of Esperance. As such they have identified a site for a new treatment plant, to the east of the Town, adjacent to the existing waste disposal site (previously discussed from a land use perspective in section 3.3.7).

Excess treated wastewater is currently being transferred to infiltration ponds at Wylie Bay using a combination of pipeline owned and maintained by the Shire of Esperance and the Water Corporation.

The new \$5.7 million wastewater facilities will improve the transfer of wastewater from the Wastewater Treatment Plant No. 1, near Jetty Road, to the proposed Wastewater Treatment Plant No. 2 at the second site at Wylie Bay.

### 3.6.2 Power

Esperance is not connected to the South West grid system, therefore electricity is currently provided via a gas/diesel-fired power station located at the Esperance Port and supplemented by a supply from the Nine Mile Beach and Eleven Mile Beach wind farms. These wind farms were constructed in 2003 and include upgraded turbines, and now provide for approximately 20 percent of the towns electricity.

Power provision has been identified in the LPS as being a limiting growth factor for the expansion of the townsite. It is recognised in the Goldfields Esperance Regional Planning Strategy that cost effective alternative forms of energy generation may need to be considered for remote townsites. These alternative sources of power could include wood fired power stations.

### 3.6.3 Gas

Alinta Gas has advised that there is no planning in place for the provision of natural gas distribution infrastructure within the study area. Esperance currently utilises bottled LPG gas as reticulated areas are very limited.

### 3.6.4 Telecommunications

Telstra has advised that telecommunications are available to the study area. Regional areas require high quality communication services with reliable and affordable voice, fax, data modem telecommunications, public telephones, cheap/reliable internet access and mobile telephones as a minimum. As development occurs in the DSP area, the access network will be planned and designed to cater for the expected growth levels and product requirements.

## 3.7 Extent of Developable Area

The overall growth potential of Esperance is physically constrained by environmental factors including the Esperance Lakes System (including wetlands of international significance) to the north, the coast to the south and public drinking water supply catchment to the west. While there are redevelopment and infill opportunities within the town's existing urban form, many of these areas are constrained. Based on this, the long term natural growth pattern of the town will be along its eastern axis, in the vicinity of the Bandy Creek Boat Harbour and beyond to Wylie Head, lending strategic rationale to the identification of urban land in this locality. However the staging and development of this land will need to be justified based on the existing land supply and capacity of infrastructure.

Based on the site and issues analysis undertaken and outlined in the previous sections of this report, the following issues have determined the parameters for the extent of the DSP:

- Within the investigation area development to the north and south is constrained by physical features, including the coast, the Esperance Lakes Nature Reserve, and Bandy Creek, and the reserves in which they are contained. These environmental assets create a green edge to the western and northern boundary of the DSP.
- Urban development to the east is constrained by the long term location of the landfill site, future waste water treatment plant site.
- Existing and approved residential development to the immediate west within Flinders Estate provides limited opportunities for urban infill.

By taking these into account, logical areas for future development have been identified.

# PART TWO – DISTRICT STRUCTURE PLAN





**Bandy Creek District Structure Plan**

Figure 5

## 4 Design Framework

The DSP is presented at **Figure 5**, and is described in the following sections of the report. The DSP seeks to provide the long-term framework for:

- Development of a mixed use tourism marina precinct at the Bandy Creek Boat Harbour; and
- The physical arrangement of urban areas, district road systems, neighbourhoods, schools, district level open space, shopping facilities and major infrastructure in the wider DSP area.

It is intended that the DSP will be used as a basis for preparing more detailed local structure plans, which will guide subdivision design and development proposals for individual neighbourhood areas.

The DSP addresses planning within two distinct areas – the area of Crown land currently zoned as Harbour under the Shire’s Local Planning Scheme and the balance of the DSP area held in private ownership and currently zoned as Rural. These areas are described below.

The development of a local structure plan or concept plan for the harbour is beyond the scope of this DSP. It will be undertaken as a separate process by the Department of Transport’s Coastal Facilities Business Unit with input from other relevant stakeholders including the Department of Planning, with the principles of the DSP, particularly those in section 5.1 below, providing the key land use and development parameters.

### 4.1.1 Design Intent

The DSP applies the design and spatial layout principles of the WAPC’s planning policy *Liveable Neighbourhoods*, within the context of the particular opportunities and constraints of the study area. The spatial layout and design identifies the boat harbour as the key driver for development. The plan responds to the various land use constraints, such as identifying compatible uses for the landfill site buffers. The Structure Plan is robust and can respond to changing economic and social conditions. Environmental assets are also capitalised on and are a key feature for the development of the area. A desire to create environmentally responsive planning and development outcomes has been a key driver of the DSP design process.

### 4.1.2 Liveable Neighbourhoods

The DSP adopts the urban structuring principles defined in the Liveable Neighbourhoods Community Design Code. The Liveable Neighbourhoods design solution aims to achieve compact, well defined and sustainable urban communities.

Liveable Neighbourhoods encourages:

- A wide variety of housing types and sizes.
- Local employment opportunities.
- A sense of community focused on walkable neighbourhoods and towns.
- Support for public transport.

Liveable Neighbourhoods aims to achieve environments that are sustainable, liveable and well suited to the shape of our community.

In terms of structuring the urban environment, Liveable Neighbourhoods uses the neighbourhood unit as the fundamental building block. The neighbourhood unit is an area of approximately 50 hectares defined by a 400m radius. The 400m radius represents a theoretical 5 minute walk to the neighbourhood centre, where the elements of community daily needs are located. Although, given that regional areas generally have lower residential densities than the Perth metropolitan area, and in the context of Bandy Creek, it is acknowledged that this radius may be expanded to 800m in regional centres given the reduced feasibility of delivering a large number of retail centres as the central nodes of neighbourhoods.

Liveable Neighbourhoods identifies the requirement to link neighbourhoods and town centres with a clearly legible road network. The road network should be highly interconnected to allow traffic to

permeate through the urban fabric and reduce the need for large, expensive and highly engineered arterial roads. With lower levels of traffic on each road, the arterial roads that do exist are able to provide access direct to the centres of neighbourhoods and to deliver the economic benefits of the „movement economy“ to local businesses.

In order to enhance the walkability of the neighbourhood units, and to maximise the number of residents within a five to ten minute walk, non-residential land uses that require large areas of land, such as schools and parks, are located on the edges of neighbourhoods. In the case of primary schools, a location on the edge of the neighbourhood means that the facility can be shared between neighbourhoods while theoretically being no more than ten to twenty minutes walk from any point within the catchment.

### 4.1.3 Sustainable and Responsive Development

The environmental values of the area provide a significant opportunity to create environmentally sensitive and responsive development that protects the environmental values of the coast and Bandy Creek and reflects its cultural values.

The importance of protecting the water quality of nearby wetlands and the harbour water body highlights the need for integrated urban water management. A network of open space for stormwater retention and filtration can be provided to improve water quality and slow runoff from urban development. This is complementary to the protection of vegetation and landscape values, and guidance on the identification of corridors for both these purposes is provided in section 5.6.1. The large existing landholdings that make up the DSP area create the opportunity to consider these factors at a broad district scale so that appropriate design considerations can be incorporated into local structure plans.

## 5 Structure Plan

### 5.1 Bandy Creek Boat Harbour

The Bandy Creek Boat Harbour is managed and operated by the Department of Transport with input from the Bandy Creek Maritime Advisory Committee. It is currently a small harbour that caters for commercial fishing, marine tourism and pleasure craft, and it provides facilities such as boat launching ramps, jetties, vessel servicing, wharves and picnic facilities at Summy's Park.

An indicative development concept has previously been prepared by the Department of Transport (see **Figure 6**), prior to the finalisation of the DSP. This plan may need to be reviewed in light of the DSP outcomes and design intent contained within this section, and the current or future context of boat harbour operations and boating demand. Such a review, however, is outside the scope of the DSP and is currently the responsibility of the Department of Transport.

#### 5.1.1 Design Principles

The development of the Bandy Creek boat harbour should be in accordance with the following design principles:

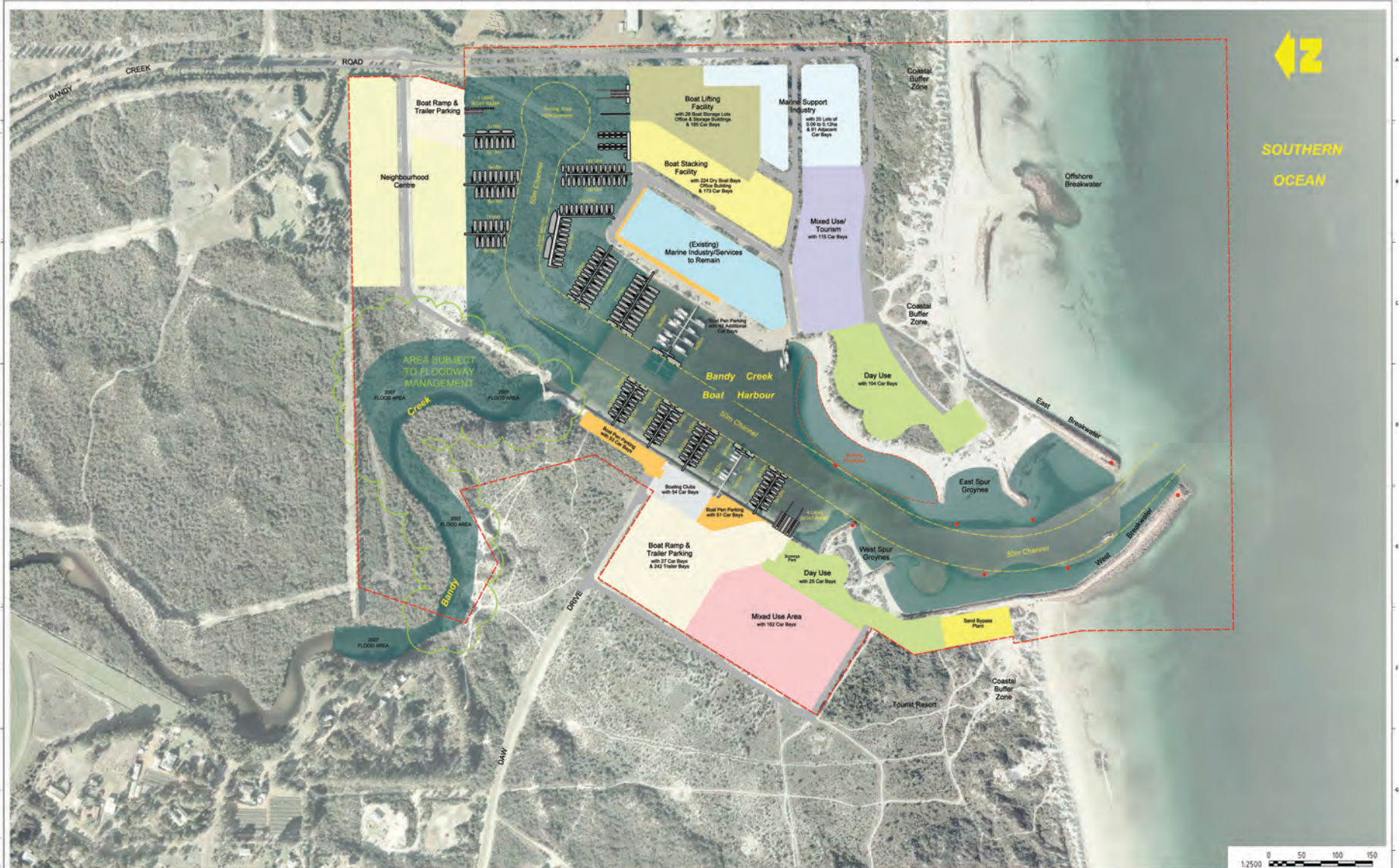
- Retain commercial and recreational boat harbour functions and operations.
- Provide a water-focused commercial, retail and hospitality service for tourists and visitors as well as local residents.
- Ensure building siting, road network, access, car parking, servicing, public spaces and mix of uses to create a sense of place, identity and vibrancy.
- Ensure development fronts the public realm adjacent to the harbour, to create an active edge.
- Restaurant, retail and café uses are encouraged, to provide active ground level frontage.
- Building design should contribute to the creation of a safe public environment by avoiding dead-end spaces and ensuring that all public areas are subject to casual surveillance from surrounding properties.
- Public access to and around the waterfront must be maintained, to promote a sense of community ownership (with the exception of operational areas where safety may be a concern, although these should be kept away from the water's edge where possible).
- Provide logical and efficient connections around the harbour, particularly for pedestrian access and circulation.
- Provide parking in a sustainable manner and locate parking areas behind buildings away from street view, or, where this is not possible, ensure parking is adequately screened from public view.
- Roads along the water front should be traffic-calmed and should contribute to an active and attractive streetscape.
- Main access boulevards to the Marina precinct will maintain vistas to the waterfront at key vantage points to create a sense of arrival and place.
- Access to the beach on the eastern side of the harbour should be formalised.

#### 5.1.2 Water Management

There is potentially a high risk of eutrophication and other water quality impacts on the Marina water body from urban development. This risk may increase if canal development occurs, or if there is a significant alteration in the hydrology and basin of the harbour.

These issues will need to be considered in the design and impact assessment of future urban development, with a significant level of assessment at local structure planning stage. The water body design of the harbour does not require or preclude canal connections. Any canal proposals will need to





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FIGURE 6: MARINA CONCEPT PLAN PREPARED BY DoT



be proved up and demonstrate they can address the environmental constraints in the area, prior to consideration. Landowners adjacent to the harbour may seek to obtain water frontage or water access from the marina water body, however this will require negotiations with the Department of Transport regarding contribution to upfront capital and ongoing maintenance costs.

Best practice urban stormwater management will be a requirement for development in the area. A District Water Management Strategy will be prepared following finalisation of the DSP, and all local structure plans will need to be accompanied by a Local Water Management Plan.

### 5.1.3 Harbour and Maritime Related Development

The existing recreation boat facilities on the western side of the water body may expand in response to increased local and regional demand in the short to medium term. Additional uses associated with the operation of the boat harbour for recreational boating, including boat servicing and land based handling facilities, will locate on the eastern side of the water body to efficiently service demand for these facilities that is likely to be generated by residential development adjacent to the harbour, and to accommodate future regional demand. Issues such as traffic management, location and provision of boat and trailer parking, and the interface between this and adjacent residential development will need to be considered.

The recreational use of the boat harbour will be enhanced by co-locating other water based activities on the western side of the harbour near the Angling Club and recreation boat pens.

Marine related industrial uses currently exist on the eastern side of the water body and the continued use of the harbour for these activities is anticipated. Over time this precinct may evolve into a marine, maritime or aquaculture research and technology innovation precinct. Industrial development fronting Bandy Creek Road, adjacent to residential development, must provide an active, office or shop front onto the road, as an appropriate interface to the residential uses. Blank walls, back of shop, or sheds fronting on to Bandy Creek Road at this interface are to be avoided.

Significant parking or hard stand areas are to be adequately screened and provide a landscaped edge to Bandy Creek Road. Appropriate landscaping in keeping with the boulevard function of Bandy Creek Road should also be utilised.

### 5.1.4 Waterside Development

The design principle for waterside development is to create a mixed use, retail, recreation and tourist node that capitalises on the water frontage, coastal amenity, and harbour activities. A Neighbourhood Centre has been identified for the harbour, to provide a range of retail services. Restaurants, small food outlets and specialty stores which reflect the fishing and recreational activities at the harbour are also envisaged. A local centre on the western side of the harbour is also identified to service the needs of recreational boaters as well as the local neighbourhood (refer to section 5.3.1 for requirements for Centres). Commercial office uses may also be located in the precinct, but will be ancillary to the use of the Marina for recreation and tourism. These should be located at the Neighbourhood Centre. However the extent of such development should not detract from the Esperance Town Centre as the primary commercial centre for the Shire.

Short and long stay accommodation development should be located to capitalise on views, access to the coast and amenities. Subject to coastal setback requirements, there may be an opportunity to provide an iconic tourist development that capitalises on the visual amenity near the western groyne of the harbour. Within the same setbacks parameters, there may also be an opportunity to create a tourist development, that incorporates public open space (both passive and active), on the eastern side of the harbour near the coast. This would build on the existing use of the area for swimming. Development adjacent to the coast would need to address the requirements of the WAPC's State Planning Policy 2.6 - State Coastal Planning Policy.

### 5.1.5 Proposed Vehicular Creek Crossing

Although geographically close, there are currently several kilometres between one side of the harbour and the other by road, which significantly impacts on connectivity and access for vehicles. This is considered a significant issue for the DSP to address, and many stakeholders were concerned that in the absence of improved connection to both sides of the harbour, the functionality, activation and

integration of the boat harbour and its surrounds will be compromised, resulting in fragmentation of harbour activities.

While beneficial for pedestrians, the new causeway at the site of the old weir does not provide a link for general vehicle traffic. It will either need to be upgraded to accommodate light vehicle traffic or alternatively another vehicle bridge within the vicinity of the pedestrian causeway may be identified. Detailed planning for any proposed creek crossing will need to ensure engineering and environmental suitability in the context of flooding and impacts on the ecological value of the Bandy Creek.

## 5.2 Residential Development

### 5.2.1 Residential Densities and Population

Residential densities for the DSP have been identified based on the principles outlined within Element 3 - Lot Layout of Liveable Neighbourhoods.

In particular, requirements 2 and 3 specify the need for a variety of lot sizes, and requirement 12 specifies increased housing density near centres. Using these criteria, a preferred average overall density of R20 (20 dwellings per hectare) is envisaged for the DSP area. This average accounts for a range of densities and diversity of housing across different parts of the DSP area, specifically:

- Higher densities of R30 and possibly up to R80, incorporating mixed use development, around the boat harbour, neighbourhood centre and local centres.
- Lower densities of R5 to R10 in areas where more intensified development may impact on environmental values or to protect topographical features. The largest lots should be required in the most environmentally sensitive areas, and to protect existing landform,
- Medium densities of R15 to R25 in locations fronting open space corridors, conservation reserves and the coast, to leverage off the natural amenity of these areas and to provide passive surveillance and a sense of community.

However, should the existing preference for larger blocks in Esperance continue into the future as the DSP area develops, a more conservative lot yield and population estimate has also been calculated based on an average overall density of R12.5. This density of development would be similar to that currently identified in the Flinders ODP.

Further, should canal development be approved, it can be assumed that the lot yields will decrease by between 450 and 700 lots due to the take-up of land area for water bodies.

The following table outlines the dwelling and population projections for the DSP area based on the optimum and conservative scenarios. The population figures have been derived by multiplying the projected number of lots (including a deduction based on an assumed vacancy rate of 10% for holiday homes and other absentee owners) by the Shire's average household size of 2.5 persons (ABS, 2006).

#### Estimated Optimum Scenario (Average R20)

Total Land Area	Developable Land (assumes 30% deduction for roads, drainage, reserves, schools, commercial uses etc)	Number of lots (assumes average 500m2)	Projected population (assumes average 2.5 persons per household)*
377.5 ha	264.3 ha	5285	11,891

\*Also assumes a vacancy rate of 10% for holiday homes etc.

#### Estimated Conservative Scenario (Average R12.5)

Total Land Area	Developable Land (assumes 30% deduction for roads, drainage, reserves, schools, commercial uses etc)	Number of lots (assumes average 800m2)	Projected population (assumes average 2.5 persons per household)*
377.5 ha	264.3 ha	3303	7431



## 5.2.2 Forms of Development

### **Very low density residential (R5)**

This type of development can be located where protection and strengthening of ecological values is an important consideration. One such location would be a strip of low density residential development as a buffer to the Esperance Lakes System. The extent of this type of development in other parts of the DSP area needs to be considered in the context of the existing supply of this type of development in the vicinity and the rest of the town. Reconfiguration to create smaller lots may be supported where it can be demonstrated that a better ecological outcome will be achieved and provided that the open space character of the area will not be compromised.

### **Low density residential (R10)**

This type of development can be utilised in order to provide a mix of larger family blocks within neighbourhood precincts, in response to market preference. It should not make up majority of the coding within precincts.

### **Medium density residential (R15 – R25)**

This land comprises a mix of houses and dwellings at densities of R15 - R25, and is suitable within an 800m walkable catchment of local neighbourhood centres. The higher densities should locate closest to the neighbourhood centres and facing onto local parks. Aged care accommodation is supported near neighbourhood centres.

### **High density residential and multi-unit development (R30 up to R80)**

High density residential development and tourist development can be located adjacent to the boat harbour, where high levels of amenity and access to services can support this type of development.

Multi-unit residential development can be co-located with land designated for increased residential densities; or located within a comfortable walking distance of a centre; or integrated with a local park.

### **Mixed use**

Higher density residential development combined with commercial uses may be located in the boat harbour precinct and neighbourhood centres. Some small scale mixed use and commercial activities may be acceptable in other parts of the DSP area, where they are compatible with the predominantly residential nature of the area.

These commercial uses should be on the ground and lower levels of a mixed use development or may be accommodated within the same site in a separate building.

Commercial uses should be orientated to the street to encourage active street frontages. In the local and neighbourhood centres, buildings should be designed with an adaptable ground floor to allow maximum flexibility in accommodating different (including non-residential) uses in the future.

### **Building Heights/Limits**

In accordance with *State Planning Policy 2.6: State Coastal Planning Policy*, urban development within 300 metres of the horizontal setback datum should generally be limited to 5 storeys and not exceed 21 metres in height. Local Governments may specify lower maximum height limits in particular localities in order to achieve outcomes which respond to the desired character, built form and amenity of the locality, and under certain circumstances it is possible to go higher, up to eight storeys. However, any variation will need to be proved up at the stage of detailed planning and development.

The Shire of Esperance Local Planning Scheme No.23 also contains provisions regarding height limits, and any development will need to comply with the Scheme.

### **Coastal Development**

Development closest to the coast will need to comply with the policy requirements of *Development Control Policy 6.1: Country Coastal Planning Policy* and *State Planning Policy 2.6: State Coastal Planning Policy*. Residential development near the coast should be designed to complement and enhance the coastal environment in terms of its visual, amenity, social and ecological values.

Coastal development should not reduce the visual amenity of the foreshore. Instead visual permeability of the foreshore and ocean from nearby residential areas, roads and public spaces should be promoted through streets oriented perpendicular to the coast, while responding appropriately to climatic conditions and solar access, and addressing the site's topography and landscape characteristics.

A local centre has been identified for land adjacent to the coast, east of the boat harbour, which may be developed as a restaurant/cafe, small deli or takeaway food premises to provide some amenity and activity for residents, tourists and recreation users of the coast.

### 5.2.3 Lot Layout

#### **Frontages to open space**

In accordance with „Crime Prevention through Environmental Design“ (CPTED) principles, the DSP promotes development overlooking public open spaces. This will enable development to take advantage of the amenity provided by the linear open spaces, whilst also ensuring that the areas operate with a high level of real and perceived safety.

#### **Bandy Creek**

Bandy Creek may have conservation values, which could result in additional setback, drainage and development requirements to be met as required by DEC. Environmental assessment of Bandy Creek will need to be undertaken at ODP stage.

#### **Climate Responsive Design**

The strong wind conditions that typify the Esperance coast emphasise the need for climatically responsive development. The undulating nature of the coastal landform creates the opportunity for sheltered areas in the valleys between ridges, which can offer desired low wind climates and compensate for the lack of views. Consideration of climatic factors should be reflected in local structure plan and subdivision design.

#### **Maintaining Public Access to Foreshore Areas**

A principle objective of *Development Control Policy 6.1: Country Coastal Planning Policy* is to ensure public access to the coast consistent with the protection of coastal resources. Pedestrian access to the coast should be carefully planned and incorporate the following design elements:

- Fenced walkways provided to link coastal car parks, residential and other developments with adjacent beaches;
- Fenced walkways provided in residential areas if private landholdings back onto the foreshore reserve to facilitate the guiding of pedestrians and to prevent haphazard crossing of the dunes; and
- Pathways located to direct people away from environmentally sensitive areas.

A Foreshore Management Plan will be required for coastal areas at local structure planning stage to address these and other issues to ensure design sensitive to the coastal environment.

## 5.3 Commercial Uses

This section provides a discussion of the activity centres and commercial elements of the DSP area.

### 5.3.1 Activity Centres

The DSP area is an extension of the existing urban area of Esperance. As such, the new urban areas will also be serviced by the existing Esperance Town Centre. Local, neighbourhood and tourist shopping needs only are provided for within the DSP area, as are local commercial and employment opportunities.

The scale of additional centres has been determined based on a hierarchical system that does not detract from the primary role of the Esperance Town Centre. The Esperance Town Centre will still continue to service the region as the main retail and commercial centre as it is easily accessible from all areas of town and provides higher order services.

Activity centres have been located to best service the convenience needs of the surrounding community, and to activate the boat harbour. These centres will provide strong links with the pedestrian networks and parks and surrounding residential precincts. Parks or attractive public spaces that adjoin a centre will provide a focus and orientation for the centre.

The primary objective of creating walkable catchments is to establish focal centres for localised communities. Centres should contain such retail, commercial and community facilities as would be appropriate based upon community demand and market requirements. Child care facilities would not be appropriate in centres close to the landfill site or the future waste water treatment plant. The specific uses for each centre should be determined through local structure planning.

**5.3.1.1 Indicative Retail Floor Space**

Centres shown on the DSP propose a district hierarchy but are conceptual only, and retail floor space requirements would be subject to further investigation in conjunction with the local government’s commercial strategy, and through retail and commercial assessment at local structure planning stage.

The amount of retail floor space has been calculated based on the optimum lot yield scenario and an average per capita allocation of 0.53m<sup>2</sup>, as per the Metropolitan Centres Policy. Based on this the DSP may generate demand of up to 6,500 m<sup>2</sup> of retail floorspace.

The distribution of retail floorspace in the DSP is shown in the table below. Variations from this distribution at the detailed local structure planning stage will need to be supported by appropriate retail and commercial assessment, which demonstrates both that the vitality and viability of existing centres remains unaffected, and that the new communities of the DSP area will be appropriately provided for.

<b>Centre</b>	<b>Retail floorspace cap</b>
Major Neighbourhood Centre - Marina	4,000m <sup>2</sup>
Minor Neighbourhood Centres ( x 2 )	1,000m <sup>2</sup> each
Local Centres ( x 2 )	250m <sup>2</sup> each

**5.3.1.2 Retail Centres**

*Major Neighbourhood Centre*

Neighbourhood centres are convenience centres that provide local services to the surrounding residential neighbourhoods. These services may include shops, restaurants, and supporting community uses and child care facilities.

A Neighbourhood Centre containing a mix of commercial, tourist and recreational uses is proposed to be located on the northern boundary of the boat harbour on Bandy Creek Road. While not central to the DSP area, the centre is located so that it activates the waterfront, while servicing the greatest catchment population. Given the low level of existing activity around the harbour it will be important to solidify a nucleus of activity, and the centre is positioned so that it can leverage off existing commercial fishing and recreational boating activity.

The role and function of the Neighbourhood Centre should be as a major Neighbourhood Centre in the Bandy Creek area and should not challenge the primacy of the Esperance Town Centre as the major retail and commercial centre for the town. The retail component would be approximately 4,000m<sup>2</sup> NLA and be based on a limited line supermarket as its major attractor or anchor. It would provide for a range of support shops, personal care services, restaurants and food premises, reflective of the tourism and recreation nature of the boat harbour precinct.

The centre itself should have a distinct sense of place with a strong link to adjacent harbour activities and nearby public open space corridors. The maritime theme can be enhanced by activating water frontages with restaurants and cafes. Clearly defined and legible pedestrian links around the harbour (via the pedestrian causeway) will improve connectivity and integration with the western side of the harbour and the Neighbourhood Centre.

Development of the centre should be in accordance with the following principles:

- The centre should create an urban edge to the water front and provide an urban environment that supports active uses on its fringes, meeting places, places of interest and comfortable pedestrian movement and activity.
- The centre should contain clear and direct view lines and pedestrian connections to adjoining buildings, to the pedestrian causeway, around the harbour and to neighbourhoods.
- Vehicle access, parking, manoeuvring and servicing should be designed not to dominate the streetscape and to reinforce the pedestrian focus and the high visual amenity of the centre.

#### *Minor Neighbourhood Centres*

Two smaller neighbourhood centres have been identified to service future urban areas to the east of the harbour. This has been located at the intersections of major roads and are intended to service both residential needs and the surrounding business community. Child care facilities are not considered compatible with the easternmost centre because of the close proximity to the wastewater treatment site. The approximate retail floor area of each centre would be 1,000m<sup>2</sup> NLA, primarily made up of a small supermarket or deli, with lunch bars or other small food outlets, or other local support shops such as a chemist or newsagent.

#### *Local Centres*

The DSP provides for small local centres to service the demand generated by visitors to the coast (tourist and recreational users). These are located outside the 400m walkable catchment of the Neighbourhood Centre and are likely to take the form of a small convenience store, deli or food premises with between 100m<sup>2</sup> and 200m<sup>2</sup> NLA to service nearby tourist development and beach-goers.

### 5.3.2 Business Park

The Business Park is intended to accommodate specialised employment opportunities. Ancillary uses such as small cafes and offices or other sensitive uses will not be supported because the Business Park forms a buffer area between the Shire's landfill and residential areas. Compatible uses such as industrial or commercial uses that don't generate significant customer demand or high amenity requirements may be considered in the buffer area, but will need to demonstrate their compatibility with the intent of the business park. These uses may include non-sensitive manufacturing/processing/fabrication uses, storage and distribution, light industry, showroom warehouses. Uses that generate their own buffer requirements are to ensure that their buffer is contained within the buffer of the landfill site or wastewater treatment plant.

Other commercial enterprises traditionally associated with a Business Park, such as service industries can locate within the Precinct provided that they are outside the buffer identified for the refuse disposal site.

The built form interface between the Business Park and adjacent sensitive uses such as retail centres or residential development needs to be addressed. Such measures include appropriate landscaping, sensitive built form, and ensuring office and shop fronts associated with Business Park development front roads between the Business Park and sensitive uses.

The Business Park will assist in enabling the ecological values of the area to be retained through the identification of the east-west landscape, fauna and flora corridors that link the recreation area at Wylie Bay with Bandy Creek and the coast. Drainage may not be appropriate in these corridors given the potential for contamination from the landfill site.

Development within the Business Park is to occur in accordance with a local structure plan and landscape plan that address the establishment and protection of this corridor. The retention of significant vegetation will be required, to enhance landscape amenity.

### 5.3.3 Aquaculture

The potential for aquaculture development along the coast between the harbour and Wylie Head has been identified in the Shire's LPS. However it is uncertain whether the extent of land required for this

purpose will be significant. Notwithstanding this, the industry may grow in the future as more sustainable sources of fish are required.

Aquaculture would be a compatible use within the buffer of the landfill site, provided that effluent from both uses is managed to ensure no cross contamination of pollutants via the groundwater system.

Environmental impacts, access and visual amenity will be significant considerations in the positioning of aquaculture proposals, and will need to be considered at the detailed structure planning and development stage. If the full extent of the identified land is not likely to be entirely used for the aquaculture industry, other suitable uses for the coastal buffer area may be identified in the future.

## 5.4 Community Uses

### 5.4.1 Schools

Esperance currently has five primary schools, three are Government schools and two are private. These are mainly located within or near the Esperance town centre, with one school at Nulson. The nearest school to Bandy Creek is at Castletown where enrolments are nearing capacity. There is currently only one public high school, with plans for an existing Anglican Middle School to provide years 8 to 12 in the near future.

Liveable Neighbourhoods requires the provision of one primary school for every 1,500 lots. A primary school is identified for the Flinders ODP area, and based on estimated yields of approximately 5000 lots for the DSP area, an additional three or possibly four primary schools will be required east of Bandy Creek (subject to build out of the whole DSP area). These schools may generate demand for an additional public or private high school to service the eastern side of town (based on 1 high school per 4-5 Primary schools). As the area develops there will be the need to re-examine the demand for school sites with the possibility of identifying additional school sites.

In accordance with Liveable Neighbourhoods requirements, the school sites are strategically located at the edge of neighbourhood precincts or between neighbourhoods. The locations proposed achieve a distribution that will allow easy access for the majority of residents within the DSP area. The schools have been located so that some school play fields may be combined with the network of public open space corridors.

The traditional size of a school site is 4ha. There may, however, be scope at detailed design stage to reduce these to 3.5 ha where located adjacent to sufficient public open space. In preparing detailed school site design, it is also important to consider the surrounding road network, access and parking. This should be undertaken in consultation with the Departments of Education and of Planning.

### 5.4.2 Community Precinct

A community precinct has been identified for the visible location at the entry to the DSP area at the intersection of Fisheries Road and Bandy Creek Road. Building size and scale should reflect the role of the precinct as an entry to the Bandy Creek area and the boat harbour, and should incorporate signature buildings and landmark elements. Given the site's location adjacent to Bandy Creek and the Esperance Lakes Nature Reserve, development must be designed to mitigate impacts on the environmental values of adjoining habitat areas and ecological corridors.

Uses that maybe appropriate within this precinct include educational facilities, such as a private high school, or an indoor recreation centre. Some commercial development may also be considered provided that the built form reflects the gateway principles.

## 5.5 Key Infrastructure Uses

### 5.5.1 Landfill site

The existing Shire of Esperance refuse disposal site and transfer facility has been retained within the DSP area because of the significant investment in the facility and the long term demand and requirements for the Shire. Long term options for the landfill site currently include continued use as a

landfill, or a district or regional park once the site has reached capacity and is remediated. Other uses may become possible with future developments in remediation technologies and expertise.

The EPA *Guidance Note 3* and the WAPC's *Draft Statement of Planning Policy 4.1 State Industrial Buffer Policy* identify requirements for buffers to protect sensitive land uses from emissions from industries and essential infrastructure. Sensitive land uses are generally prohibited within buffer areas, or special measures are necessary to ameliorate the impacts of emissions. Sensitive land uses include residential development, hotels, motels and hostels, caravan parks, hospitals and nursing homes, schools and other educational establishments, shopping centres, and some public buildings.

Compatible (non-sensitive) land uses may be accommodated in buffer areas, in areas furthest from the source of emissions and risk. Buffer areas are not an alternative to control at the source and high standards of environmental management of the landfill site are also required. Buffer areas should be considered as an additional measure to assist in the minimisation of off-site impacts of industry on sensitive and other land uses.

The DSP does not identify the buffer required for the landfill site, however the EPA currently maintain a default 500m buffer for this type of use in accordance with the Guidance Note. Detailed investigations will be required at local structure planning stage to identify an appropriate buffer area, with the results of this work used to inform buffer distances.

The landfill site is an existing constraint to development within the DSP area. Until such time as the landfill site is relocated, the DSP response is to locate non-sensitive and appropriate uses within the buffer area. Given the coastal location, the Structure Plan identifies aquaculture as an appropriate use within the buffer area. Appropriate management of the landfill site and any aquaculture proposal must ensure no contamination of the ground or surface water system. In the longer term the site may have redevelopment potential subject to:

- Relocation of the existing facility; and
- Remediation to a level appropriate for any proposed use.

Application of best practice principles for the location, construction and management of any expansions of the existing facility will be required to reduce off-site odour, contamination and visual impacts. Implementation of such measures will be critical to the successful management of these impacts.

A vegetated buffer of an adequate depth and width should be incorporated into the refuse disposal site to screen it from adjoining green corridors and the coastal tourist drive. This buffer area can then be incorporated into a potential recreation reserve that may be established upon relocation and remediation of the landfill site. The use of vegetated interfaces has obvious environmental value, but may also bring aesthetic values to the area as landscape and character features.

In the context of the current level of investment in and commitment to the existing site, any effort to identify a more appropriate landfill site and ultimate relocation of the facility will require a significant level of state government agency support.

### 5.5.2 Wastewater Treatment Plant

The WaterCorp has identified an area north of Wylie Head for a future wastewater treatment site and its buffer. The site is currently used by the Water Corporation for infiltration ponds as part of the town's wastewater treatment facilities. Excess treated wastewater from the Jetty Road treatment plant will, in the short term, be piped to the infiltration ponds. Given the long term requirements of Esperance, Water Corporation will continue to operate the Jetty Road plant concurrently with a second wastewater treatment plant that will be developed at their Wylie bay site. Future proposed upgrades including constructing the Wylie Bay operations, are estimated to commence around 2011.

Like the landfill site, the wastewater treatment plant at Wylie Bay and the existing infiltration ponds will require buffers to be identified as per the EPA's *Guidance statement No.3 Separation Distance Between Industrial and Sensitive Land Uses* and presents as another significant constraint to urban development to the east.

Management measures will need to include adoption of high standards of environmental management and containment of emissions on site where possible and technical analyses to determine an appropriate buffer area based on the ultimate build out scenario.

Residential development, accommodation, child care facilities, schools, health care services and playgrounds will not be supported in the buffer area. Land uses which are heavily dependent upon a high level of amenity, attract large numbers of people and predominantly operate in the late evening or at night should not be located within wastewater infrastructure buffer areas. For example restaurants, tourist facilities, community and cultural centres, indoor sporting venues, and outdoor and bulky goods showrooms.

For land use and developments proposed within the odour buffer (including intensification of existing uses), the responsible authority should take into consideration the potential odour impacts on the users or occupiers of the land or development, and ensure compatibility or endeavour to minimise impacts on the proposed land use from existing or proposed future wastewater infrastructure.

## 5.6 Public Open Space and Recreation

### 5.6.1 Corridors

Open space corridors are to perform an active and passive recreation function while simultaneously improving water quality, ecological health and habitat value. Public open space corridors are broadly identified on the plan based upon the principles of wetland, landform and vegetation protection, interface management providing linkages between reserves, schools, neighbourhoods and centres (including facilitating pedestrian and equestrian access to the coast) and amenity. The corridors are indicative; they are not fixed and need to be refined based upon more detailed investigations of biophysical criteria at local planning stages. Inclusion of these elements will provide future urban areas with a sense of place that reflects the existing high environmental amenity.

Public open space corridors should be located between neighbourhoods and ideally located between neighbourhood clusters. The corridor widths will vary depending on site requirements, but should always maintain ecological and drainage functions, and enable good passive surveillance of the open space from adjacent residences. In some instances the corridor width may be significantly increased to accommodate district parkland, schools and playing fields.

Drainage is not appropriate in corridors where there is the potential for groundwater or surface water contamination from adjacent uses, unless it can be demonstrated that no such risk exists.

### 5.6.2 Foreshore and Coastal Reserves

The DSP shows the existing coastal reserve and the Bandy Creek foreshore reserve. However the adequacy of the current area of these reserves in light of future development of land and therefore increased importance of foreshores will need to be ascertained at local structure planning stage. Investigations into the adequacy of the Bandy Creek foreshore reserve in light of recent flood events will also need to be determined within a foreshore management plan prepared by adjacent landowners during the local structure plan and local water management plan stage.

The DSP identifies the importance of creating coastal foreshores of sufficient width through the local structure planning process, consistent with the State Coastal Planning Policy. In addition, coastal foreshore management plans will need to be developed to address the following requirements of the State Coastal Planning Policy:

- Identification of adequate coastal setbacks to protect development;
- Identification of an adequate foreshore reserve, which includes the coastal setback, and areas of passive and active open space;
- Managing conflicting uses of the coast;
- Identification of coastal stabilisation and erosion management requirements;
- Provision of adequate public access and parking areas; and



- Appropriate height and scale of development.

Individual proponents for land adjacent to coastal foreshores and Bandy Creek will need to prepare foreshore management plans at local structure planning stage to address these elements.

### 5.6.3 Public Parkland and Recreation

The DSP mainly identifies both existing regional public open space reserves across the study area, which is largely contained within the coastal and river foreshores reserves, and the provision of district level parkland areas that should be incorporated into the linear open space network.

In addition to these areas of district and regional level parkland, local structure plans will need to identify a range of local parks to meet the needs of the local communities.

Public parkland in the Structure Plan area should:

- Be of a sufficient cumulative area to adequately cater for the recreation needs of the Bandy Creek community;
- Be of sufficient area and dimensions to cater for a broad range of passive and active recreation activities;
- Be distributed to be within a comfortable walking distance of the majority of dwellings and, where possible, link to the district open space corridors;
- Be located to protect and optimise valuable landscape features and view corridors;
- Provide amenity as well as retain elements of the Bandy Creek cultural landscape;
- Be located to protect and optimise valuable pedestrian and wildlife movement corridors; and
- Be located to provide a focus for commercial and medium–high density residential uses.

Water quality and quantity treatment devices within parks will only be supported where provided in accordance with Liveable Neighbourhoods policy and with the Better Urban Water Management Policy.

A recreation centre could be accommodated within the community precinct, and would strengthen the recreation theme of the area linking with the existing football field to the north and the racecourse to the south.

The DSP identifies the area adjacent to the Wylie Head tourist node, currently being used informally for off-road vehicle use, as a future recreation area. This is consistent with the Local Planning Strategy recommendation that this area be formalised for off-road vehicle use and areas for sand boarding be identified. In the longer term this area has the potential for redevelopment with a tourist/recreation theme, subject to detailed planning and design investigation. Management and stabilisation of the dune system in this area would be required prior to any redevelopment.

Any future relocation of the landfill site would present an opportunity for this area to be remediated and incorporated into a regional or district level active recreation area, with elements of passive recreation along the coastal vegetated buffer.

## 5.7 Environment

Future urban development in the vicinity of the Harbour and Bandy Creek will need to address, amongst other things:

- Protecting biodiversity values;
- Maintaining the water quality of Bandy Creek, the harbour and any other water bodies;
- Likely presence of acid sulphate soils; and
- Altered floodplain of Bandy Creek and requirements for adequate flood risk management for future development.

These considerations will have a significant influence on the extent and form of future urban development. In particular, the potential for canal development or expansion of the harbour basin may be limited or ruled out based on the results of these requirements.

### 5.7.1 Urban Water Management

In order to minimise the impact that future development will have on groundwater and surface water quality and quantity, aquatic habitats and terrestrial habitats, sensitive urban water management will need to be addressed. The key objectives of integrated urban water management for the DSP area will be to:

- Minimise total water use across the DSP area;
- Manage groundwater levels to protect infrastructure and assets; and
- Protect environmental values of receiving water bodies.

In accordance with the *Better Urban Water Management* policy, the preparation of urban water management plans will be required to manage water quality impacts from urban development. As a priority a District Water Management Strategy should be prepared following finalisation of the DSP, to identify district level drainage flows and the principles and targets for managing urban water at the local structure planning stage. The DSP has been designed to be robust enough to accommodate any changes that may be required as a result of these investigations.

Local Water Management Plans will be required at local structure planning stage. Water sensitive urban design techniques, such as the use of drainage swales and compensation basins in public open space areas, should be utilised. In this regard, there would be a presumption against fenced drainage sumps for any subdivisions within the study area. Where possible, the use of foreshore areas for drainage should be avoided.

### 5.7.2 Flood Risk Management

The Shire of Esperance LPS highlights the occurrence of recent localised flooding activity, which was experienced along a number of waterways including Bandy Creek. Studies have since shown that groundwater levels are rising as are the levels of the lakes, and detailed technical studies will be required to map flood-prone areas where it may be inappropriate to construct buildings or significant infrastructure.

### 5.7.3 Water Quality

The requirement to maintain the water quality of Bandy Creek, which is a habitat for a rare freshwater fish species, and the harbour is an important consideration in the management of urban stormwater. It may be necessary to restrict/retard urban run-off into the creek and harbour from proposed urban areas which would otherwise naturally drain into the Bandy Creek catchment.

Retarding basins with artificial wetlands would be required upstream of flow into Bandy Creek to delay intense run-off and filter the quality of urban run-off from development. This would reduce the impacts on water quality and bank-scouring from high flows. It would also minimise the impact of urban development on the harbour and conservation reserves along the coast.

Development can manage the water cycle by including or implementing the following water sensitive urban design measures:

- Swale and bio-retention systems;
- On-site infiltration/porous pavements;
- Conveyance and non-conveyance bio-retention systems;
- Filter/buffer strips; and
- Reticulated non-drinking water system.

#### 5.7.4 Biodiversity

It is clear from existing documentation that there are three key issues to be considered in relation to conservation of bushland and wetlands within the DSP area:

- i. Retention of important bushland and wetland remnants because of their intrinsic environmental, cultural and aesthetic values.
- ii. Ensuring connectivity between remnant areas of bushland and wetland so that the conservation values of the various areas are maximised by facilitating migration, nomadism and gene flow of the animal and plant populations.
- iii. Identification of foreshore reserves to manage the use and impacts of access on Bandy Creek and the coast.

Detailed flora and fauna surveys will be required at local structure planning stage to ascertain the species distribution and compositions, and the occurrence and levels of significant flora and fauna. The outcomes of these surveys will determine whether any special conservation measures need to be established in the DSP area. Further, subdivisions should be designed around significant stands of vegetation to maintain their value and integrity.

The following items will need to be addressed at the local structure planning stage in order to protect the environmental values of the area:

- Additional investigations into the adequacy of the Bandy Creek foreshore reserve given significant alternations of the water body due to recent flooding events.
- Maintaining and improving water quality of Bandy Creek and the harbour as a habitat for potentially rare and endangered species.
- Development adjacent to the creek and coast will require adequate foreshore reserves and setbacks to be identified and foreshore management plans prepared by individual proponents.
- Ensuring adequate and appropriate buffer development to the Esperance Lakes wetland system to the north.
- The need to extend and connect the reticulated sewer front to future urban development around the boat harbour.
- Development of a vehicular creek crossing will need to ensure there is minimal impact on the creek's hydrology and environmental quality.
- The clearing of some native vegetation will be necessary to ensure an efficient spatial layout of urban development, however areas of priority for vegetation protection should be identified at the local structure planning stage and included in the foreshore reserves and linear parks where possible.
- Areas of high visual amenity adjacent to the beach and Bandy Creek foreshore should be identified in foreshore management plans and incorporated into the foreshore reserve.

The DSP recommends appropriate interface treatments between areas of environmental significance and adjoining urban development, and promotes the achievement of a balance between environmental protection and the scenic opportunity created by the area. Public roads should be used to delineate urban development from conservation and environmental protection areas such as foreshore reserves, nature reserves and National Parks. Where areas of high environmental value have been identified, the Department of Environment and Conservation will require adequate setbacks and buffers to be identified. Very low density development would be an appropriate interface to the Esperance Lakes system.

#### 5.7.5 Acid Sulphate Soils

Proposals for future development will need to satisfy that any acid sulphate risk due to earth moving and construction will be appropriately managed. While the protocols for appropriate management would be administered by the Department of Environment and Conservation (DEC), consideration of the impacts of excavation required for subdivision works will be necessary, particularly in the event that canal development is proposed.

## 5.8 Movement Network

### 5.8.1 Roads

Given the current low scale of development in the area, the existing road network presently meets the requirements of the area. However, as the boat harbour and adjacent residential areas are developed, connectivity to both sides of the harbour will become increasingly important. Significant population increases and growth in industrial activities in the future will require a number of improvements to the existing road network to ensure the safe movement of both heavy and light vehicle traffic around and throughout the site.

In the DSP area the public road network is intended to:

- Be of sufficient capacity to cater for anticipated travel demand, except where capacity is deliberately constrained through traffic calming and road design, such as at the approaches to the proposed creek crossing and the crossing itself;
- Be highly interconnected, reflecting a grid pattern;
- Respect local landscape features such as topography and waterways;
- Create a coastal drive linking the eastern side of the boat harbour with tourist nodes and areas of high scenic amenity along the coast;
- Be of sufficient width to incorporate water sensitive urban design, pedestrian and cyclist paths, and on-road car parking and street tree planting, where appropriate;
- Cater for and integrate pedestrian and cyclist facilities; and
- Facilitate active streetscapes and casual surveillance of public parks.

#### 5.8.1.1 Road Hierarchy

Based on a traffic modelling exercise undertaken for both the optimum and conservative scenarios, a road hierarchy has been developed. This hierarchy has been developed conservatively assuming for no canal development (which would reduce lot yield and therefore traffic numbers). This is a robust approach, which accommodates a slightly higher overall traffic generation. The width and designation of each of the major link roads are defined based on anticipated traffic load and the role of each road.

The conceptual road hierarchy provides for the following:

Road name and classification	Role	Indicative section
<b>Fisheries Rd</b> Road to be upgraded to Integrator Arterial A type.	Traffic modelling undertaken indicates that the traffic volumes on Fisheries Road can be expected to increase by approximately 13,000 (low scenario) – 21,000 (high scenario) vehicles a day.	Typical road reserve could be a 32.6m incorporating two 8.2m carriageways, a 5.1m verge including bike lane on either side and a 6m median.
<b>Bandy Creek Road</b> Road to be upgraded to Integrator Arterial B type.	Provides access to the eastern side of the harbour. Signage from Fisheries Road, and design and streetscaping should be consistent with its role as the main boulevard to the harbour, and access to the proposed coastal drive to the east, and Wylie Bay.  Proposed to be realigned to provide a legible connection to the coastal drive and defined edge to the boundary of harbour land and adjacent residential uses.  Adjacent to neighbourhood centre and therefore expected high pedestrian/cyclist usage.	Typical road reserve to include two 7.5m carriageways with on-street parking and bike lane, 6m median and 4.1m verge on either side allowing for shared paths on both sides and retail frontage where applicable.

<p><b>New Integrator Arterial B road</b></p>	<p>Forms the main east-west connection for new neighbourhoods east of Bandy Creek Road and is a key linkage to the Business Park and secondary Neighbourhood Centre. Road design and capacity to reflect its role as a key linkage</p> <p>Provides a more direct route to Fisheries Road and therefore likely to be used by commuters from the east accessing major employment nodes in the Town Centre and industrial areas to the west.</p>	<p>Typical reserve of 29.2m which would include two 7.5m carriageways, a 6m median and 4.1m verge on each side.</p>
<p><b>Daw Drive</b> Neighbourhood Connector A</p>	<p>Main boulevard to the western side of the harbour from Goldfields Road.</p> <p>Provides access to creek crossing.</p> <p>A review of the Flinders ODP is required to realign Daw Drive so that it reflects its role as a boulevard and entry to the western side of the boat harbour. Appropriate traffic calming and landscaping to be used to slow traffic through built up areas and towards the proposed creek crossing.</p>	<p>Typical road reserve width of two 7.1m carriageways incorporating on-street bike lane, median plus shared path on both sides</p> <p>Creek crossing road width can be reduced to 10m to include two 3.5m carriageways and a shared path on one side. Bridge and road design to be determined based on detailed environmental and engineering assessment.</p>
<p><b>Coastal Drive</b> Neighbourhood Connector B</p>	<p>Scenic coastal route connecting coastal attractions and nodes. A continuous coastal route for tourists is created from the eastern side of the boat harbour, via Bandy Creek Road, through to Wylie Bay.</p> <p>Traffic volumes on this road are expected to be low. Points of high scenic amenity should be identified and appropriate stopping places provided for.</p>	<p>Typical road reserve width of 19.4m. On street parking to be provided near proposed Neighbourhood Centre and adjacent to residential areas, and future recreation areas. Reserve to include a dual use path adjacent to or incorporated into the coastal foreshore reserve, and is to run along the length of the road.</p>
<p><b>Proposed Neighbourhood Connector A through the Nature Reserve connecting with Merivale Rd and the proposed Coastal Drive to the south.</b></p>	<p>This road forms the north south spine for the eastern side of the DSP area. It is an important tourist route connecting tourist attractions on Merivale Road with Wylie Head to the south (via proposed Neighbourhood Connector B).</p> <p>Road design and location to create a defined edge between the proposed Business Park and adjacent residential development.</p> <p>Road alignment, reserve and landscaping to respond to sensitive environmental areas. Green corridors may be located adjacent to the road.</p>	<p>Typical road reserve width of two 7.1m carriageways, median plus shared path on both sides. May incorporate on-street bike lane where dual use path is not provided as part of adjacent green corridor. ,</p>
<p><b>Proposed Neighbourhood Connector B linking Wylie Head with proposed Neighbourhood Connector A to the north.</b></p>	<p>Forms part of the tourist road network linking Merivale Road (and coastal attractions) with Wylie Head. Landscaping of the road verge and vegetation buffers should be used to screen the landfill site and wastewater treatment plant site from the road.</p>	<p>Typical road reserve width of 19.4m. On street parking may not be necessary through the sections adjacent to the landfill and wastewater treatment plant. Reserve to include a dual use path incorporated into the vegetated buffer and/or greenway corridor to run along the length of the road.</p>

### 5.8.1.2 Creek Crossing

The DSP identifies a light vehicle creek crossing in the vicinity of the proposed pedestrian causeway, with the intent that traffic is directed from the west to meet Bandy Creek Road north of the harbourside neighbourhood centre.

The positioning, design and width of the crossing will require detailed environmental and engineering investigations to be undertaken in the finalisation of the Boat Harbour Concept Plan, due to the environmental sensitivity of the Creek and flood management requirements. Should adjacent local structure planning proceed ahead of development of the boat harbour, detailed design of the creek crossing will be the responsibility of the relevant proponent.

Although the creek crossing will improve connectivity between the eastern and western sides of the harbour, and provide benefits in terms of legibility and land use activation, the potential for „rat running“ must also be considered and planning for.

To reduce the potential for the creek crossing and Daw Drive to be used as a rat run route, the DSP:

- Provides sufficient capacity on higher order routes (Bandy Creek Road and the new Integrator Arterial B road) to reduce incentive to rat run;
- Prioritises Bandy Creek Road as the main gateway to the boat harbour;
- Prioritises the new Integrator Arterial B road as the primary route for north and west bound traffic;
- Recommends that heavy vehicle access be restricted, over the crossing; and
- Recommends the use of appropriate landscaping and road treatments to create a low speed environment through the possible rat run route.

### 5.8.1.3 Intersection Treatments

The road hierarchy provides for an entry statement development at the intersection of Fisheries Road and Bandy Creek Road. Based on the projected traffic volumes, road reserve and surrounding land uses, a roundabout is considered appropriate for this intersection. This is subject to detailed analysis, which would need to be undertaken as part of local structure planning.

Other intersections within the DSP area should be cognisant of the proposed road hierarchy and provide priority to key movements such as along Bandy Creek Road and the east-west Integrator Arterial B. Intersection design must also take into account the high level of boating-related traffic. In addition, suitable intersection treatments should be provided in the immediate vicinity of retail centres and schools to encourage safe pedestrian and cyclist traffic.

### 5.8.1.4 Subdivisional Roads

The subdivisional roads within the various neighbourhoods and precincts are not defined under the District Structure Plan. Their locations will be determined at the detailed planning stage of the development and will need to comply with Liveable Neighbourhoods and other relevant WAPC and Shire of Esperance policy.

## 5.8.2 Walking and Cycling

Walking and cycling will be an important transport mode in the DSP area, particularly given the emphasis on recreation and tourism due to the boat harbour and coastal location. The DSP demonstrates the principle of linking high pedestrian traffic areas such as the coast, major parklands and reserves, centres, schools, recreation and tourist nodes. Additional work will be required to identify appropriate routes to take advantage of open space corridors and other opportunities including the incorporation of Indigenous cultural elements. These opportunities will become evident as more detailed planning proceeds.

Providing legible and safe pedestrian connections around the harbour and foreshore will be critical. The coastal dual use path should be continued from the Flinders ODP to the eastern side of the harbour via the pedestrian causeway. The path should be continued along the coastal foreshore to the eastern

part of the DSP area. Also important will be recognising the need for safe routes to schools, retail and recreational facilities.

### 5.8.3 Bridle Paths

It is preferable for the creek crossings (both the current causeway and/or any future vehicular crossing) to be able to be used for horse access. Bridle trails can be incorporated into the public open space corridors that link neighbourhoods to the coast.

In order to minimise conflicts with other beach users, beach areas adjacent to intensified residential and tourism activities should not be accessible to horses. The proposed aquaculture precinct or the landfill site may be appropriate locations for a designated horse beach area. Consultation with the racecourse, the Esperance Pleasure Riders Club and the local horse-riding community should be undertaken to determine the preferred location. This consultation needs to occur as coastal Foreshore Management Plans are prepared for the various coastal land parcels in the DSP area.

## 5.9 Infrastructure

The infrastructure component of a potential development is capital intensive and therefore it is a significant consideration in the development of a DSP. The determination of an economically feasible implementation strategy is relevant to infrastructure planning.

The provision of infrastructure for future development in the study area will be considered on an as-needs basis by the relevant provider. However, the extension of services should also be considered from the perspective of providing the services via the most logical routes to ensure the extensions are sustainable. The Flinders Estate acts as the current edge of the urban front of the study area, therefore the logical extension for service infrastructure will be eastwards. Bandy Creek Road and the Neighbourhood Connector proposed in the vicinity of the existing Wylie Bay Road will provide the infrastructure corridor to the east of the Harbour. It is acknowledged that development adjacent to the Harbour will occur first, and this can be serviced via extensions to the existing infrastructure network currently servicing the Harbour.

Future planning decisions will determine the level of additional services required. Proposals for rezoning and detailed planning will need to provide more information about the additional services required and the implications of this.

### 5.9.1 Water

Esperance's town public water supply wellfield draws water from an extensive unconfined aquifer underlying the town and extending westwards for at least 25 km. At current levels of abstraction, widespread permanent water table declines are unlikely, as long as the average annual abstraction remains less than the average annual recharge.

Abstraction of water for public water supplies is the primary use of groundwater in the Esperance Groundwater Area. The Water Corporation abstracts approximately 2,200,000 kL/yr of groundwater from the superficial aquifer for scheme water supply and plans to increase abstraction in the future to sustain projected urban growth. The increased draw would be gradually taken from new bores to the west of Esperance thus relieving the stress on the area near the town where water quality is a concern.

Across the Esperance Region's four groundwater sub-areas, a total allocation limit of 6,800,000 kL/yr has been established. This figure is less than a quarter of the estimated recharge volumes across the total groundwater area. Accordingly, any increase in WaterCorp's abstraction from their current quantities can be accommodated without impact on the sustainability of the region's water supply.

The majority of the DSP area is not currently serviced by reticulated water. Extension of the existing services from the Flinders ODP via the Bandy Creek weir or Bandy Creek Road will be necessary. In new areas services will be located within road reserves.

Expanded services into the areas designated for additional development in the DSP will need to be planned in conjunction with the Water Corporation. The Corporation's approach is to plan and budget works on a five year program that enables it to provide services to new fronts of development. Should the development fronts materialise in advance of the Water Corporation's planning and budgets, the



developer will be responsible for pre-funding any major upgrade of the existing Water Corporation's system. The pre-funding is then returned to the developer at the time when the works are budgeted for in the Corporation's capital works budget.

A total water cycle management approach is promoted by the Water Corporation, with the aim of reducing potable water demand, which would include water sensitive urban design principles and the reuse of wastewater wherever possible. Appropriate responses will need to be identified in Local Water Management Plans.

## 5.9.2 Wastewater

The Water Corporation anticipates that the town's current sewerage treatment plant has sufficient capacity, with the construction of infiltration ponds at its Wylie Bay site, to process wastewater for the next 9-10 years if the growth rate within Esperance townsite remains at around 2% per annum. The construction of an additional treatment plant at Wylie Bay can accommodate additional future requirements, and is expected to commence some time in 2011.

The DSP area is located outside the existing sewerage catchment. The existing mains that connects the Wylie Bay treatment facility to the Brazier Street facility along Wylie Bay Road provides an opportunity for an efficient connection to extend the sewerage catchment to service the majority of the DSP area.

Similar to water supply, wastewater or deep sewerage, systems are best handled along moving development fronts. Given the DSP area has undulating topography, a number of pumping stations and pressure mains are likely to be required.

As with water supply, any major infrastructure development ahead of the Water Corporation's capital program will place financial responsibility on the developers in the form of pre-funding obligations.

## 5.9.3 Power

The power distribution system throughout the DSP area will need upgrading to provide adequate power services. Initial consultation with Horizon Power indicated that there are currently no plans to extend power infrastructure to the DSP area. Horizon Power advised that there are existing feeder lines to service the Bandy Creek Harbour via Daw Drive (feeder cable 11,000 volt system), and that this can service any future development associated with the boat harbour precinct. A 33,000 volt rural feeder system along Fisheries Road from the north can be extended down Bandy Creek Road to service future development east of Bandy Creek. Engineering studies to identify specific infrastructure requirements and upgrades will be required, and in particular additional sub-stations will be necessary. As with other services, to properly stage and implement the work forward planning is needed so that the DSP area provides for economically sustainable development.

To meet current standards in residential and commercial development, the minimum requirements will mean that the supply including high voltage feeders will need to be put underground, grids established throughout the area to provide security of supply, and a number of major sub-stations located to facilitate the work.

Under current Horizon Power policies, developers are responsible for the design and implementation of power reticulation throughout developments but Horizon Power maintains responsibility for the provision of adequate power. Based on this policy, Western Power can levy significant headworks charges to upgrade works.

## 6 Implementation

### 6.1 Planning Process

The first step in implementation of the Bandy Creek DSP will be its endorsement as a guide for future development of the subject area by the Department of Planning and the Shire of Esperance. Implementation will occur through the preparation of local structure plans for all relevant land parcels as proponents are ready to proceed with this detailed level of planning. This will include the preparation of a structure plan for the boat harbour precinct by the Department of Transport.

Local structure plans (or outline development plans) will need to be prepared in accordance with the relevant requirements of the WAPC and the Shire of Esperance Local Planning Scheme No.23. Following endorsement of local structure plans, and finalisation of any concurrent rezoning, subdivision and development of land subject to structure planning may proceed. Section 6.4 below outlines the additional plans and technical studies that will need to accompany structure plans, applications for rezoning, subdivision applications and development proposals for any land within the DSP area.

### 6.2 Staging

The DSP provides a robust planning framework, and does not specify timeframes for the development of any part of the DSP area, given the range of parameters that can affect the timing of development.

Growth in the area would best be facilitated on a moving development front and this is likely to be determined by infrastructure costs. This front is likely to flow from the west via the Flinders ODP area. It is expected that Bandy Creek Road becomes the initial service corridor.

Proposals to amend the Shire's Town Planning Scheme to facilitate urban development will need to demonstrate that the proposed rezoning is both timely in terms of maintaining an adequate residential land supply and appropriate in terms of proximity to available infrastructure. Given existing pressures for development of land immediately surrounding the boat harbour, it is acknowledged that these areas are likely to be developed first in the short to medium term. Development further east will occur in the longer term, and it is reasonably unlikely that this will occur within the next 20 years. The timeframe for this development will depend on population and economic growth in the Shire generally, and commercial viability in the context of existing and short term land supply.

### 6.3 Implementation Costs

Infrastructure often serves land beyond the boundaries of any particular lot proposed to be subdivided or developed. It is common practice for the costs associated with this common infrastructure to be equitably shared between landowners. Such common infrastructure items include the land required for government school sites, district-level drainage, major roads and traffic control devices and land for conservation purposes. The cost of planning, environmental and engineering investigations can also be considered as common costs and be shared between landowners. It should be noted that generally, public open space is dealt with through the subdivision process.

The proposed Shire of Esperance Local Planning Scheme No. 23 sets up a framework to permit the sharing of the cost of common non-standard infrastructure items between developing landowners, through the establishment of Development Contribution Areas and the preparation of Development Contribution Plans. These areas and plans will generally correlate with an area which is proposed for subdivision and development through structure planning.

Scheme amendments to facilitate subdivision and development at Bandy Creek will therefore need to incorporate two separate but interrelated elements:

1. A rezoning from the current zone to an appropriate development zone, requiring the preparation of a local structure plan (Outline Development Plan); and
2. The establishment of a Development Contribution Area, setting out the common infrastructure works and costs for which development contributions will be collected, as detailed within a Development Contribution Plan.

Various infrastructure items are likely to be included within the contribution arrangement for the Bandy Creek area, including upgrades to district roads, in particular Bandy Creek Road and its intersection with Fisheries Road, the provision of a general traffic crossing/bridge over Bandy Creek, dual-use paths and district level drainage infrastructure. Costs will tend to be shared based on a direct link between demand generated and the infrastructure required. For example, if the vehicular creek crossing is required to be extended or heightened beyond the standard required to simply bridge Bandy Creek, due to demand from an adjacent landowner for waterway access to the harbour water body, the additional costs involved to provide this non-standard item will be the responsibility of the relevant proponent.

Local governments also have the ability to establish a separate rate for a specific area of their jurisdiction that has unique considerations and requirements. Such a rate would apply to all land in the identified area based on land value, and not related to timing of development. A differential rate may, for instance, be considered for any private land that benefits from access to the boat harbour precinct.

## 6.4 Key Recommendations

To ensure successful development of the Bandy Creek area in accordance with the principles of the District Structure Plan, the following actions and further studies/plans items need to be addressed following adoption of the DSP.

### Recommended Actions

- Department of Planning to coordinate preparation of a District Water Management Strategy following finalisation of the DSP.
- Department of Transport to finalise a structure plan for the boat harbour, which sets the framework for the development of Bandy Creek Boat Harbour into a mixed use waterfront precinct with a distinct tourist and recreation/leisure theme, with the principles of the DSP informing the development of this plan.
- Shire of Esperance to review the Flinders ODP so that Daw Drive is realigned to provide a more legible access boulevard and vista to the boat harbour.
- Undertake the necessary environmental and engineering studies to determine an appropriate design and treatment for the vehicular creek crossing.
- Identify options for relocation and redevelopment of the town's landfill site and/or on site management to limit off site impacts.

### Further Studies/Plans Required

Landowners (including government agencies) wishing to develop land have a responsibility to coordinate planning with adjoining landowners, in particular to address issues relating to interface, connectivity and cumulative environmental impacts. This would be particularly the case with any proposals for canal development and/or expansion of the boat harbour.

Joint ventures or arrangements with other landowners may be used to facilitate preparation of comprehensive plans for development, cost sharing, co-ordinated neighbourhoods, drainage management and open space.

Specifically, the following plans/strategies/information are required at local structure planning stage:

- Local Water Management Strategy
- Flora and Fauna assessment and Landscape Management Plan
- Aboriginal Heritage assessment and Management Plan
- Floodplain Mapping
- Coastal Foreshore Management Plan (including setback assessment)
- Acid Sulphate Soils assessment and Management Plan
- Retail/ Commercial Feasibility Review and Strategy

- Traffic and Transport Study
- Review of infrastructure servicing requirements and availability
- Development Contribution Area establishment and Development Contribution Plan

Local government also has a crucial role in the co-ordination of planning and equitable cost sharing across the study area during implementation of the DSP.

