

Pilbara's Port City Growth Plan



A vision for a nationally significant regional city



PILBARACITIES
DEVELOPING THE FUTURE



Department of
Planning



Town of Port Hedland

Kelly Howlett - Mayor

Paul Martin - Chief Executive Officer

Eber Butron - Director Planning and Development

Russell Dyer - Director Engineering Services

Gordon MacMile - Director Community Development

Steering Group

Paul Martin/Eber Butron - Town of Port Hedland

Chris Adams/Paul Trottman - Office of Pilbara Cities

Matt Read - LandCorp

Phil Woodward - Department of Planning

Consultant Team

Town Planning and Urban Design - RPS (in association with APP Corporation and Dr Fiona McKenzie)

Economic Development - AEC Group

Property - AEC Group

Landscape Architecture - RPS (in association with UDLA)

Civil Engineering - Wood and Grieve

Environment - RPS

Indigenous and Non-Indigenous Heritage - RPS

Stakeholder and Community Engagement - Worley Parsons

Traffic and Transport - AECOM

Sustainability - Parsons Brinckerhoff

With additional input from:

Community Development and Place Making - FORM

3D Images - LandCorp/Last Pixel

ALL ENQUIRIES TO:

TOWN OF PORT HEDLAND
CIVIC CENTRE, MCGREGOR STREET

PO BOX 41
PORT HEDLAND WA 6721

T: (08) 9155 9300
E: council@porthedland.wa.gov.au

VERSION/CONTROL	REVISIONS	DATE
DRAFT A	Preliminary Draft for Council Review	10/8/11
DRAFT B	Final Draft for Council Endorsement (for consent to advertise)	09/9/11
DRAFT C	Final Draft for Advertising	11/10/11
DRAFT D	Post-Advertising Final Draft	02/02/12
DRAFT E	Final Draft for Council Endorsement	28/02/12
DRAFT F	Final Draft for Council Endorsement (V2)	15/03/12
FINAL A	Final for WAPC Endorsement	05/10/12
FINAL B	Final for WAPC Endorsement (V2)	17/12/12

ADVERTISING

The Town of Port Hedland Local Planning Strategy certified for advertising on 27 September 2011.

Signed for and on behalf of the Western Australian Planning Commission

an officer of the Commission duly authorised by the Commission (pursuant to the Planning and Development Act 2005)

27 DEC 2012

Date

ADOPTED

The Town of Port Hedland hereby adopts the Local Planning Strategy, at the Ordinary meeting of the Council held on the 23RD day of 20 MAY, 2012

MAYOR

CHIEF EXECUTIVE OFFICER

ENDORSEMENT

Endorsed by the Western Australian Planning Commission on 5 July 2012.

an officer of the Commission duly authorised by the Commission (pursuant to the Planning and Development Act 2005)

27 DEC 2012

Date



MAYOR'S FOREWORD

The Town of Port Hedland and lead consultants RPS have been working hard and collaborating with industry, business and community to create this document—Pilbara's Port City Growth Plan. This document provides a framework towards achieving Council's vision of transforming Hedland into Pilbara's Port City of 50,000 people. Our City will boast an attractive and vibrant CBD areas with public open spaces, cafes, restaurants, boutiques, offices and residential dwellings. Our Spoilbank Marina will be the highlight of our rugged and picturesque coastline – the marina will include the world's best entertainment, recreation and tourist facilities including boat pens, boardwalk with cafes, fishing and bait stores as well as areas for parks, public swimming and environmental interpretative

opportunities.

Council understands that one of the biggest issues facing Hedland is the lack of accommodation and housing and the rising cost of living. Pilbara's Port City Growth Plan will assist Council in finding solutions to these problems to ensure our City becomes an attractive and sustainable place for families to live in. Since the City Growth Plan forums, short and medium-term solutions have already been identified and implemented – marking a positive direction forwards for Council and Hedland.

Over the next 24 years, Council will work with partners including Federal and State Government, industry, local businesses and community to achieve our vision of transforming from a regional town which is an important export hub, to Pilbara's Port City – a nationally significant friendly City boasting a population of 50,000 and some of the world's best infrastructure, community spirit and our unique North-West coastal lifestyle. Pilbara's Port City - where parents can raise their children, young people can come and make their mark, grandparents can enjoy times with their grandchildren and long term residents chose to retire and live locally.

To each and every one of you it is your involvement, the completion of significant infrastructure projects, the working together as a team and your continued support that will ensure Port Hedland – Pilbara's Port City achieves our vision and is one of the top cities to live in by 2035.

Kelly Howlett

Mayor, Town of Port Hedland



CEO'S FOREWORD

Our vision is clear – by 2035 Port Hedland will be Pilbara's Port City, a nationally significant friendly City where people want to live and are proud to call home.

Pilbara's Port City Growth Plan will help us achieve this vision – it will be Council's key strategic document which will outline key focus themes that are significant to the growth of Port Hedland into a regional City.

The Growth Plan takes into consideration previous strategies, plans and consultations including last year's Pilbara Placemaking Series by FORM, the Town of Port Hedland Land Use Master Plan (LUMP) and the Town's Strategic Plan 2010-15. There will be two parts to the Growth Plan: a visioning document and an implementation plan which will draw upon the visioning document.

The Growth Plan will be a detailed document addressing underlying social, economic and environmental issues in a defined area to achieve a 'sustainable city', including increasing economic diversity, private and public sector investment and improved infrastructure co-ordination. Projects need to be delivery focused, and where necessary, delivered through partnerships; and outcomes and benefits will reflect the community's vision for the area and enable stakeholders to coordinate their plans and programs with our vision to achieve an integrated approach to implementation.

The Pilbara's Port City Growth Plan has undergone extensive background work to enable it to reach its current stage. The project has a steering group comprised of the Town of Port Hedland, Pilbara Cities, Department of Planning and LandCorp. A stakeholder reference group has also been formed involving representatives from government, resources, small business and community groups.

Pilbara's Port City Growth Plan has involved extensive consultation with the broader community to incorporate their vision and ideas for the direction and growth of Port Hedland into a City they want to call home. The Town of Port Hedland and their consultants have undertaken a series of focus groups and workshops on a variety of identified themes, followed by a two day forum finalising key points and ideas gained from the consultation.

The Growth Plan also focuses on improving the community in which we live in – this includes providing more facilities and amenities, introducing new community initiatives, supporting community groups and not-for-profit organisations and ensuring all the needs of members of the community are continually addressed to a satisfactory level. Community is the cornerstone of any place and is one of the key foundations to building an attractive City.

I am looking forward to working with our stakeholders, partners and the community in achieving our vision for Hedland and I believe this document is key to ensuring we address all issues which arise on our journey to becoming Pilbara's Port City.

Paul Martin

Chief Executive Officer, Town of Port Hedland

*“A nationally
significant,
friendly, City,
where people
want to live and
are proud to call
home”.*





“The Port Hedland economy has grown 61.3% over the last 3 years.”

EXECUTIVE SUMMARY

Western Australia's Pilbara Region, and Port Hedland particularly, have grown to become the economic might of the Australian economy on the back of an internationally significant resource industry. Port Hedland is already the largest bulk commodity port in Australia. Total expansion of the port is expected to increase to a capacity of 895 million tonnes per annum (mtpa) - an impressive 400% increase from today. In 2010/11, the Port Hedland Port Authority exported \$40b worth of exports (199 million tonnes).

Despite this, national and state level re-investment in Port Hedland since the 1960's has not been at a nationally significant level. The resulting growth pressures are acknowledged in the *Western Australian Planning Commission's Pilbara Planning & Infrastructure Framework (2011)*, where severe infrastructure shortages, high living costs, demand for amenity improvement and housing affordability are all identified as major constraints to Port Hedland's sustained growth and development as a Pilbara City.

The Pilbara Planning and Infrastructure Framework provides a blueprint for the long term growth and sustainable development of the Pilbara Region, and identifies both Port Hedland and Karratha as Regional Cities of 50,000 people by 2035.

What is Pilbara's Port City Growth Plan?

Pilbara's Port City Growth Plan ('the Growth Plan') provides a high level strategic blueprint to facilitate the sustained growth of Port Hedland into Pilbara's Port City with a population of 50,000 people. It is being driven by the need to modernise and transform Pilbara towns to support long term economic activity in the region, improve the quality of life for existing residents and to attract and retain new residents. The Growth Plan builds on many of the aspirational themes of previous Port Hedland plans which have sought to guide the future structure and form of growth. It incorporates all land within the municipality of Port Hedland, with primary focus on the settlement areas of South and Port Hedland.

The Growth Plan provides guidance on:

- How we will provide for significant population growth, create local employment and investment and diversify the economy;
- How our city will reflect cultural and landscape values through development of community and sense of place;
- Where will urban and industrial growth be located and what forms of land use, transport and activity centres will support this;
- How Pilbara's Port City will relate to its landscape, protect natural environmental assets and respond to the challenges of climate change; and
- What infrastructure will be necessary to support the growth of Pilbara's Port City.

The Growth Plan has been prepared alongside a second document, Pilbara's Port City Implementation Plan ('the Implementation Plan'). Among other things, the Implementation Plan will provide details on the actions required to 'de-constrain' land in the precincts identified, prioritisation (timing) of those activities, as well as the broad roles and responsibilities of the key stakeholders involved in ensuring a timely delivery of the projects and programs.

What kind of city will Pilbara’s Port City be?

Pilbara’s Port City Growth Plan is based on the vision that:

“A nationally significant, friendly city, where people want to live and are proud to call home”.

The vision is supported by 5 core themes that have informed the Growth Plan’s preparation:

- 1. **Sustained and Diversified Economic Growth** – providing opportunities for regional and local employment generation to address the gaps in employment outcomes within the community and providing the right conditions for robust economic growth to occur across a range of industries.
- 2. **Strengthening Local Communities & Culture** – fostering the development of safe, friendly and inclusive communities that call Port Hedland home. Providing places and space that reflect and enhance the unique character, indigenous and non-indigenous heritage and identity of the area. Building resilience within the community and providing services and facilities for a range of diverse community needs and interests, so as to reduce disadvantage and improve social cohesion.
- 3. **Housing Diversity & Land Supply Capacity** – providing an orderly and adequate supply of affordable land along with increased choice in affordable housing products and tenure options to cater for a diverse and permanent population.
- 4. **Environmental Protection and Change Adaptation** – the protection and enhancement of natural environmental and cultural assets, biodiversity, air and water quality, and building resilience against the long term effects of climate change.
- 5. **Building & Maintaining Infrastructure Capacity** – strategic and urban transport, utilities and communications infrastructure are provided in a timely, sustainable and efficient manner to cater for a growing resident population and increasing economic activity.

Why are we preparing the City Growth Plan?

Port Hedland has a Gross Regional Product of \$3.3b and comprises 1.8% of the Western Australian economy. The Port Hedland economy has grown 61.3% over the last 3 years. If we are to provide for the future of Port Hedland, and achieve our vision, Port Hedland will have grown significantly beyond even its current size. From a current estimated total population of 19,216 it will have reached 50,000 people.

Existing growth pressure has already seen average house prices of \$1.12m (March 2011), which is 2.3 times higher than the average Perth house price (\$480,000 – March 2011). Similarly,

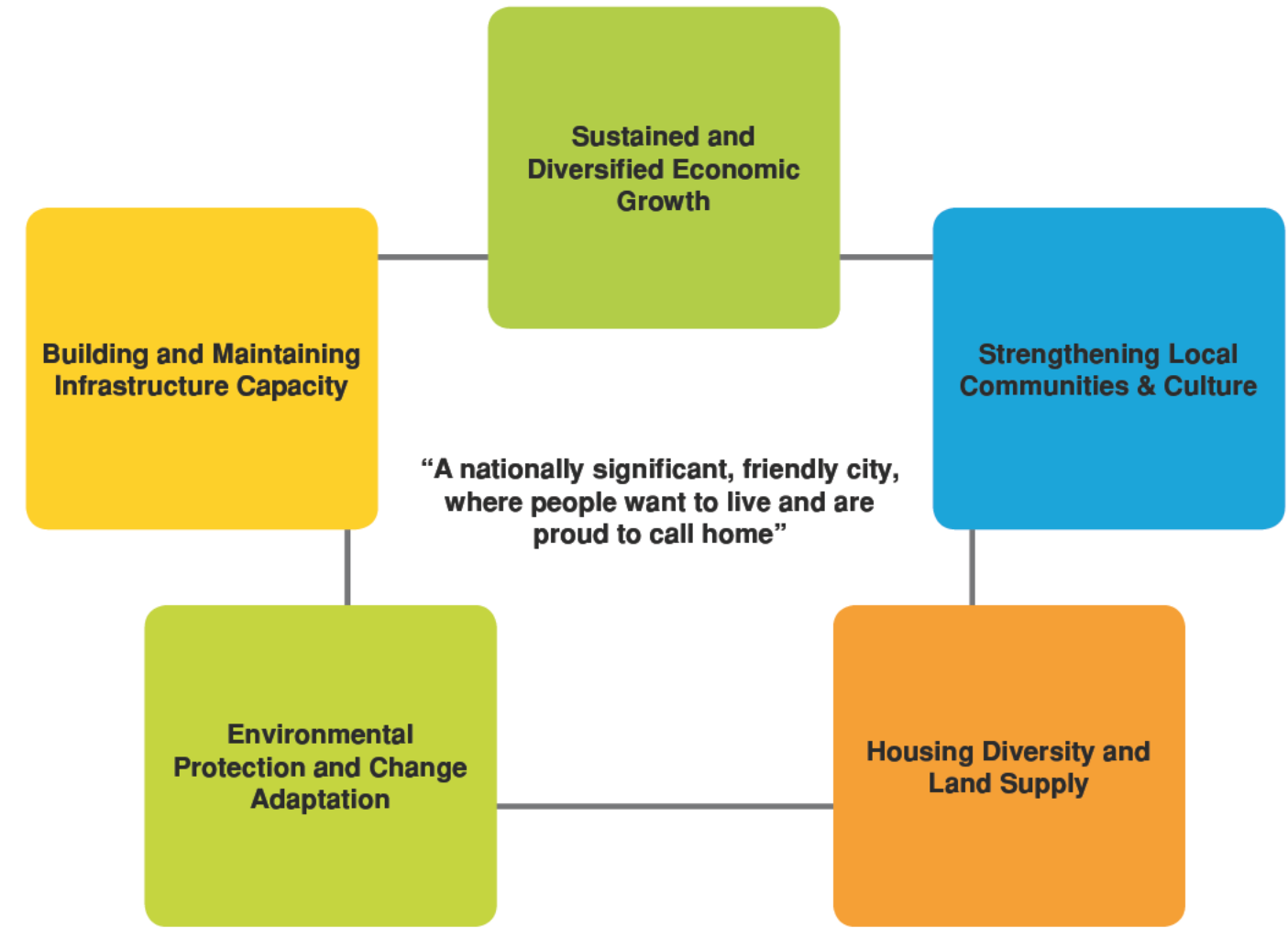


Figure i: City Growth Plan Core Themes

average rental rates are \$1,772 per week (March 2011) some 4.6 times higher than average rental rates in Perth (\$380 per week – March 2011). Median house prices have already increased 14% over the last two years, with rental rates also increasing 14% during that period. The resultant issues of housing affordability and land supply are already highly prevalent and will increase unless a coordinated land release program and accompanying affordability measures are undertaken.

These types of steps must be taken in a coordinated way, though. The principles of 'responsible growth' must be used to ensure the primacy of Port Hedland's port and resource infrastructure is protected and enhanced for the longer term. Similarly environmental attributes and coastal vulnerability must be considered before developing new areas. Infrastructure and transport must be planned to coincide with new urban or industrial land; and most importantly, the strong cultural and landscape values that typify Port Hedland must be captured as the city grows through new community and cultural facilities and programs.

The Growth Plan has also been prepared to satisfy the core

recommendations of the State Government's Port Hedland Dust Taskforce. Among other matters, these require the preparation of a plan which:

- Identifies sites for new development in the entirety of Port Hedland;
- Identifies appropriate locations in the West End of Port Hedland for redevelopment such as additional commercial premises, entertainment complexes and short stay accommodation facilities;
- Prescribes additional planning controls to address amenity issues associated with living in an area with elevated levels of noise and dust.

Preferred Scenario for Growth

The Growth Plan examined several scenarios for growth and adopted an approach most aligned with a 'Rapid City Growth' scenario, which recognises the importance of expansion in both existing urban settlement areas of South and Port Hedland in the

“Pilbara’s Port City Growth Plan identifies land and housing capacity for some 23,000 dwellings and a population of over 54,000 people - providing certainty for city growth confidence in the local housing market”

short and medium term. It recognises that South Hedland will support the City Centre as the primary regional centre, while the East End of Port Hedland will be developed as a high amenity coastal community with a Neighbourhood Centre serving local needs.

The West End will be a commercial/cultural hub recognising the primacy of the Port, while offering entertainment and cultural experiences to residents and visitors. This approach offers the basis for strengthening the connectivity between South and Port Hedland through the early development and expansion of Wedgefield and Airport land. It is based on having a balance of urban infill and immediate new land development.

An important legacy of the Growth Plan will be to provide certainty for all stakeholders as Pilbara’s Port City grows to 50,000 and beyond. The Growth Plan identifies land capacity to accommodate 54,000 people, while also identifying longer term urban land bank requirements for continued growth.

Figure ii below illustrates the spatial distribution of total dwellings under the preferred scenario.

Strategies for Growth

Pilbara's Port City Growth Plan identifies land and housing capacity for some 23,000 new dwellings (allowing also for normalised vacancy rates within the market) and a population of over 54,000 people - providing certainty for city growth and confidence in the local housing market. For the first time, Pilbara's Port City will have clear strategies to map and implement growth across five core themes. Spatially, the Growth Plan identifies 16 Growth Precincts, broadly setting out how land should be used and developed – and protecting the primacy of the Port and resource infrastructure and operations. In addition to non-spatial strategies, these precincts provide the foundations for the following:

- Significant new residential development capacity (in excess of demand for a population of 54,000), including:
 - 23,043 new dwellings (28,577 total including existing stock);
 - 17,440 new dwellings in South Hedland;
 - 5,643 new dwellings in Port Hedland;
 - No additional dwelling capacity in West End.
- Providing housing diversity and housing choice to cater for future growth of both permanent and temporary accommodation;
- Approximately 125,000 sq/m of additional retail/commercial floor space;
- A cultural hub in the West End of Port Hedland and a new retail centre in the East End;
- Delivery of a regional City Centre for South Hedland; and

- Approximately 2,161ha of additional strategic industrial land and 450ha of additional general/light industrial land.

To meet the needs of a growing population, the Growth Plan also identifies a range of strategies and initiatives required to address the core themes. In particular, housing has been identified as by far the most critical impediment to economic growth and a range of strategies have been articulated to address this issue; failure to address this issue in a pro-active and robust fashion could impair all future growth.

Other strategies and initiatives have also been identified to facilitate enhancement of the quality of life for Port Hedland's residents, including the creation of safe, friendly and inclusive

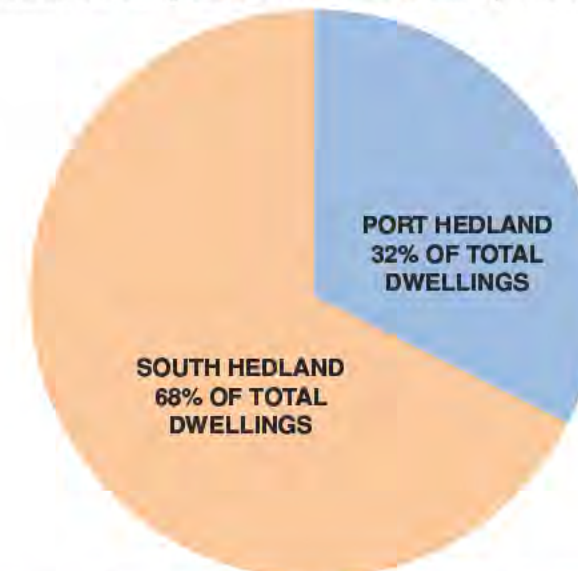


Figure ii: Spatial Distribution of Dwellings under the preferred growth scenario

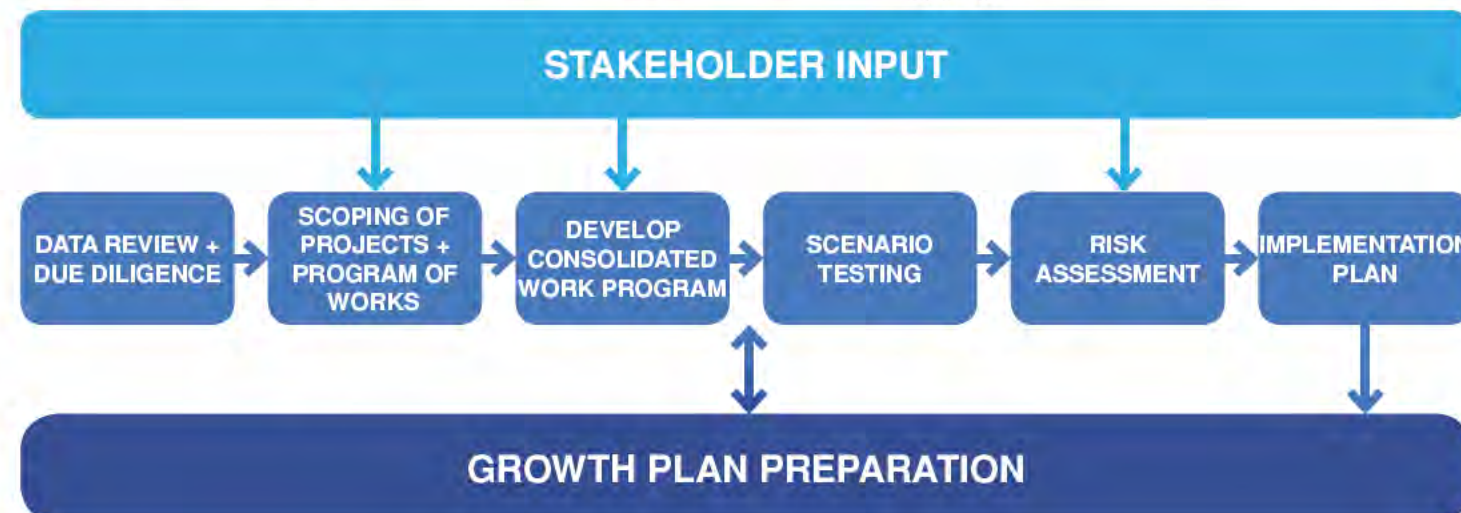


Figure iii: Implementation Plan

communities; expanding job and related opportunities for current and future residents; addressing infrastructure, including public transport, services; and ensuring that current and future developments are built in a manner which respects and preserves the region's indigenous and non-indigenous heritage, and meets the challenges of the climatic conditions and environmental constraints.

Making it Happen. Delivering on the Growth Plan

Supporting the Growth Plan is a separate document entitled Pilbara's Port City Implementation Plan ('the Implementation Plan'). The Implementation Plan sets out programs for the delivery of all recommended work across each of the five core themes – comprising economic, community, environmental, housing/land and infrastructure projects and programs. It will include a broad set of actions, roles and responsibilities, timing, and other information required to inform the delivery plans and programs of project partners.

Delivering the outcomes required to meet the Growth Plan vision will require a 'whole of Government' approach and commitment by many stakeholders across the region and the state – with sustained levels of support and resourcing. Critically, this transformation will need to be led at the local level by a strong and well resourced Local Government, playing a central role in the coordination of activities, investment initiatives and the development of strong and effective delivery partnerships.



Figure iv: Front covers of Growth Plan and Implementation Plan documents.

A vision of Pilbara's Port City



“A place of ‘northern Australian life’, Pilbara’s Port City Centre is a dynamic, accessible and inclusive place that is the heart of the South Hedland community and the major regional centre for the City of 50,000 people. It is an exciting destination for visitors, business people and residents. It has great public spaces, friendly streets, landmark buildings and architecture. There are many visual cues through public art and spaces, and a strong association with indigenous heritage and the natural landscape. Like the many other destinations throughout Pilbara’s Port City, culture and social destinations are woven into the fabric of the City Centre.”





Quality Design

“The East End Urban Village is Port Hedland’s primary residential area. The area, encompassing Cooke Point and Pretty Pool, offers significant housing density and diversity together with sport and recreation opportunities, and school and community facilities. At its core is a retail and mixed use village offering a range of local convenience as well as dining and entertainment choices. Strong links to the coast and mangrove environs have been established offering residents and visitors alike a closer connection with the landscape.”



“The West End is the Port City’s soul – perhaps like Fremantle to Perth, it is a unique and interesting place. It supports the growing port activity, yet remains people friendly and accessible. It is busy with day time workers, many of whom leave their offices to enjoy lunch in outdoor cafes and bars. As evening arrives, the West End transforms into a place popular with tourists observing Australia’s largest tonnage port and the coastline, while travellers and the wider city population enjoy the many cultural, dining and entertainment activities.”



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1.0 INTRODUCTION



1

1.1 PILBARA'S PORT CITY

Western Australia's Pilbara Region and Port Hedland in particular have grown to become the economic might of the Australian economy on the back of an internationally significant resource industry. This resource sector is forecast to expand significantly with continued demand for Australia's natural resources, particularly in China and South-East Asia.

- Port Hedland is Australia's largest bulk commodity port with a total output in 2011 expected to surpass 200 million tonnes.

In 2009/10, Port Hedland exported US \$18.7b of Iron Ore. Iron ore Royalties to the WA Government from the Pilbara were \$1.7b in 2009/10 with royalties forecast to increase to \$3b in 2012/13, an increase of 77% (*Town of Port Hedland, 2011*).

Region	Gross Product (\$b)	Share of Australia
Port Hedland	\$3.3	0.3%
Pilbara SD	\$19.8	1.5%
WA	\$184.4	14.4%
Australia	\$1,283.6	100%

Figure 1.1: Gross Regional Product and Share of National Economy, Port Hedland, 2009/10 (Source: ABS 5206.0 National Accounts and AEC group)

Port Hedland's role is also well established on the national and international stage. It attracts internationally prominent resource companies, and contributes at a nationally recognised level to the broader Australian economy.

While the statistics are revealing, it should be noted that the figures are not a reflection of the actual contribution of Port Hedland to the national economy. Notably, they do not account for the contribution of a region (like Port Hedland) to key economic activities such as exports or Government revenues; they also do not take into consideration the enabling role of key infrastructure in Port Hedland (namely the Port) in facilitating economic activity and value-adding in other parts of the country (i.e. mining located in East Pilbara is almost wholly dependent on access to export infrastructure, services and facilities in Port Hedland).

This notwithstanding, national and state level re-investment in Port Hedland since the 1960's has not been at a nationally significant level. The resulting growth pressures are acknowledged in the *Pilbara Planning & Infrastructure Framework*, where severe infrastructure shortages, high living costs, demand for amenity improvement and housing affordability are all identified as major constraints to Port Hedland's sustained growth and development as a Pilbara City.



The housing situation (both rental and sales) is particularly acute and has been identified as by far the biggest single issue and impediment to future economic growth.

The Town of Port Hedland has recognised the many growth pressures it faces through the *'Hedland's Future Today 2010'* initiative, which documents a range of significant investment projects the town is seeking to deliver. While the Town and the State Government have successfully progressed a number of projects, a 'Whole of Government' approach from all levels is required to meet the growth challenges and deliver a successful Pilbara City.

BACKGROUND

The underlying direction and vision for the Pilbara's Port City Growth ('the Growth Plan') has been determined at both Local and State Government levels. Importantly, the Town of Port Hedland's (ToPH) aspirations have been well articulated in key strategic documents such as the *Port Hedland Land Use Master Plan (ToPH, 2007)*; *Strategic Plan 2010-2015*; *Hedland's Future Today 2010*; as well as the *Port Hedland Land Availability Plan (RPS, 2011)* and *Housing Capacity Study (GRA, 2010)*. Similarly, under the Pilbara Cities framework, the State Government has previously announced its vision to revitalise Pilbara towns, including developing Port Hedland as "Pilbara's Port City".

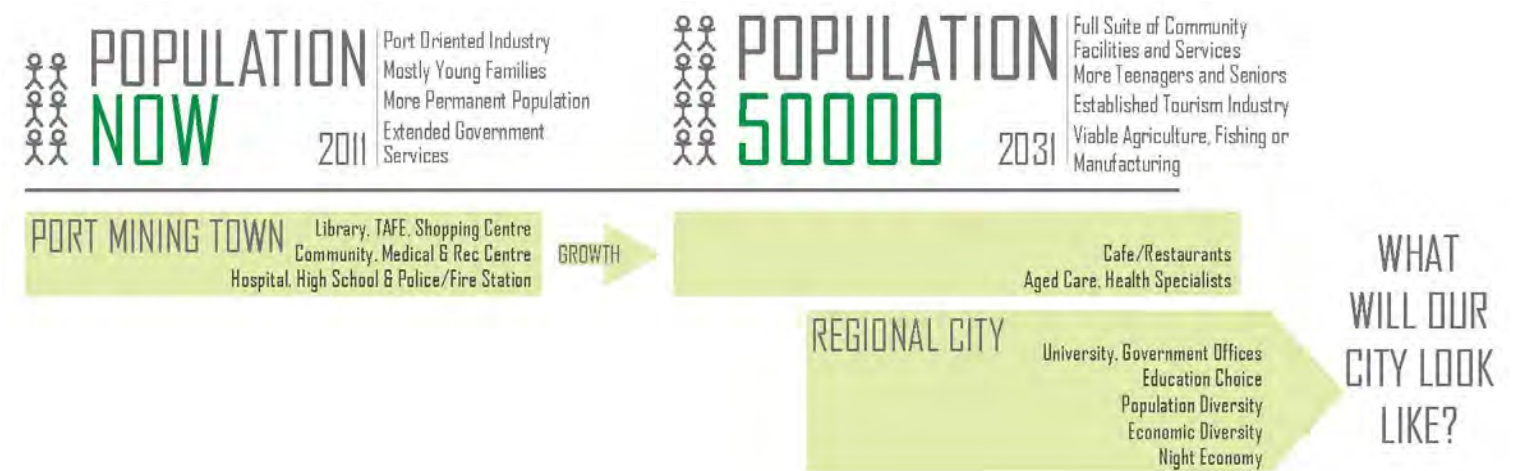
The *Pilbara Planning and Infrastructure Framework (WAPC, 2012)* provides a blueprint for the long term growth and sustainable development of the Pilbara Region, and identifies both Port Hedland and Karratha as Regional Cities of 50,000 people. The Growth Plan provides a local level strategic blueprint to facilitate the sustained growth of Port Hedland as Pilbara's Port City. Critically, it is intended to replace the current Land Use Master Plan (2008) as the ToPH's adopted Local Planning Strategy, proactively guiding future spatial development and statutory land use planning.

The Growth Plan is being driven by the need to modernise and transform Pilbara towns to support long term economic activity in the region, improve the quality of life for existing residents and to attract and retain new residents.

Achieving this transformation will require more than just local level enhancements. It will require an array of district and local level programs and projects focussed on strengthening local communities, providing growth opportunities, and diversifying the economic base. Enhancing the quality of life for Port Hedland's residents will involve responding to the needs and aspirations of people by enhancing local amenity, expanding job and related opportunities, addressing service shortfalls, and ensuring current and future settlements are built to meet the challenges of the region's climatic conditions.

Population growth is essential to sustain the long term economic activity in the Pilbara. Current forecasts, however, indicate that settlements across the Pilbara will not reach the population growth objectives of Pilbara Cities without significant intervention. A change in economic growth and diversification will be required at a regional and local level to capitalise on Port Hedland's unique strengths and advantages and pursue new economic opportunities. The Growth Plan will provide the background and framework for this intervention, and set out the spatial requirements to facilitate this.

Importantly, delivering the outcomes required to meet this vision of revitalisation requires commitment and contribution by many stakeholders across the region and the state – with sustained levels of support and resourcing. It is critical that this transformation is led at a local level by a strong and well resourced Local Government, playing a central role in the coordination of activities, investment initiatives and the development of strong and effective delivery partnerships.





FINUCANE
ISLAND

COOKE POINT

WEST END

PORT HEDLAND

PRETTY POOL

REDBANK

DAMPIER SALT

WEDGEFIELD

AIRPORT

GREAT
NORTHERN
HIGHWAY

SOUTH
HEDLAND

BOODARIE
INDUSTRIAL
ESTATE

Figure 1.2: Aerial Context Plan

1.2 SCOPE

The boundaries of the Town of Port Hedland contain an area of approximately 18,700 square kilometres, extending from the coast to approximately 180 kilometres inland. This is an area of about four times the size of Metropolitan Perth, but it contains less than 1% of Perth's population. The Growth Plan covers the entire area of Port Hedland, but the focus of the plan is the area of settlement on the coast where over 98% of the Port Hedland community is located.



Figure 1.3: Port Hedland Regional Context

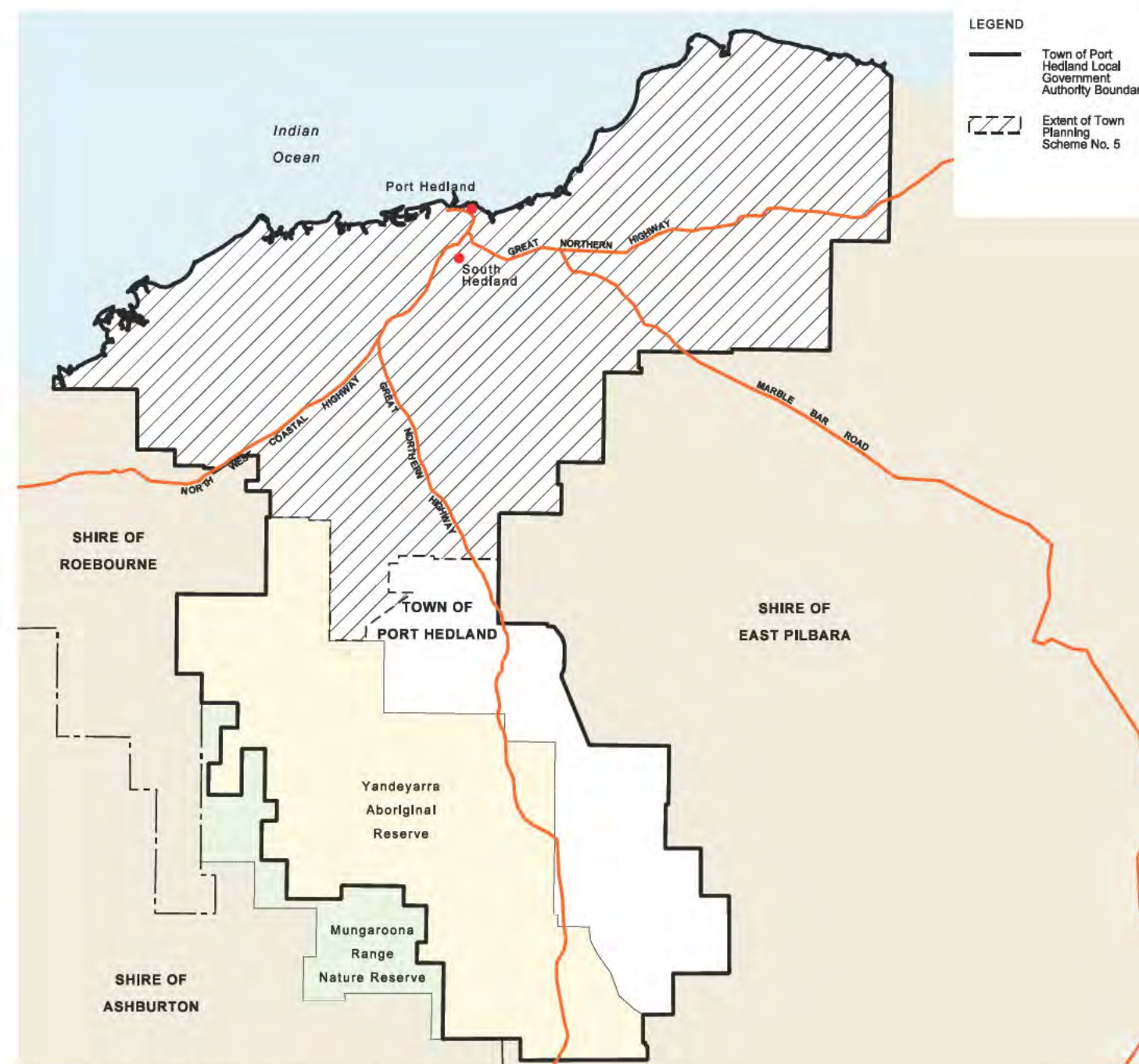


Figure 1.4: Town of Port Hedland Boundaries

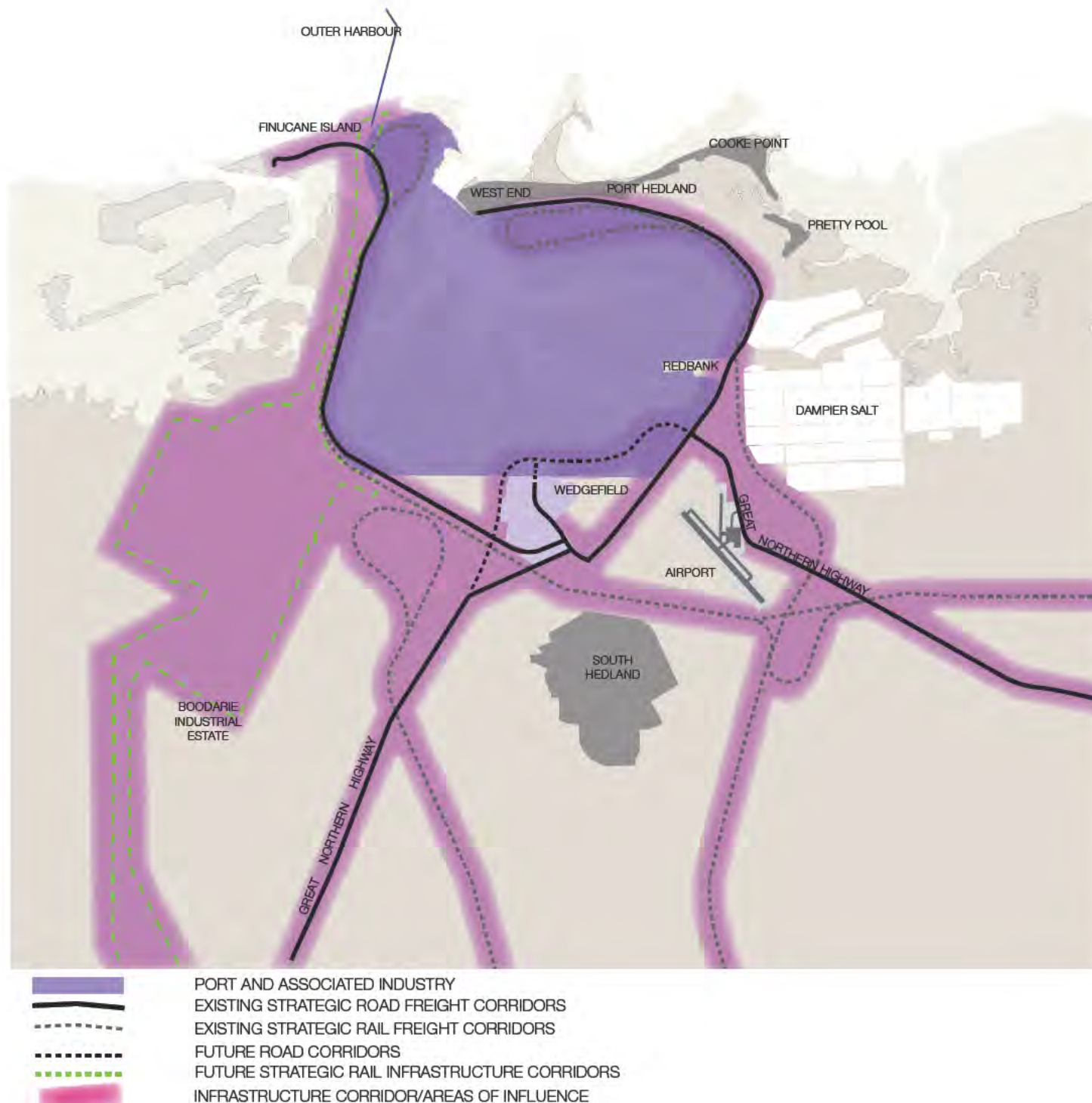


Figure 1.5: Port and Key Infrastructure

1.3 CONTEXT AND ROLE

As Port Hedland and Karratha become 'Pilbara Cities', their particular roles must be established. Beyond its position in a broader retail and centres hierarchy, it seems logical that Karratha will continue to serve an offshore industry support function given its proximity to the North West Shelf.

At the national, state and regional levels, Port Hedland will continue to form a critical element of the national, state and regional freight and logistics networks. At a regionally specific level it will be a higher order service centre for the East Pilbara, in addition to being the historical and cultural centre of the Pilbara Region. These roles and their impacts on this Growth Plan are explored further below.

Freight and Logistics

Port Hedland is, first and foremost, a port town. Its role at a national level, defined through the National Ports Strategy (*Infrastructure Australia*, 2011a) and National Land Freight Strategy Discussion Paper (*Infrastructure Australia*, 2011b), acknowledges Port Hedland as a strategic element of our national freight and logistics network. This role and function of Port Hedland is a significant



consideration of the Growth Plan:

"Given the nodal nature of ports (i.e. Port Hedland) and the large concentrated freight flows along land corridors, the port aspects should be among the most important yet the simplest and clearest aspects of any city plan or any freight plan. A capital city plan (apart from that for Canberra) or freight plan would be inadequate if it did not reference relevant ports and the key landside infrastructure that is used to service them. If an adequate ports plan cannot be developed, there is little prospect of planning for other much more complex activities. Hence, plans for relevant ports should be among the highest priorities for Australia's urban agenda." (*Infrastructure Australia*, 2010)

Australia's freight sector is a substantial economic activity in Australia. It generates and facilitates economic growth and employment, and accounts for a significant share of Gross Domestic Product. At a national level, freight movements will continue to increase and are planned to potentially treble by 2030 (*BTRE 2010*).

Port Hedland's capacity to function at the national, state and regional level will be underpinned by its capacity to accommodate increased freight movements associated with continued expansion of the resources sector. This means protecting and accommodating expansion of the port as well.

The Growth Plan protects and enhances the role of Port Hedland as a critical element of the nation's freight and logistics industry. The ancillary benefit in undertaking this will be to encourage increased investment of industry in Port Hedland by providing greater certainty on government policy which affects the growth and operation of the port (*Infrastructure Australia*, 2011a). To achieve this, the Growth Plan will enact some key recommendations of the National Ports Strategy (*Infrastructure Australia*, 2011a). This will include:

- In a spatial context, undertaking land use planning which protects critical existing and future freight corridors (road and rail) from encroachment of conflicting land uses whilst providing land for support industry to the freight sector;
- Implementing controls that are adequate to ensure the protection of the port against the existing sensitive uses; and
- Removing the barriers inhibiting the productive and efficient movement of freight on the land and sea side particularly in proximity to the urban areas where urban congestion can significantly affect the safe and productive movement of freight.

Defence

Australia's geographical size and location within an international context has been noted as a 'major defence planning challenge'. The Australian Defence White Paper (Department of Defence, 2009) further highlights:

The Defence Force has acknowledged a principal task in deterring armed attacks on the sovereignty of the nation, will include addressing the difficult task of protecting strategically significant offshore territories and economic resources in the remote north-west. This has been reaffirmed through suggestions that the Defence Force will identify the need for a new defence base in north western Australia as part of its Force Restructure Review.

A key threat to the safety of the nation is addressing the potential security risks from South-East Asia. This region sits alongside Australia's northern approaches and key trade routes. Similarly, the Indian Ocean and the central location of key international trade routes have been identified as having an increasingly strategic role to play within the Australian Defence Force's (ADF) primary operational environment (Department of Defence, 2009).

The ADF acknowledges a "fundamentally maritime strategy" where "forces can operate with decisive effect throughout the northern maritime and littoral approaches to Australia, and the ADF's primary operational environment more generally".

In the recently published ADF Posture Review Progress Report (Department of Defence, 2011), preliminary conclusions noted that "while permanent Navy bases in the North West are not

operationally necessary, there is a case for Defence to pursue improved access arrangements at commercial ports such as Exmouth, Dampier, Port Hedland and Broome". It also recommends that "Defence (Joint Logistics Command) carry out an assessment of Civil Infrastructure and its logistics capacity available to support operations in the North West in a range of contingencies".

The Growth Plan acknowledges the future role of Port Hedland as a strategic asset in the nation's broader defence strategy. This is consistent with the notion that Port Hedland can support a Marine Common User Facility which would compliment plans for a defence presence in Port Hedland (Department of Commerce 2011).

Strategic Industry and Manufacturing

Port Hedland's strongest assets are its strategic freight infrastructure, geographical location and access to raw materials. All of these elements are complimentary to the establishment of a manufacturing industry and an industrial service role (AEC Group 2011). Similarly, the capacity for Port Hedland to provide a servicing role to offshore industry has been confirmed (Department of Commerce 2011).

Port Hedland currently provides a marginal service and manufacturing role to the broader Pilbara Region (AEC Group 2011). Notwithstanding this, the strategic advantages Port Hedland has provide the foundation to develop a secondary role to the northern regions of Western Australia. The Growth Plan will facilitate this new function of Port Hedland by:

- Encouraging the stabilisation of the population and continued growth in line with population projections;

- Setting aside land to support downstream processing, manufacturing and distribution throughout the North-West;
- Setting aside land which is able to support supply chain industries to service the resource sector;
- Undertaking appropriate land use planning to reduce risks to the operation of industry by identifying and mitigating conflicts with sensitive uses; and
- Nominating an appropriate location for a Marine Common User Facility in the Port.

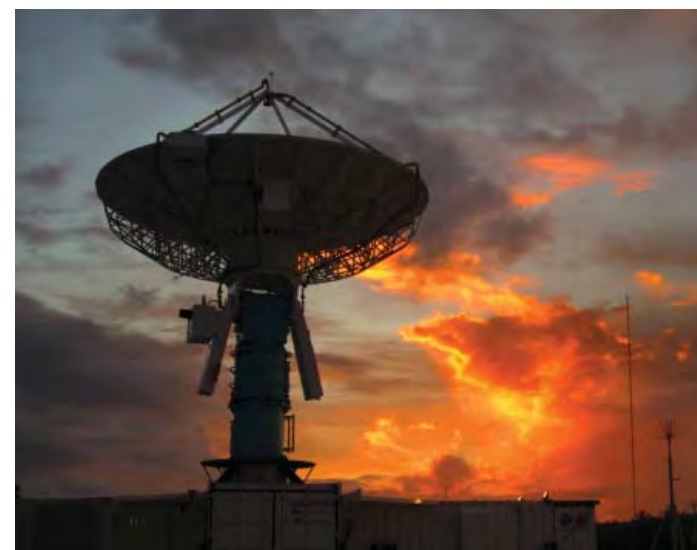
Cultural Core

Port Hedland has a rich history and culture which extends before the iron ore and core resource logistics and port role it now serves. Port Hedland also has a rich aboriginal culture extending over thousands of years.

Port Hedland's history and cultural wealth have defined Port Hedland as a cultural centre of the Pilbara. It offers unique and rich cultural experiences which are specific to its historical development. Fostering cultural growth increases the level of social capital in the region which is shown to improve health, education and life satisfaction and reduced crime (BTRE 2005). Furthermore, regions that are rich with social capital are likely to have a competitive economic advantage as it improves information flows and/or enhances the creation of knowledge and innovation (Maskell 2001).

The cultural role of Port Hedland at a localised and also regional level is equally important in fostering population and economic growth in the locality and the broader region as direct and tangible factors such as land release. The Growth Plan will foster the cultural role of Port Hedland by:

- Protecting and celebrating Aboriginal and European history elements of Port Hedland through appropriate land use planning and design;
- Fostering a stronger tourism industry through the increased provision of accommodation, retail and entertainment activities, along with greater emphasis on placemaking; and
- Identifying a range of community development strategies and initiatives (including cultural strategy) aimed at enhancing social capital within the community.



1.4 METHODOLOGY

The Growth Plan is not exclusively a land use planning strategy; it considers both spatial and non-spatial challenges to the expansion of Port Hedland into a sustainable city. The Growth Plan identifies where a population of up to 50,000 can reasonably be accommodated, what additional civil infrastructure and transport services, how community aspirations can be accommodated and how the environment, indigenous and non-indigenous heritage should be protected and celebrated.

In addition to serving as the Town's new Local Planning Strategy, the Growth Plan also addresses the core recommendations of the State Government's Dust Taskforce. Those recommendations require the preparation of a plan which:

- Identifies a range of sites for new development in South Hedland, which will see the majority of new residential development and population housed over the next 20 years, along with a major focus on South Hedland's city centre as the primary activity centre for Hedland and the wider region;
- Proposes significant new residential development in the east end of Port Hedland offering a new focal point for high amenity coastal living with a full range of local services and facilities;
- Identifies appropriate locations in the West End of Port Hedland for redevelopment as additional commercial premises, entertainment complexes and short stay accommodation facilities; and
- Provides greater guidance on residential density, dwelling types and building design for all areas of Port Hedland.

The whole of the Town of Port Hedland municipal area, and its national, state and regional context have been considered in preparing the Growth Plan. Critically, however, the geographic expansion of the existing settlement areas has been the key focus of the document.

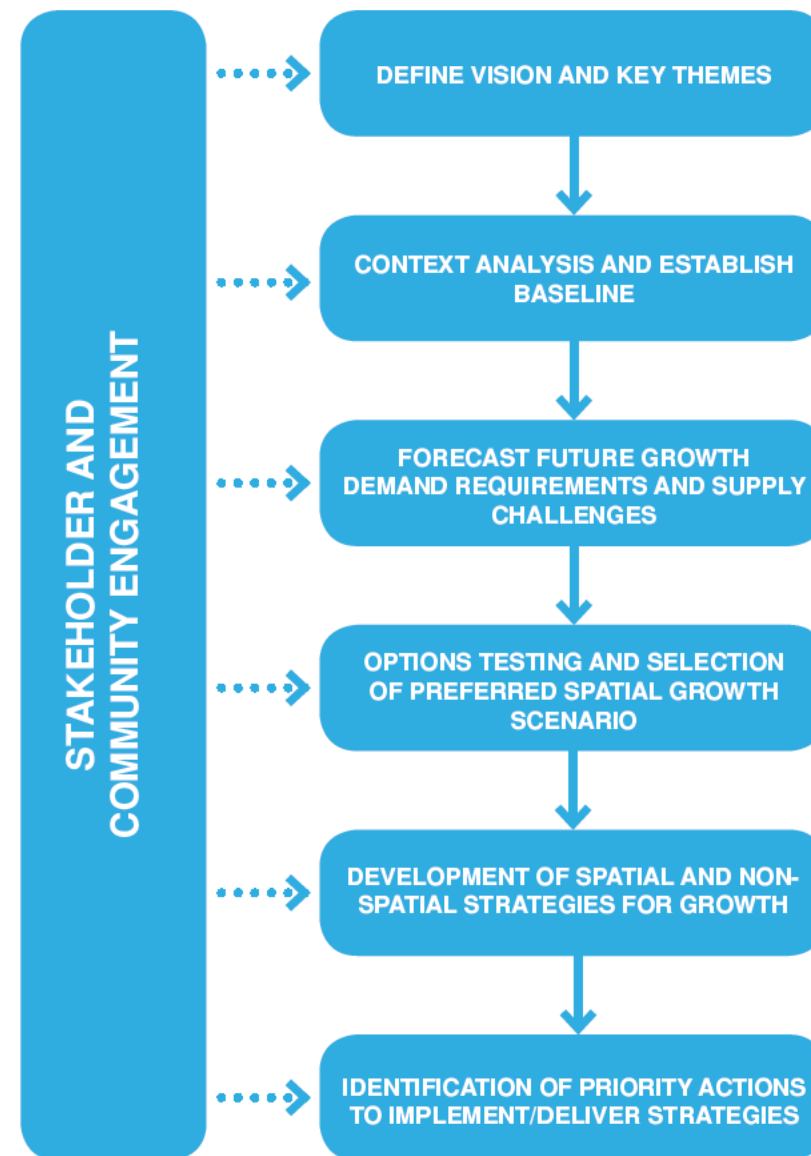


Figure 1.6: Project Approach

1.4.1 Project Approach and Decision Making

The Town of Port Hedland engaged a multidisciplinary team with specialist skills in town planning and urban design; civil infrastructure engineering; economic and property analysis; landscape architecture; indigenous and non-indigenous heritage; environmental assessment; traffic and transport engineering; community and stakeholder engagement. The Growth Plan has been prepared taking into account the particular characteristics of the Pilbara Region and Port Hedland settlement areas and surrounds.

Figure 1.6 illustrates the broad approach to the Pilbara's Port City Growth Plan project.

A coordinated process of reporting and decision-making was followed throughout the project as shown in Figure 1.7.

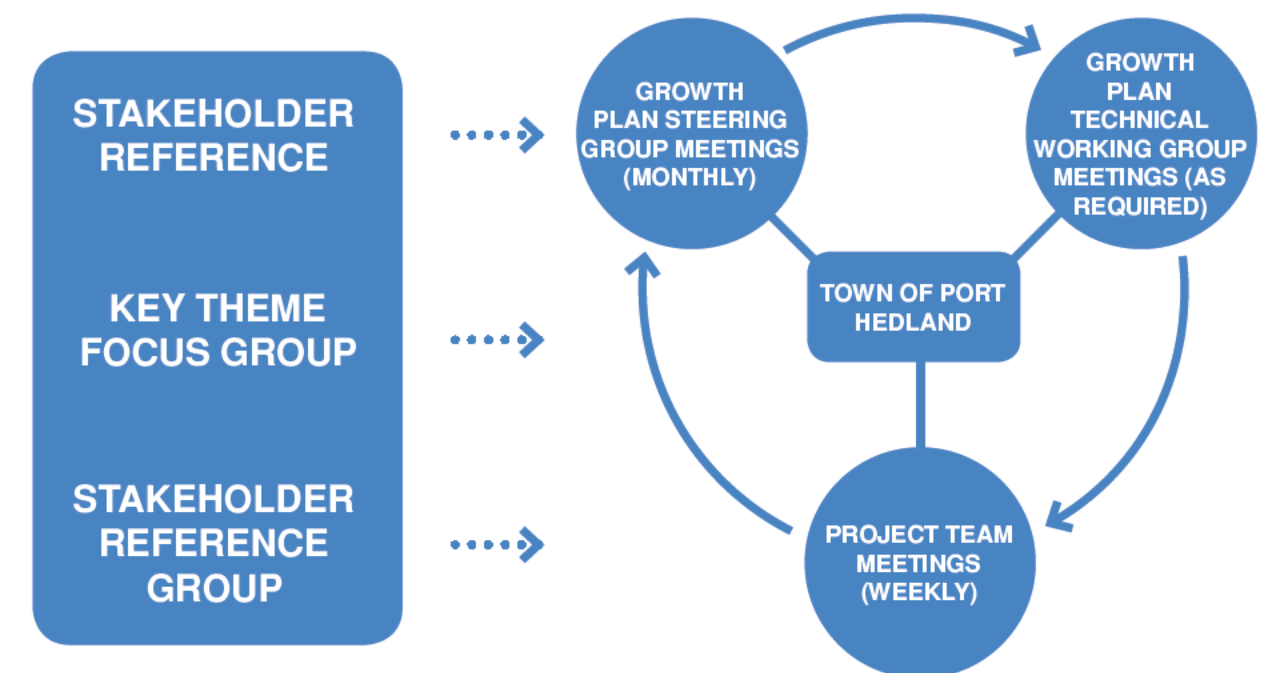


Figure 1.7: Decision Making.

1.4.2 Project Elements

The Pilbara's Port City Growth Plan project is comprised of two key components - a Growth Plan, setting the vision and strategies for growth, along with an Implementation Plan (refer Figures 1.8 and 1.9). An overarching Sustainability Assessment has also been undertaken.

Section 6.0 of the Growth Plan provides further details on the purpose and objectives of the Implementation Plan, which to be read in conjunction with this document.

What is an Implementation Plan?

An Implementation Plan is a programme and action plan for the delivery of the necessary community, economic, physical & governance projects identified in the Growth Plan.

Why is it an Important Document?

The Implementation Plan will:

- Provide greater certainty and recognition;
- Align stakeholder objectives in a single coordinated Plan/Document;
- Be a reliable tool to facilitate business cases and funding submissions for projects and programmes;
- Activate key stakeholders to progress the necessary activities; and
- Provide flexibility to efficiently respond to change of circumstance(s).

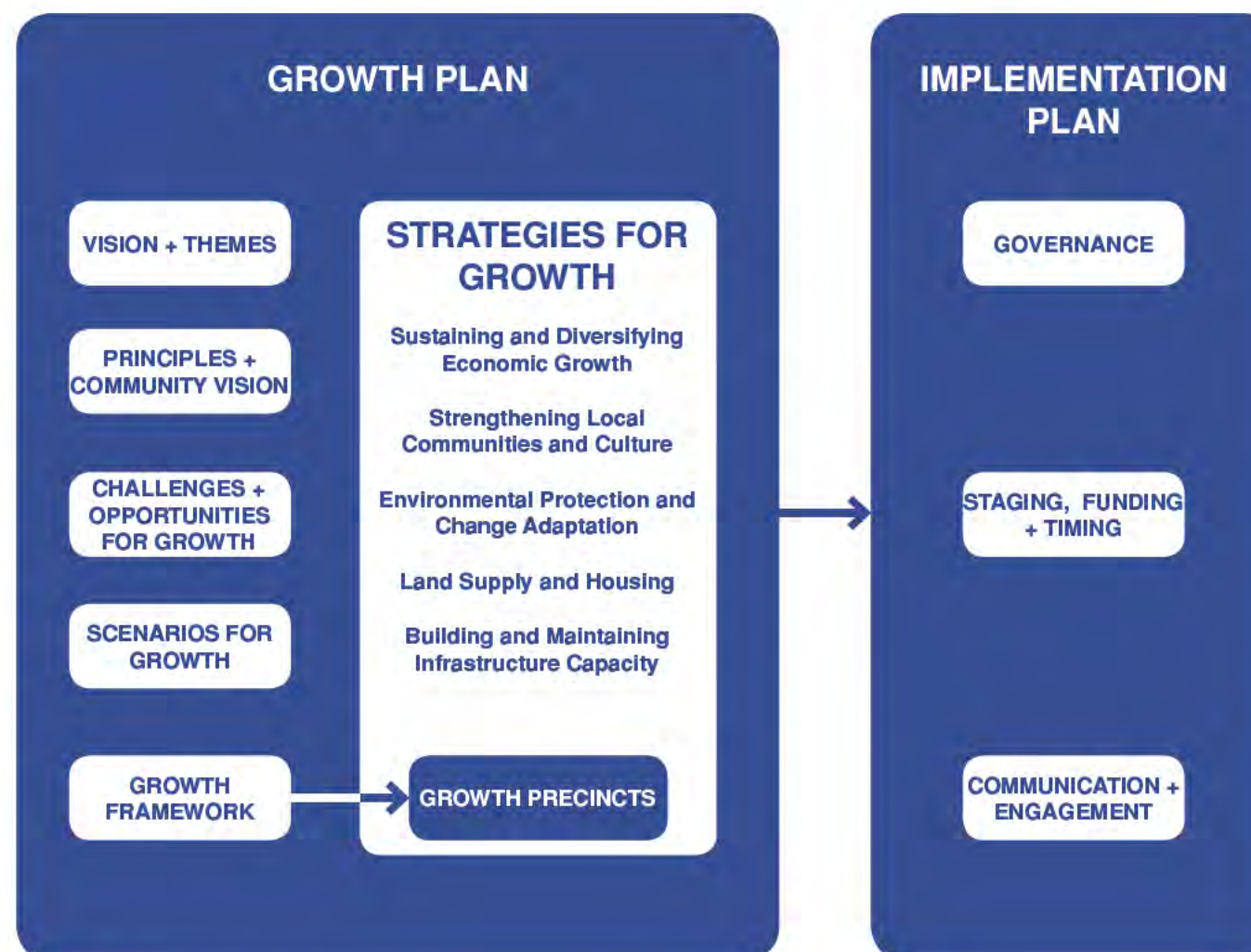


Figure 1.8: Project Elements

1.4.3 Structure of this Document

This document is divided into 6 sections as follows:

1. Introduction
2. Vision for Pilbara's Port City (including 5 themes)
3. Challenges and Opportunities for Growth
4. City Growth Scenarios
5. City Growth Strategy (including strategies across 5 themes and precinct plans)
6. Summary and Implementation (summary / guide to second document)



Figure 1.9: Core City Growth Plan Documents

1.4.4 Community Engagement

Effective communication and reporting is critical to good stakeholder management. Preparation of the Growth Plan has been underpinned by a robust and comprehensive consultation and engagement process with key stakeholders and the broader community. The community and stakeholder engagement strategy had five strategic objectives:

- To identify relevant stakeholders and to understand the nature of their interest and/or involvement in development of the Growth Plan and the Implementation Plan;
- To provide stakeholders and the community with appropriate, adequate and timely information on development of the Growth Plan and Implementation Plan;
- To seek input from key stakeholders and the community in developing the Growth Plan and the Implementation Plan;
- To achieve a high level of stakeholder and community satisfaction with the process used for developing the Growth Plan and the Implementation Plan; and
- To continue building and later maintain strong relationships with stakeholders including local community, industry and the media.

The key community and stakeholder engagement activities undertaken to support development of the Growth Plan and the Implementation Plan included;

- Internal engagement (with the project team discipline leaders);
- Establishment and liaison with a project Stakeholder Reference Group;
- Key Theme Focus Groups;

- 2 Day Growth Forum;
- Interviews with Aboriginal Corporations and Service Providers;
- Presentation to a Community Leaders Forum; and
- A range of targeted community meetings and presentations to key stakeholders e.g. resource companies, government agencies.

Stakeholder Reference Group

The role of the Stakeholder Reference Group (SRG) was to provide advice on proposed stakeholder engagement in the lead up to the Growth Forum, and then act as a vehicle for further testing of the Growth Plan strategies as they were refined.

An invitation to become part of the SRG was extended to more than 100 individuals and organizations on the Town of Port Hedland stakeholder database. On the advice of the SRG, additional stakeholders were approached to participate in SRG#2. An open invitation to participate in SRG#2 was promoted through Town of Port Hedland email bulletins and newspaper advertising.

Key Theme Focus Groups

Eight key themes were identified as part of Focus Group discussions. The key themes were identified in consultation with the multidisciplinary project team and validated with the Lead Consultant. Focus Group session plans were developed to detail the key questions relevant to each theme and identify target participants. These session plans were reviewed with the Town of Port Hedland. Seven focus groups were held in Port Hedland in June 2011 on the following themes:

- Strategic industry
- Economic development
- West End growth scenarios
- Environment
- Housing affordability
- Transport and infrastructure
- Sustainable community, amenity and character

Focus Groups were a maximum of two hours with participation open to any interested member of the community. Attendance at sessions varied between 5 and 26 participants.

At each session, the project consultant with primary responsibility for the Focus Group theme made a presentation to provide context to the session's key questions. This was followed by

a semi-structured facilitated discussion of key questions. In addition to the seven themed focus groups, an additional eighth theme associated with indigenous consultation and the needs of Aboriginal people was also considered. Key informant interviews of between 30 and 90 minutes were held with organisations providing services to Aboriginal people, seeking input and feedback with regard to their aspirations for the Growth Plan. Interviews were held with the following organisations:

- Rose Nowers Childcare Centre;
- I.B.N (Innawonga, Banjyma, Niapali) Aboriginal Corporation
- Youth Involvement Committee
- Bloodwood Tree Association
- Pilbara Indigenous Aboriginal Women's Group
- Yamaji Marlpa Aboriginal Corporation

Through these discussions and other community engagement processes, the need for continuous engagement and ongoing dialogue with Aboriginal people was highlighted, particularly with regard to addressing issues of housing and homelessness, access to education and employment, reconciliation and community inclusion.

Growth Forum

The Pilbara's Port City Growth Forum was held in Port Hedland over 2 days in July 2011. Core sessions were held during business hours and briefing sessions regarding the day's progress were held in the evenings of both days.

The event provided an opportunity for government agencies, the private sector and community organisations to review key elements of the Growth Plan and provide their feedback on options presented. The key objective was to receive early advice on any fatal flaws, major gaps or significant differences of opinion on the strategic directions being developed.

Information and discussion was structured in 19 sessions. The early focus during Day 1 was to establish the Growth Plan context, after which reactions were sought to the non-spatial enabling strategies (economic development, infrastructure provision and community facilities). After lunch on Day 1, the focus turned to the review of draft Precinct Plans. Stakeholders had the opportunity to work in small groups to modify and mark up plans.

The focus of Day 2 was on testing the approach that was to be used to develop the associated Implementation Plan.

Fifty-four stakeholders participated in the core sessions over the two days.



1.4.5 Sustainability Framework

The Growth Plan is aimed at addressing underlying social, economic and environmental issues in a defined area and takes a holistic view geared ultimately towards implementation. The associated Implementation Plan is delivery focused and, where public and private sector investment is required, considers delivery through partnerships as appropriate.

To this end, the plan is aligned with a tailored Sustainability Framework, developed to meet the future needs of Port Hedland. It provides a set of principles and aspirations to help guide and support planners and decision makers on how to achieve sustainable development and build a resilient Port Hedland for current and future generations.

The principles of the Sustainability Framework have been adopted from the national best practice GreenStar Communities framework and is designed to:

- **Enhance livability** - Sustainable communities are liveable. They are diverse, affordable, inclusive and healthy; they enhance social interaction and ownership, are safe and caring and improve people's well-being.
- **Create opportunities for economic prosperity** - Sustainable communities prosper. They encourage opportunities for business diversity, innovation and economic development that support local jobs for people in the region.
- **Foster environmental responsibility** - Sustainable communities respect the environmental systems that support them. They protect and restore the natural environmental values of their bio-regions. They are less resource intensive.
- **Demonstrate visionary leadership and strong governance** - Sustainable communities are characterised by leadership and strong governance frameworks that are transparent, accountable and adaptable. They enable active partnerships to build capacity and achieve a shared vision and deliver stakeholder benefit.
- **Embrace design excellence** - Sustainable communities are places for people. They are desirable, accessible and adaptable. They have their own distinct character and identity and evolve over time.

The Sustainability Framework principles are illustrated in Figure 1.10 and described below.

- **Reducing ecological footprint:** precinct urban design objectives; public infrastructure strategies;
- **Enhanced natural environment:** place-making strategy; public infrastructure strategies;

- **Attracting investment:** economic development strategy; business progression program; tourism strategy; young entrepreneur support program; former resident alumni network;
- **Transport & connections:** public transport strategy; transport corridor strategy; airport masterplan (as amended); place-making plan strategies (gateway and tourism objectives);
- **Future-proofing:** climate responsive precinct plans; spatial planning for transport corridors; coordination of infrastructure provision and facilitation of common infrastructure access;
- **Integrated design:** precinct urban design objectives, place activation programs;
- **Life-long education & learning:** Growth Model as input to social infrastructure coordination; tertiary institution attraction program; student achievement recognition program;
- **Accessibility:** precinct urban design objectives; transport strategies; detailed building and footpath access plan;
- **Diverse and affordable living:** land release program; affordability strategies;
- **Healthy, safe, secure communities:** place-making plan strategies; community development programming to strengthen networks; community service recognition programmes; reconciliation action plan; community leadership development program; open space strategy; and
- **Stakeholder engagement:** monitoring and reporting strategy.

The Sustainability Framework provides a consistent and agreed approach to sustainable development in Pilbara's Port City. This is important in the local context as there are many stakeholders who are interested in the economic, cultural, social and environmental success of the region. The Sustainability Framework is designed

using the guiding principles and themes of state, regional and local policies and supplemented with 'best practice' sustainable community frameworks.

Although in the first instance the Sustainability Framework is used to guide sustainable development options, it is expected that the framework will be used throughout the life of the project to monitor and evaluate project outcomes to ensure that sustainability objectives are being considered and targets met. During the next stage of implementation planning, the Sustainability Framework will be used to evaluate the initiatives and strategies considered to ensure that the plan aligns with the principles set, identify any gaps and adjust the plan accordingly. Furthermore, measures and targets will be determined during the next stage, which is a crucial element of on-going monitoring for sustainability performance.

1.4.6 Integrated Growth Model

In addition to the Growth Plan and the Implementation Plan, the Town of Port Hedland engaged AEC Group to prepare an integrated Growth Model for the Town. The Growth Model is designed to assist the Town to manage growth into the future and at the same time deliver better planning outcomes with greater certainty for the community.

The Growth Model leverages the existing assumptions and data underpinning the Growth Plan. It allows for manipulation of various future characteristics to understand how they will impact other future facets of the Growth Plan. The model will assist the Town to make informed decisions regarding future projects and development and at the same time understand the future implications of these decisions.

Population and economic stimulus are the main model inputs (which can be used to test a wide variety of future scenarios), which will allow for an understanding of changes to future levels of:

- Land demand (across retail, residential, industrial, commercial and tourist accommodation);
- Community infrastructure (parks, libraries, recreation centres, sports fields, etc.);
- Infrastructure demand (water, sewer, roads, etc.); and
- Economic impacts (GRP, employment, incomes).

The Growth Model presents a unique tool to assist in future decision making for key projects. It is a dynamic tool that can grow with the city's development and one that effectively links decision making on key planning and capital investment decisions more effectively than previous possible. As part of the Pilbara's Port City Growth Plan project, the Growth Model has informed development of the Implementation Plan to provide further certainty on the type, scale and timing of interventions required.



Figure 1.10: Sustainability Framework

2.0 VISION FOR PILBARA'S PORT CITY



2

A nationally significant, friendly City where people want to live and are proud to call home.”

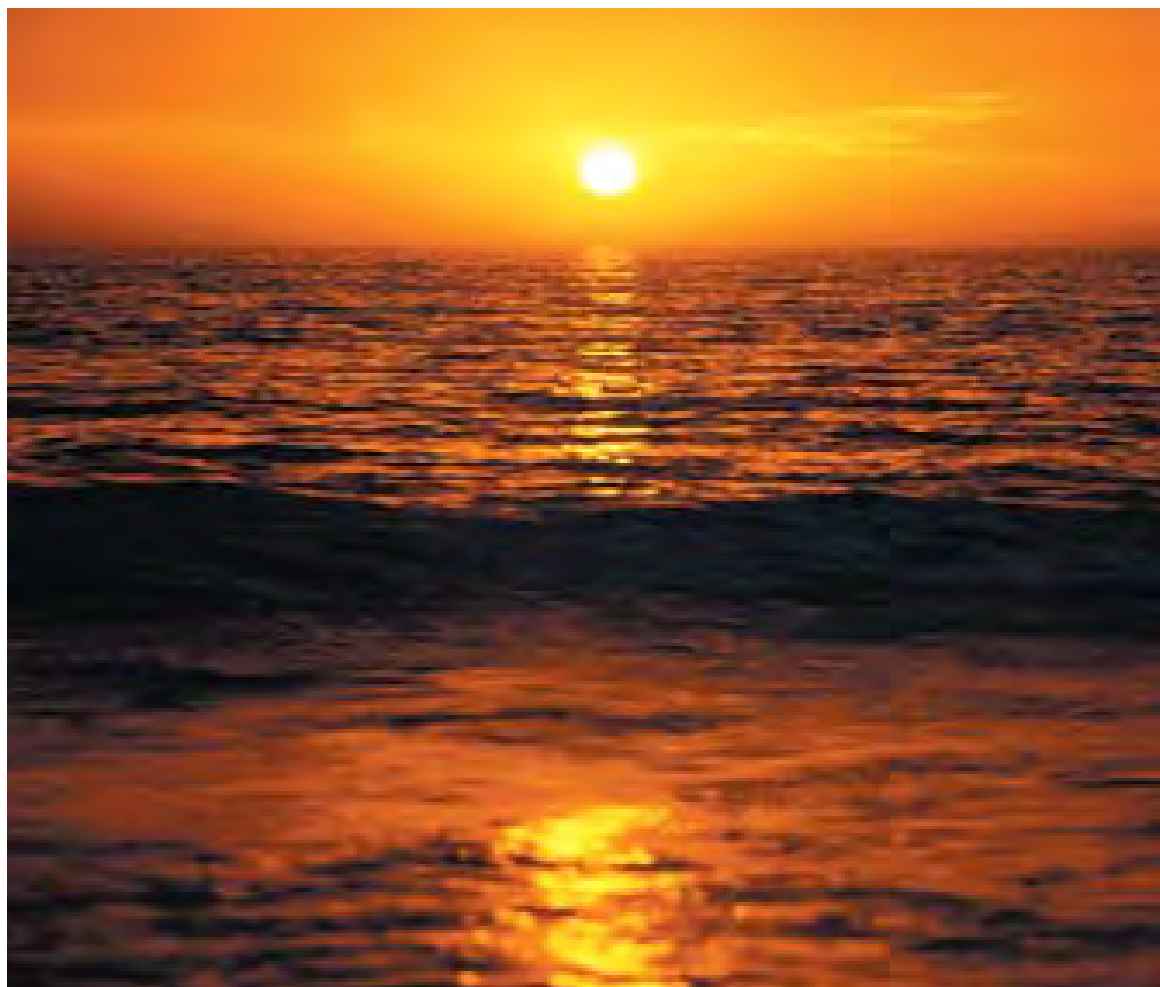


The City of Port Hedland is recognised on the national stage as the economic gateway to the Pilbara and wider North Western Australia – a strategic economic hub supporting regional and national industries, and providing its residents and visitors with a wealth of lifestyle and recreation opportunities. It is a City with an increasingly diversified economy, providing a range of regional services and capitalizing on the important flow-on opportunities from the resource sector, agricultural investment, and the expansion of industrial, logistics and airport development.

Increased land availability, supply and built construction choice continues to attract and retain a permanent population. The population profile has changed significantly as a result, with increased levels of seniors and young people more reflective of Port Hedland's role as diverse and inclusive regional city. Cultural experiences and healthy lifestyle choices are available for those choosing to live in Pilbara's Port City, with modern sports facilities and a choice of local recreation and arts and cultural destinations. As a city responsive to its environmental attributes, Port Hedland is connected with the landscape, while caring for the environment

Pilbara's Port City continues to grow while celebrating and building on its important historic indigenous and cultural links. The West End of Port Hedland recognizes the primacy of the Port, while serving as the civic and cultural heart of the historic town site. It offers the City's residents a range of unique attractions; supplying quality office and commercial space for the multitude of new businesses locating in the City. After attending an art exhibition residents and visitors take an evening stroll along the foreshore before enjoying a meal at one of the new restaurants.

Urban development has progressed significantly, with an expanded retail centre located at the Boulevard and a new local centre in the east end providing improved amenity and retail choice for the growing east end community. People have the choice of apartment living with ocean views, townhouses or terrace homes though to traditional single dwellings. All are in close proximity to new schools, sporting and community facilities.



Wedgefield has established itself as a centre for light industry, transport and logistics, whilst heavy industries are increasingly locating in the Boodarie Strategic Industrial Area, with room to grow and capitalise on the availability of strategic transport and utilities infrastructure. The development of bulky goods and commercial premises on the airport land opposite Wedgefield has helped to strengthen connections between Port and South Hedland and provide further diversity in local business and employment opportunities.

Most importantly, as the major regional centre, Port Hedland's City Centre in South Hedland is recognised as the hub for regional government public sector and business activity. The Town of Port Hedland provides a range of local community services and civic facilities here, including the aquatic centre, library and leisure centres. Commercial, retail and mixed business developments have thrived along the 'main street', and the health precinct developed around the regional hospital provides a range of employment opportunities and health services for local families and visitors. Many of the City's residents now live and work in the South Hedland city centre.

Pilbara's Port City is an outward looking, cosmopolitan place that reflects northern Australian life. It is confident of its place as a nationally significant regional Australian city.

2.1 CITY GROWTH PRINCIPLES

Following on from the vision for Port Hedland, a number of principles have been established from community consultation and input that form a guiding framework to ensure development is in line with the values of the community:

1. **Making Port Hedland home:** a place where our families and visitors feel welcome.
2. **Developing Port Hedland's resourcefulness:** building on our entrepreneurial, DIY culture with innovation and creativity, to make things happen.
3. **Revealing Port Hedland's riches:** celebrating our unique local character and valuing our diverse strengths - from an ancient landscape that is home to one of the world's oldest living cultures, to our natural resources and new industry, to our leading Indigenous art, and our reputation as the friendliest community in the region.
4. **Connecting Port Hedland with the world:** leveraging the world's largest port facility, our international airport, and our growing multicultural community to connect internationally.
5. **Building Port Hedland's resilience:** by building a strong community, investing in education, diversifying our economy and looking after our environment to ensure opportunities for all in the long term.
6. **Giving Port Hedland's best and expecting the best:** a place where our environment, commercial and cultural life showcase the quality of our community.
7. **Celebrating Port Hedland's vibrancy:** making our connected, attractive neighbourhood centres alive with activity and opportunities that are accessible to the whole community.

2.2 CITY GROWTH THEMES

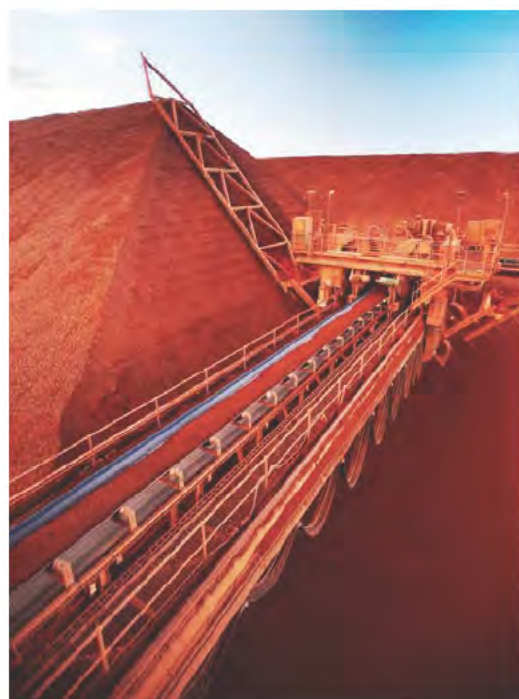
Aligned with the vision, the following core themes have been adopted to guide the development of the Growth Plan and its subsequent implementation:

1. **Sustained and Diversified Economic Growth** – providing opportunities for regional and local employment generation to address the gaps in employment outcomes within the community and providing the right conditions for robust economic growth to occur across a range of industries.
2. **Strengthening Local Communities & Culture** – fostering the development of safe, friendly and inclusive communities that call Port Hedland home. Providing places and space that reflect and enhance the unique character, indigenous and non-indigenous heritage and identity of the area. Building resilience within the community and providing services and facilities for a range of diverse community needs and interests, so as to reduce disadvantage and improve social cohesion.
3. **Housing Diversity & Land Supply Capacity** – providing an orderly and adequate supply of affordable land along with increased choice in affordable housing products and tenure options to cater for a diverse and permanent population.
4. **Environmental Protection and Change Adaptation** – the protection and enhancement of natural environmental and cultural assets, biodiversity, air and water quality, and building resilience against the long term effects of climate change.
5. **Building & Maintaining Infrastructure Capacity** – strategic and urban transport, utilities and communications infrastructure are provided in a timely, sustainable and efficient manner to cater for a growing resident population and increasing economic activity.

In addition to these, 'Responsible Growth' is an over-arching objective across all themes to ensure that growth is delivered within a framework of limited land use conflict and human health risk, avoiding the dangers of short term gain coupled with long-term expense.

Within each theme, a number of elements guide Pilbara's Port City Growth Plan:





An international gateway city engaged with and promoting new investment in a fully serviced community.

A port city that builds on its competitive local advantages, infrastructure and significant role in the Australian economy.

A city with an established land supply for employment generating industries and quality public service that sustains a diversified workforce.

A creative, resourceful and entrepreneurial city that encourages small business and innovation.

Sustained and Diversified Economic Growth

Providing opportunities for regional and local employment generation and diversification. Providing the right conditions for robust economic growth to occur across a range of industries.

A vibrant city of diverse and accessible activity centres creating local economic growth and employment for all residents, including Aboriginal people.

A city communicating with and informing investors and small business.

A city that embraces research & development and new technologies.

A city of evolving supply chains and business clustering.

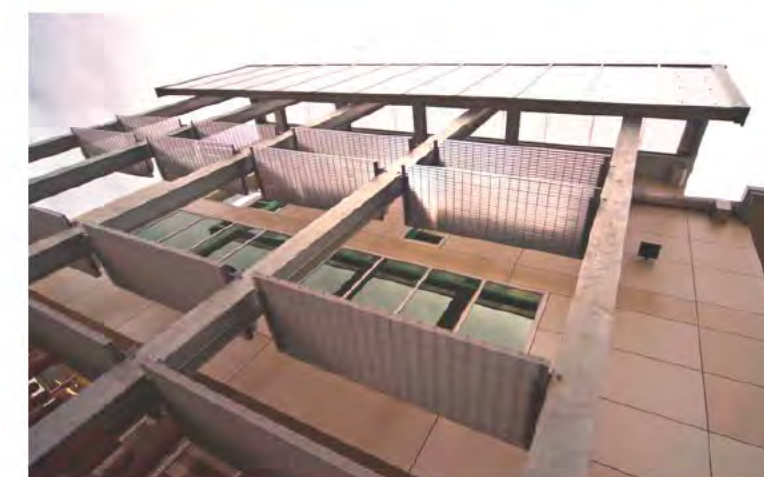


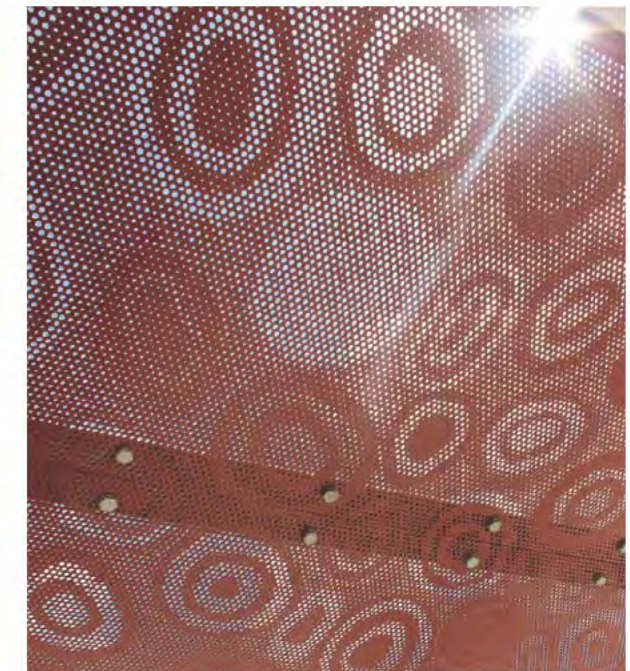
Figure 2.1: Sustained and Diversified Economic Growth



A city of healthy lifestyle and sporting opportunity.

A rich and cosmopolitan city: a confident and outward looking place that is inclusive, supportive and the friendliest community in the region.

Cultural Capital:
A city of art and creativity, preserving and encouraging diversity in language and culture.



A place of tourism opportunity with links to landscape, indigenous language and culture, and history.

Strengthening Local Communities & Culture

Fostering the development of safe, friendly and inclusive communities that call Port Hedland home. Providing places and spaces that reflect and enhance the unique character and identity of the area. Providing services and facilities for a range of diverse community needs and interests, so as to reduce disadvantage and improve social cohesion.

A city of education choice and opportunity that promotes excellence.



A place with its own sense of architecture and built form that reflects Port Hedland's cultural heritage and vibrant future.

An accessible city where public transport is a readily available and places of interest are available to all.

One City One Culture:
A city of neighbours, where community-minded residents are connected and share skills and experiences.



Figure 2.2: Strengthening Local Communities and Culture



Figure 2.3: Housing Diversity and Land Supply



A city of best practice, where the balancing of environmental, cultural and commercial objectives showcase the quality of the community.

A city that is connected to its unique environmental attributes.

A city that protects and preserves its natural environment, landscape and heritage.

A city preparing for the opportunities and challenges of a low carbon future.

Environmental Protection and Change Adaptation

The protection and enhancement of natural environmental assets, biodiversity, air and water quality, and building resilience against the long term effects of climate change.

A city that manages growth to limit land use conflict and human health risk.

A city of resilient people, adapting to the vulnerabilities of climate and climate change.

A culturally and environmentally informed city with programs for education and awareness.

A city that manages its environmental footprint.



Figure 2.4: Environmental Protection and Change Adaptation



A city that embraces new and 'Green' technology.

A city safeguarding and enhancing its strategic assets.

A city building and managing strategic corridor capacity.

An adaptable city with an array of solutions to development and stormwater management.

Building and Maintaining Infrastructure Capacity

Strategic and urban transport, utilities and communications infrastructure are provided in a timely, sustainable and efficient manner to cater for a growing resident population and increasing economic activity.

A city of safe, efficient and integrated transport.

A city with essential urban services readily available and with capacity for growth.

A city with convenient and sustainable transport options for all.

A city with a connected local street network and capacity for growth.

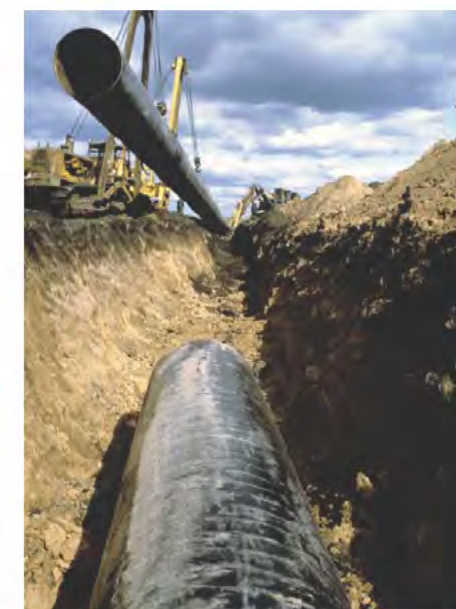


Figure 2.5: Building and Maintaining Infrastructure Capacity



3.0 CHALLENGES AND OPPORTUNITIES FOR GROWTH

3



The current challenges facing Port Hedland are well known amongst government, industry and community stakeholders, and continue to be documented in a wide range of publications and media reports. Increasing international demand for mineral resources, combined with Port Hedland's strategic infrastructure assets and locational advantages, provides a strong economic platform for future growth. In turn, the rapid expansion of mining and export operations in the Pilbara has placed significant additional pressures on local housing markets, infrastructure capacity and local communities.

This section provides an overview of the key challenges and opportunities facing the town as it grows into a modern, sustainable City.

3.1 POPULATION AND DEMOGRAPHICS

Current Population and Growth Trends

Port Hedland has an estimated 'total service population' of 19,216 persons, comprised of 14,624 permanent residents, 2,906 fly-in fly-out (FIFO) and contract workers and 1,686 short-term visitors (AEC group, 2011). Whilst an average annual population growth rate of only 1.5% was experienced over the last decade, increasing regional mining activity and exports through Port Hedland has significantly accelerated population growth in more recent years (approximately 5% in 2009). This volatility in annual population growth rates is common in many regional mining communities, where population growth is strongly linked to periods of operational expansion and major construction projects.

Population growth is expected to remain strong, linked to robust economic growth estimates and international resources demand. Economic forecasts suggest that a population of approximately 40,000 people will be required by 2031 to support projected levels

of economic growth and meet anticipated labour requirements. However, as history has demonstrated, Port Hedland's economy and associated population growth is extremely dynamic and can vary significantly depending on resources demand levels and/or the timing of new strategic expansion projects.

This unpredictable nature of economic and population growth poses significant challenges in planning for the supply of additional housing and infrastructure. The Growth Plan is therefore planning for a total population of at least 50,000 people by 2031. This is consistent with the Pilbara Planning and Infrastructure Framework (PIIF) target of a city of 50,000 people.

The Growth Plan plans for an uplift on the economy-led population forecasts, thereby ensuring that there will be more than enough new residential and non-residential land, services and infrastructure in the forward pipeline to meet future demand, correct current under supply issues and normalise the housing

market (including a reinstatement of typical urban vacancy rates of approximately 8%).

In order for Port Hedland to reach a total population of over 50,000 people by 2031, the residential population would need to grow at an average rate greater than 4% per year. To put this in perspective, Port Hedland has only exceeded a 4% annual growth rate once in the last decade (in 2009), and since 2001, only three regional local government areas (LGA's) in Australia have been able to sustain such a growth rate (Weipa, Qld; Dardanup, WA; and East Pilbara, WA).

Given current skills sets and the scale of new construction work required, it is clear that Port Hedland does not have a large enough construction workforce at present to build the number of houses associated with this level of population growth. This impediment is complicated further by significant future industrial projects competing for construction personnel and materials,

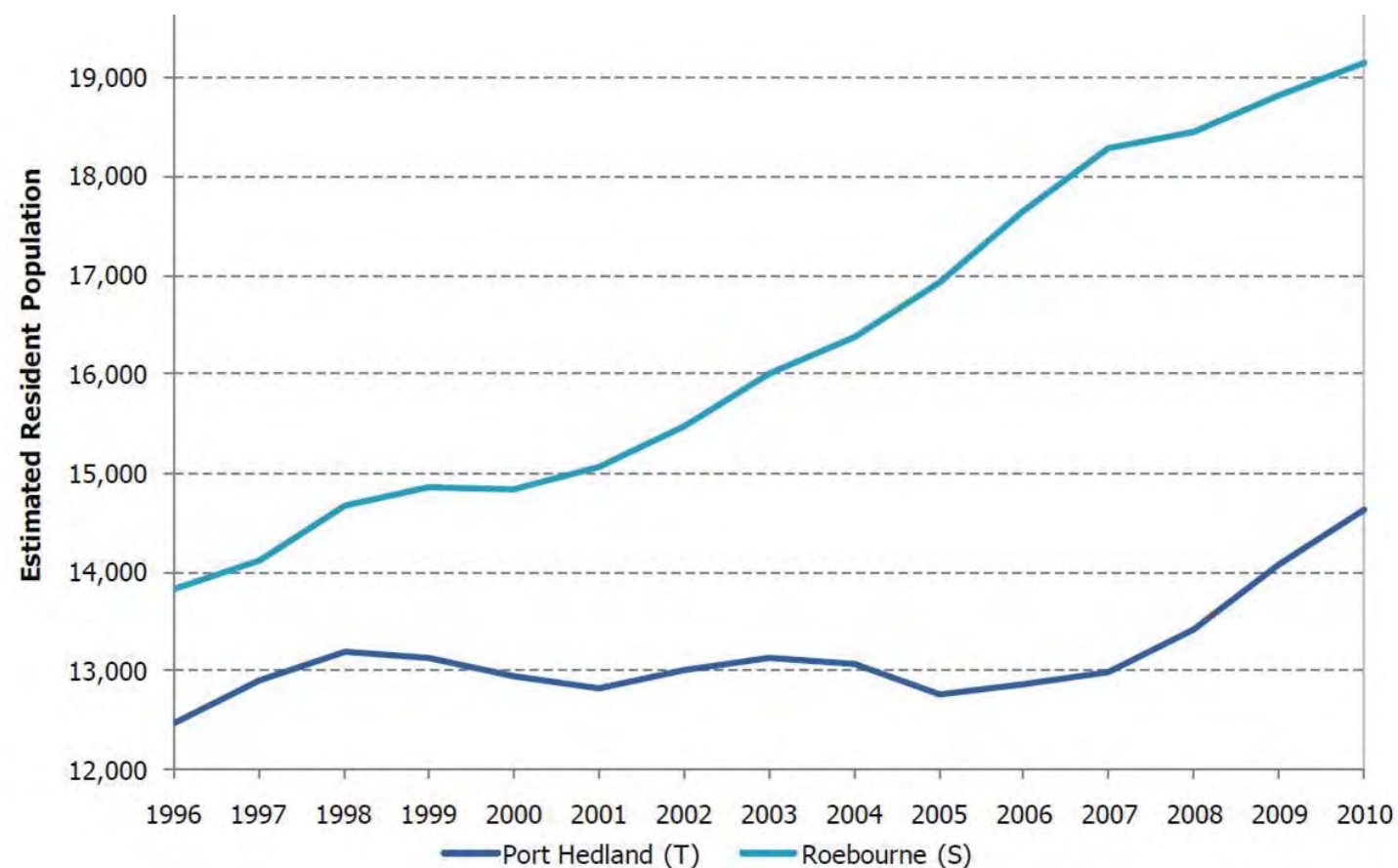


Figure 3.1: Historical Population Growth, Port Hedland, 1996 -2010 (Source - ABS 2011, AEC group, 2011)

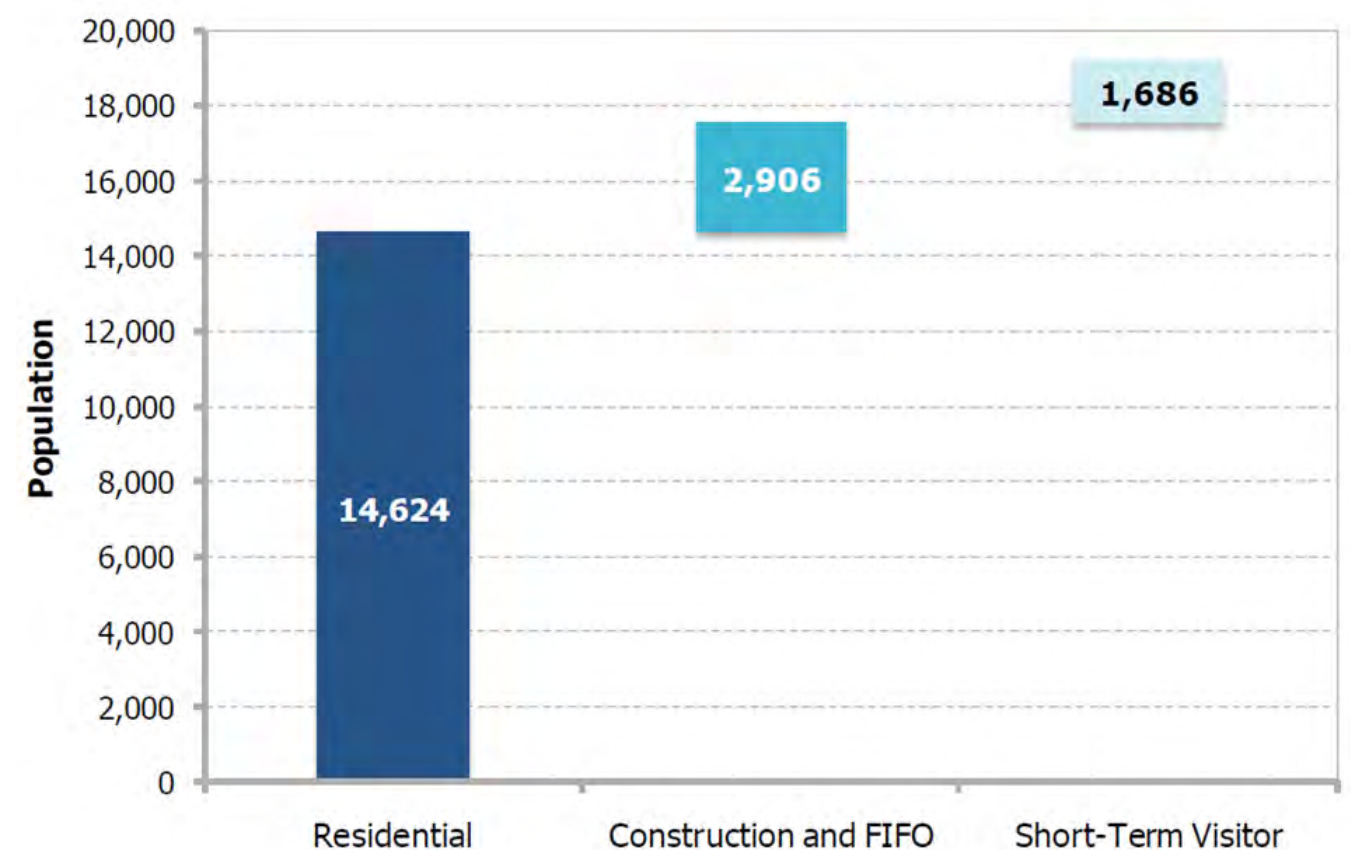


Figure 3.2: Composition of Total Service Population, 2010 (Source - AEC group, 2011)

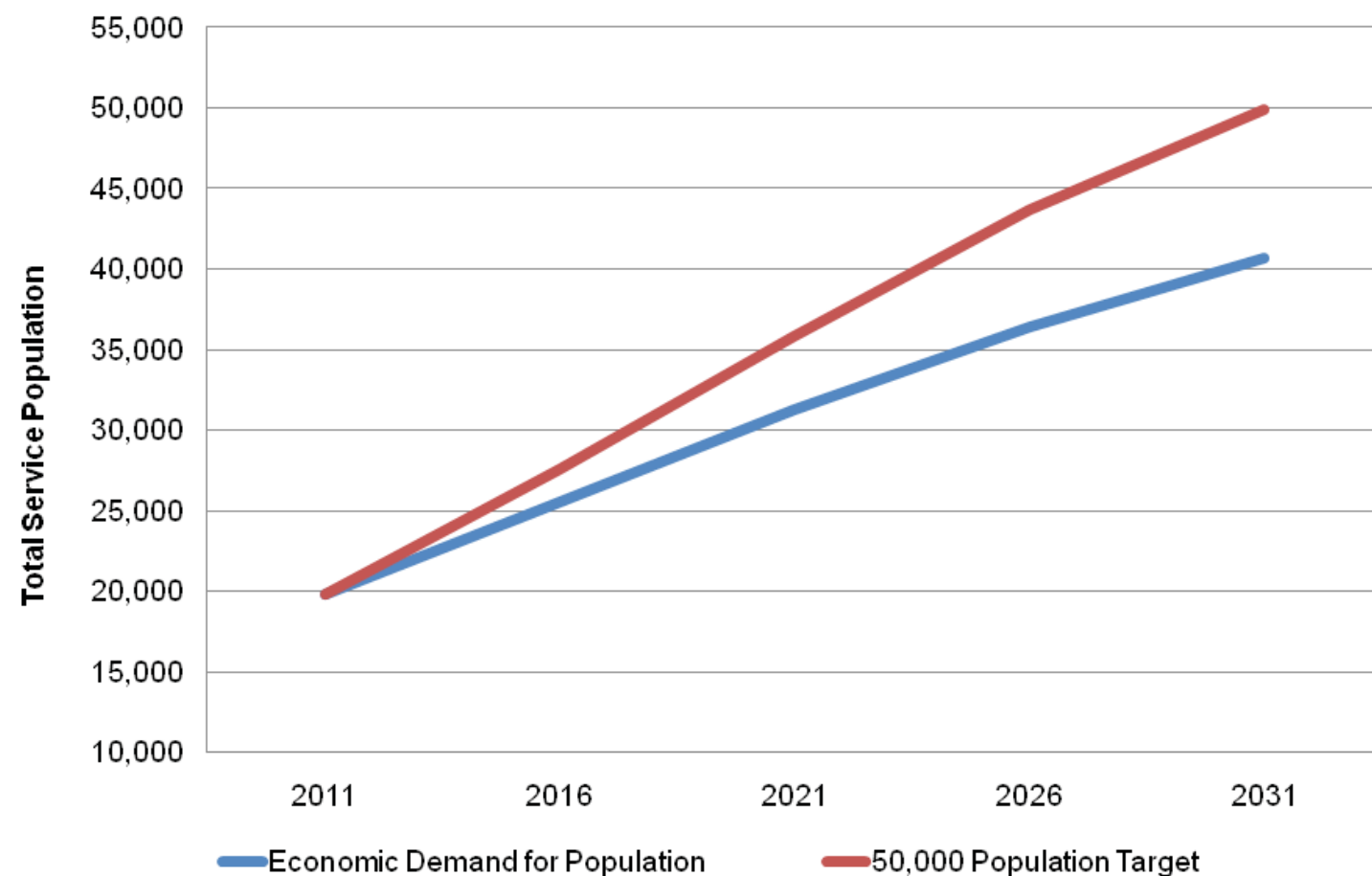


Figure 3.3: Future Population Growth, 2011 - 2031 (Source - AEC group, 2011 and RPS, 2011)

driving up costs.

The extent of these challenges dictates that a fundamental change is required in the way new housing is delivered and a skilled construction labour force is accommodated in the City. It is clear that in the short to medium term, there are few other options than to attract additional skilled labour through fly-in fly-out (FIFO) arrangements and accommodate them in workforce accommodation. Without a critical mass of skilled labour being accommodated in the City, existing issues of housing supply and affordability will be further exacerbated, potentially having lasting negative effects on both the local community and strategic industrial operations. In the medium to long term however, a move towards greater residential permanency of the skilled labour workforce will be required to ensure the City continues to grow and operate in a sustainable and socially inclusive manner, without having to rely on temporary arrangements.

Key Challenges and Opportunities

- Attracting and sustaining a resident population growth rate of over 4% per annum;
- Attracting and accommodating a significantly large construction workforce in the short term to deliver both industrial and essential domestic construction projects;
- Reducing the reliance on a FIFO workforce and encouraging an increased permanent residential workforce in the long term;
- Annual population growth rates of over 4% are achievable in Port Hedland, as evidenced in recent years (2009); and
- Population growth is supported by a very strong platform of economic growth.

3.2 ECONOMY

Economic Profile

The significant mineral, oil and gas reserves of the Pilbara region (accounting for 47% of WA mineral and petroleum production in 2009/10) are driving strong economic growth, with Port Hedland playing a key role as the regional and international gateway unlocking much of this wealth (In 2009/10, Port Hedland exported US\$18.7b of Iron Ore). On the back of this mining and export activity, Port Hedland's economy has grown 61.3% over the last three years, with significant additional growth projected as a result of considerable long term global demand for steel and iron.

Gross Regional Product (GRP) estimates illustrate that Port Hedland is a mono-economy, with almost three quarters of production value (73% of the total \$3.3b GRP) and 46% of total employment resulting from activity in the mining industry. Additionally, economic activity in the construction and transport sectors is strongly linked to the mining industry, through the

dominance of civil engineering projects, mineral resource exports through the Port Hedland Port and the prominence of business related visitors through the Port Hedland International Airport.

In 2031, Port Hedland's economy is projected to reach over \$8.7b annually. This is over four times as large as the economy in 2006/07 (\$2.0b) and over twice as large as 2009/10 (\$3.3b). The mining sector is expected to remain the most significant contributor to GRP, with an expected increase of \$3.8b (or 165.6%) expected over the period.

The reliance of local prosperity and quality of life on a single industry poses a medium to long-term risk for Port Hedland, should a decline in international resources demand be experienced. The dominance of mining (and associated port activities) also places significant demands on the labour market, including large numbers of transient workers, which in turn creates a shortage of employees in other sectors of the economy. Industrial construction



Figure 3.4: Gross Regional Product (\$b), 2006-7 to 2009-10 (Source - AEC group, 2011)

“...Port Hedland’s economy has grown 61.3% over the last three years, with significant additional growth projected as a result of considerable long term global demand for steel and iron. “

activity is poised for significant growth over the next five years, with \$46b worth of major projects designated in the immediate region.

To support the growth of the broader resource sector activity, Port Hedland is expected to invest approximately \$1b in supporting iron ore infrastructure and over \$45m in associated road and air infrastructure. This activity will consume materials and labour which would otherwise be required for local residential and commercial building projects in Port Hedland.

Employment and Skills

Mining is the region’s largest employer by far. Given the significant growth and development of the region over the past five years, Port Hedland’s next largest employers are construction

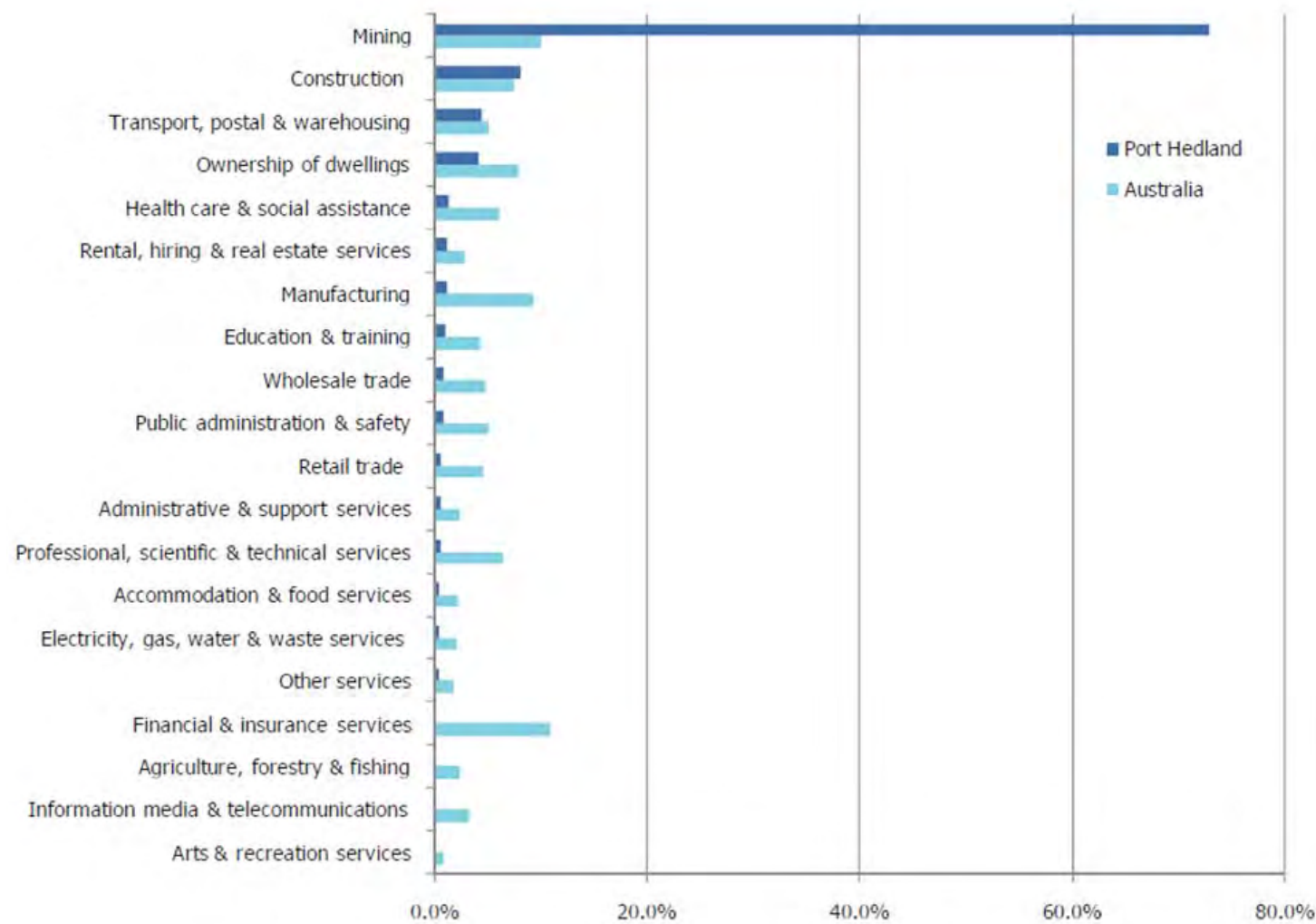


Figure 3.5: Percentage of Gross Regional Product by Industry, 2009-10 (Source - AEC group, 2011)

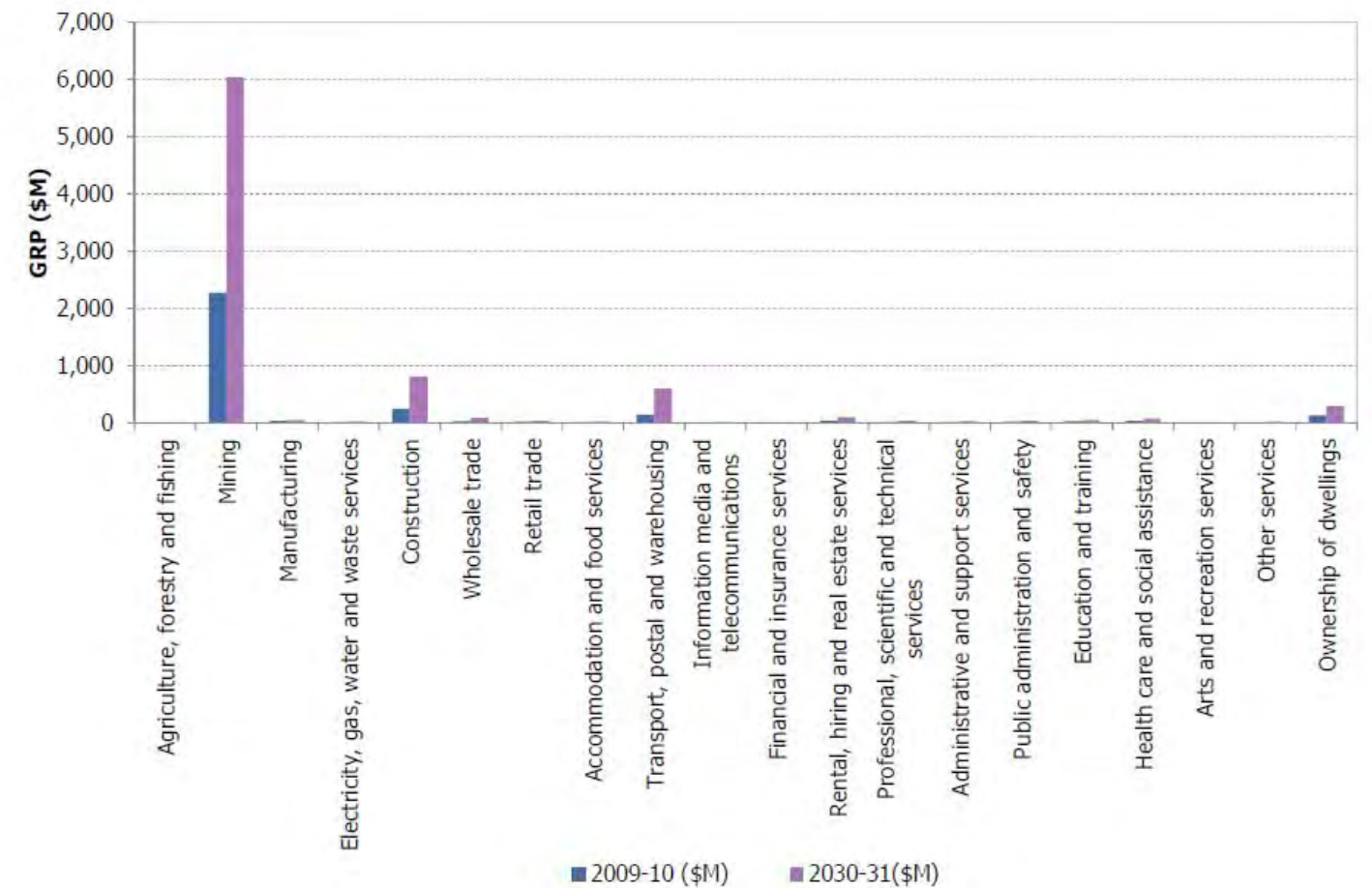


Figure 3.6: Gross Regional Product by Industry, 2031-32 (Source - AEC group, 2011)

and transport, followed by postal and warehousing. Population service industries feature as the remaining key sectors in the region with only a very small proportion of employment generated by professional and business types of services, electricity, gas, waste and water services, manufacturing or technical service areas. This highlights the dependency of the Port Hedland economy upon the mining sector and its associated industries and the relative vulnerability of the economy to the health of this sector for the generation of jobs and economic activity.

Port Hedland has a very high proportion of persons with a post-school qualification when compared to elsewhere in the Pilbara Region, Perth or Regional WA. This is due to the high proportion of skilled trades, technicians and other skill areas required by the mining sector. Key occupations and skill areas within Port Hedland and the broader Pilbara Region are tradespersons and

related workers, labourers and related workers and intermediate production and transport workers – all skill areas that are well above the Perth SD and regional Western Australia averages. Demand for these skill types reflect a similar skills profile other highly resource based economies face throughout Australia.

Employment Rate and Forecasts

Employment is forecast to increase strongly between 2011 and 2016 (by 7.0% or almost 3500 jobs), and then less rapidly over the period 2016 to 2031. This is a reflection of expected GRP growth over the same period. As at 2009-10, the majority of workers in 2030-31 are expected to be employed in the mining sector. Construction (3,373 jobs) and Transport, Postal and Warehousing (2,679 jobs) are the next largest employing industries in 2031.

Despite the continued dominance of the mining sector in terms of total employment, other sectors account for a larger proportion of total employment in 2031 than they do GRP. This reflects the fact that the mining sector has a relatively low direct employment yield in comparison to sectors such as construction and transport. Nevertheless, the mining sector will continue to play a critical role in driving employment through its supply chain relationships with other parts of the economy.

As reflected by expected GRP growth, employment is forecast to grow fastest for the transport, postal and warehousing sector between 2009-10 and 2030-31 (212.2%). This is partly a reflection of the increase of Port capacity over the period, but also reflects growth in general road and rail transport in response to increased population growth over time. Construction (160.6%), rental hiring and real estate services (140.4%), mining (127.4%), and wholesale trade (114.1%) are also expected to experience fast employment growth.

Despite having a strong local economy which has been built upon the resources sector, Port Hedland has a high unemployment rate when compared to the broader Pilbara Region, Perth and regional WA. This is likely due to the higher levels of socially disadvantaged persons and indigenous persons within Port Hedland. Over the

past three quarters, unemployment levels have declined which is in line with State trends and is reflective of the strengthening of the WA economy as a whole over the period.

Regional Trends

Across Australia, regional centres are undergoing significant changes in their economic structure and development. Challenges in sustaining population growth, securing access to major resources and reducing over dependence on single sectors are resulting in the emergence of clear trends in regional economic development. These trends include:

- Increased utilisation of existing economic assets (such as the redevelopment of regional airport precincts);
- Increased economic diversification (away from a reliance on agriculture) through increased exposure to mining activity;
- Promoting population growth through the provision of comparably affordable housing options;
- Encouraging retirement village, aged care and health related developments;

- Increased competition between towns for the role of major service centre in a broader region, with associated concentrations of higher order retail, government administration and services and health and education facilities;
- Leveraging strategic locations on major freight routes to encourage establishment of transport industry nodes;
- Attraction of major defence bases and activities; and
- Tailoring tourism products to the preferences of domestic market growth areas (for example, “grey nomads”).

Port Hedland is experiencing a similar mono-economy structure to many regional towns (although in this case it is as a result of strong exposure to mining activity, rather than agriculture), and there is a strong desire to increase economic diversification. The Port Hedland International Airport, one of the largest regional airports in terms of passenger movements, is a critical asset that can be leveraged against to increase economic activity and investment.

Port Hedland is remote from metropolitan Perth and cannot trade on any difference in relative house prices to attract residents. This situation is further exacerbated by the fact Port Hedland has significantly higher prices than Perth, making the fostering

of inward migration to the area very difficult. While access to employment is the key driver of migration to Port Hedland, more affordable housing options are required to enable effective relocation to the municipality.

There is strong competition between Karratha and Port Hedland for the role as the major service centre of the Pilbara region. The co-location of Port Hedland with Australia's largest Port facilities should be leveraged in order to capture key transport and distribution activities across the region. It is likely that government services will continue to be split evenly between cities in the Pilbara, though there is an existing opportunity to capture defence activity in response to the recently announced Defence Force Posture Review, as highlighted in Section 1.3.

Finally, visitation to Port Hedland is overwhelmingly dominated by business visitors. As the population of the Town increases, this will invariably increase the “Visiting Friends and Relatives” component of total visitation. However, there is a strong desire to capture increased market share of leisure tourism. Regional centres are increasingly focusing on “grey nomad” travellers in response to a depressed domestic tourism market. Port Hedland, located between Perth and the key destination of Broome, has the capability of capturing a portion of the “grey nomad” stopover market, through the provision of high quality, high amenity facilities and services.

Industry Sector	GRP by Industry	Employment by Industry
Mining	72.8%	45.5%
Construction	8.1%	13.9%
Transport, postal & warehousing	4.5%	5.1%
Health care & social assistance	1.3%	4.8%
Rental, hiring & real estate services	1.2%	1.8%
Manufacturing	1.2%	1.9%
Education & training	1.1%	4.9%
Wholesale trade	0.9%	2.2%
Public administration & safety	0.9%	4.2%
Retail trade	0.7%	3.7%
Administrative & support services	0.5%	1.3%
Professional, scientific & technical services	0.5%	1.4%
Accommodation & food services	0.5%	4.1%
Electricity, gas, water & waste services	0.5%	1.1%
Other services	0.4%	2.5%
Financial & insurance services	0.2%	0.3%
Agriculture, forestry & fishing	0.2%	0.5%
Information media & telecommunications	0.2%	0.3%
Arts & recreation services	0.1%	0.4%

Note: GRP by industry will not sum to 100% due to the ownership of dwellings being omitted from the table.

Figure 3.7: Gross Regional Product and employment by Industry, 2009-10 (Source - AEC group, 2011)

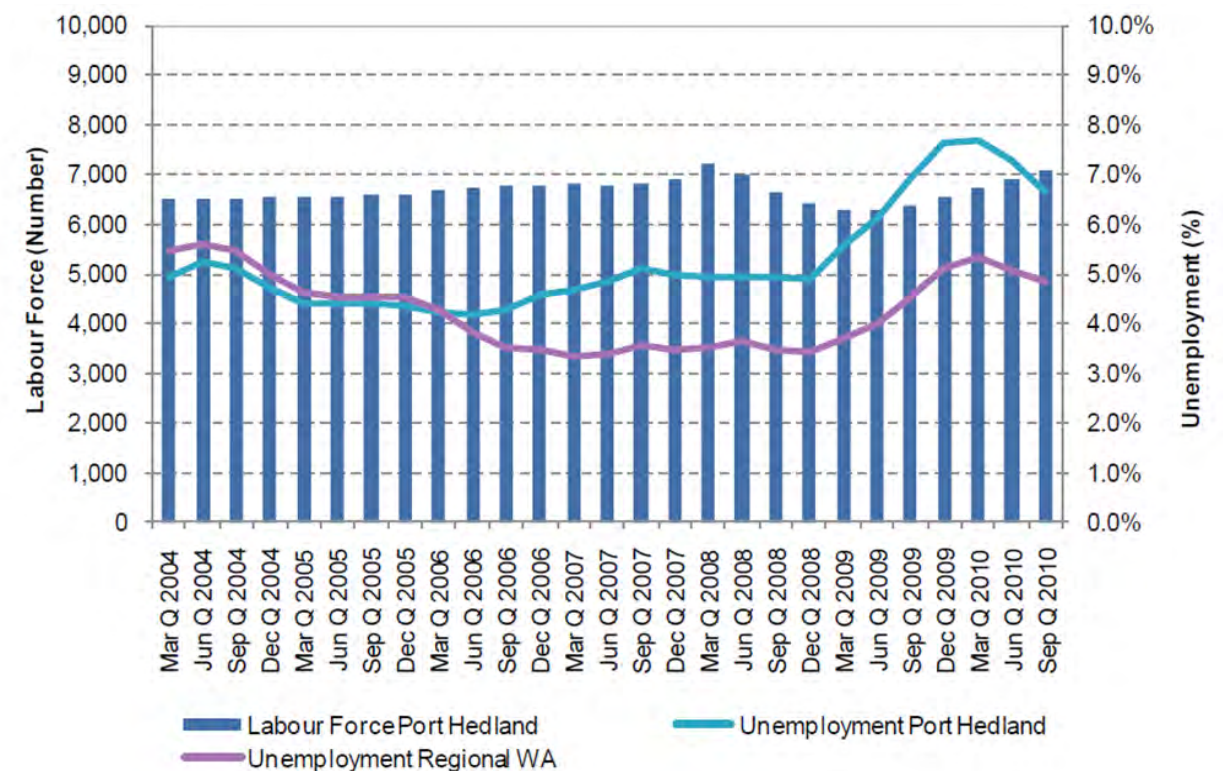


Figure 3.8: Labour Force and Unemployment, 2004 to 2010 (Source - AEC group, 2011)

Key Challenges and Opportunities

Port Hedland is in a fortunate position in comparison to many regional economies with its strong exposure to the mining sector. This will underpin strong ongoing economic growth for the foreseeable future. However, there is a need to diversify the local economy away from its current (almost total) dependence on direct mining investment and activity to reduce its exposure to global economic risks and promote a more sustainable business environment characterised by improved affordability and choice.

Investment in transport and communications infrastructure is critical to support increased economic activity and diversity in the future. Additionally, core infrastructure related to water and energy is critical to enable increased housing supply.

Economic opportunities have been identified in professional services, construction services, heavy industries, defence, local agriculture, population-serving industries and regional tourism. Promotion and attraction of these industries and businesses will assist in diversifying the economy, creating a sustainable business environment and allow Port Hedland to capture a greater share of the value-add and supply chain of future mining sector activity.

Key Challenges and Opportunities:

- Mono-economy reliant on the Mining Sector, exposed to significant risk from disturbances to global markets and local operational changes. There is therefore a need to increase resilience to potential future changes through further de-risking of industrial operations and increased diversification of the local economy.
- Housing undersupply is the most critical impediment to future economic growth, placing significant pressure on the property market and preventing the inward migration of new residents and businesses outside of the mining sector.
- Shortage of property across a range of industrial, commercial and retail sectors, restricting the rate of growth and placing further upward pressure on market prices.
- Lack of local innovation and knowledge, which could assist in diversifying the economy and reducing reliance on the mining sector.
- Timely supply of critical strategic transport and utilities infrastructure to support economic activity.
- Expansion of local mining support activities to improve supply chain efficiency and replace import requirements.
- Economic diversification opportunities within the professional services, construction services, defence, local agriculture, population servicing industries and tourism sectors.

3.3 HOUSING AND LAND SUPPLY

Housing

The recent growth in population (resident and transient workers) and economic activity, coupled with a general undersupply of residential and non-residential properties, has had a significant effect in driving up property and rental prices in Port Hedland. Residential sales and rental prices have both increased by an average of 14% between 2008-2010, with average house prices of \$1.12m (triple that of Perth) and average rental prices of \$1,772 / week (four times higher than Perth) at present.

Such high prices and lack of supply have created significant problems for local communities and businesses, and is a significant constraining factor for future population growth and the provision of a strong labour market to support strategic industry and local/regional services.

Over the next twenty years, rapid residential population growth will drive increased housing demand, and require the identification and subsequent delivery of residential development sites (both infill and greenfield) across both Port and South Hedland. Estimates suggest that to meet a population target of 50,000 people, some 21,000 new dwellings would need to be built in the urban areas of Port Hedland and South Hedland by 2031.

The move to a population of up to 50,000 will not only require significant increases in housing stock, but will also require increased diversity and choice in the location and type of residential products provided to cater for an increasingly segmented property market. In the immediate and short term, the critical constraining factors to delivering the additional housing supply are (i) the availability of utilities infrastructure capacity (particularly water); and (ii) the presence of a construction labour force large enough to deliver the number of dwellings required.

YEAR	TOTAL POPULATION	TOTAL DWELLINGS	NEW DWELLINGS REQUIRED
2011	19,822	5,392	-
2031	50,000	At least 26,000	At least 21,000

Figure 3.9: Current estimated population and dwelling requirements for 50,000 target. (Source - AEC group, RPS, 2011)

Transient Worker and Short Stay Accommodation

Port Hedland currently relies on at least 3,000 fly-in fly-out workers (although unofficial estimates place this number a lot higher) to supply the skilled labour requirements of the local mining and construction industry. Whilst a proportion of this workforce is

accommodated in permanent residential housing in established areas of Port and South Hedland, a large number of FIFO workers are accommodated in a variety of short stay accommodation and transient workforce accommodation facilities throughout the town.

Not all FIFO arrangements are the same, with some workers operating on short term contract arrangements (for example, those associated with single time limited construction projects) and others employed on a much longer term basis (for example, highly skilled workers employed for ongoing operational work on major resources projects). Likewise, the type, form and location of TWA facilities required to accommodate these different types of workers will vary, with construction workers often needing to be located in close proximity (sometimes on) the worksite they are servicing, whereas operational FIFO workers are often more appropriately located in close proximity or within established urban areas (potentially with integrated/shared use of facilities and services with permanent residential communities).

As noted in Section 3.1, the short term provision of additional TWA

facilities (particularly to cater for a skilled housing construction workforce) is essential to help support and sustain industrial activity and overcome immediate challenges in constructing required levels on new housing stock. In the longer term however, as the permanent residential population continues to grow and the local labour force increases, a slowing in the growth of FIFO demand and associated TWA is anticipated. The current significant demand for construction workforce TWA capacity will eventually shift towards a need for higher quality and more permanent accommodation for a workforce associated with the ongoing industry operations.

In addition to TWA demand, short-term visitor numbers will continue to grow in the future, requiring a significant amount of new accommodation to be delivered in the next five to ten years. This additional supply is required not only to address the current extreme undersupply (currently experiencing 90% average occupancy rates), but also to facilitate a diversification of local economic activity.

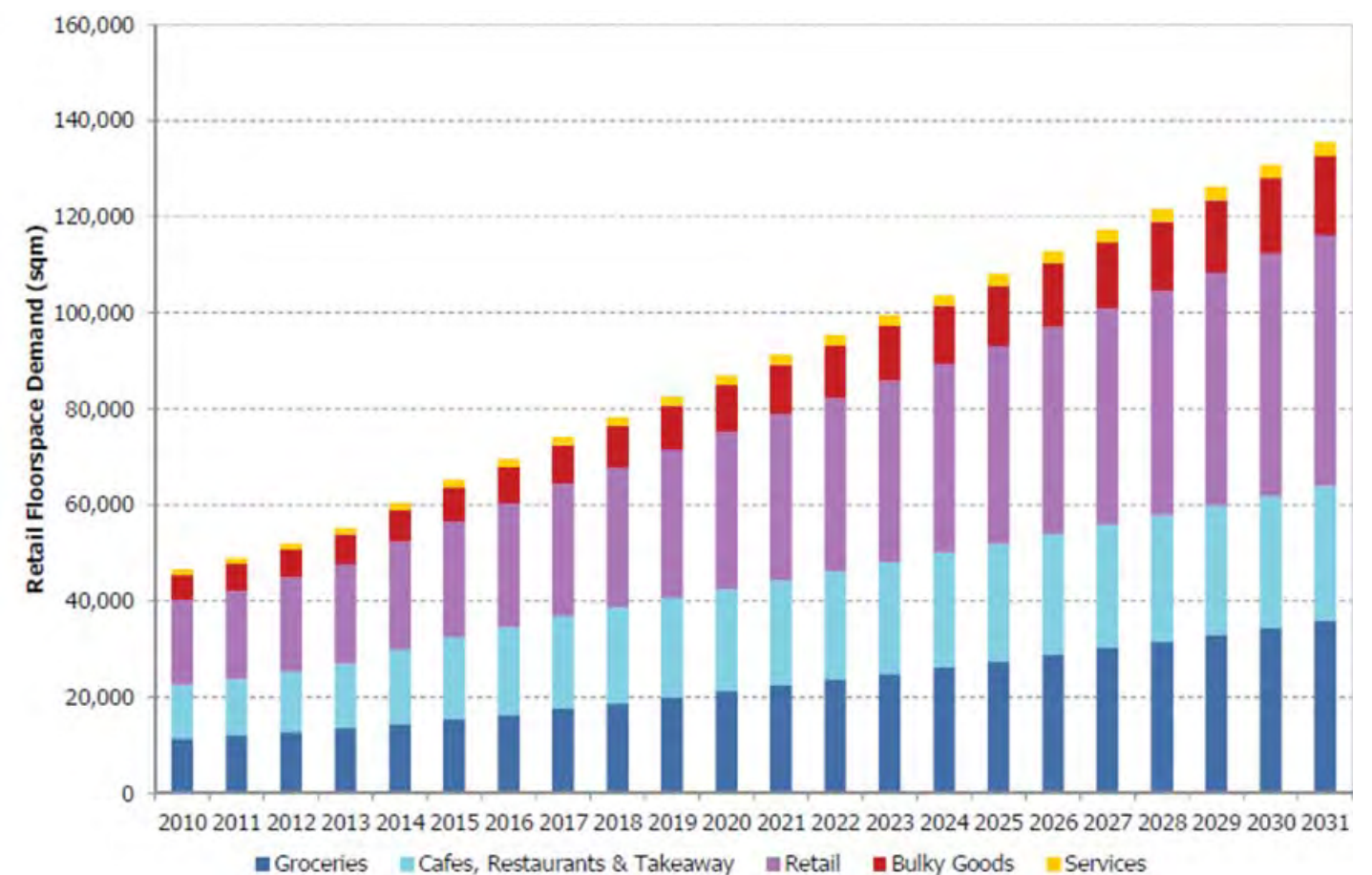


Figure 3.10: Retail Floor Space Demand 2010 - 2031 (Source - AEC group, 2011)

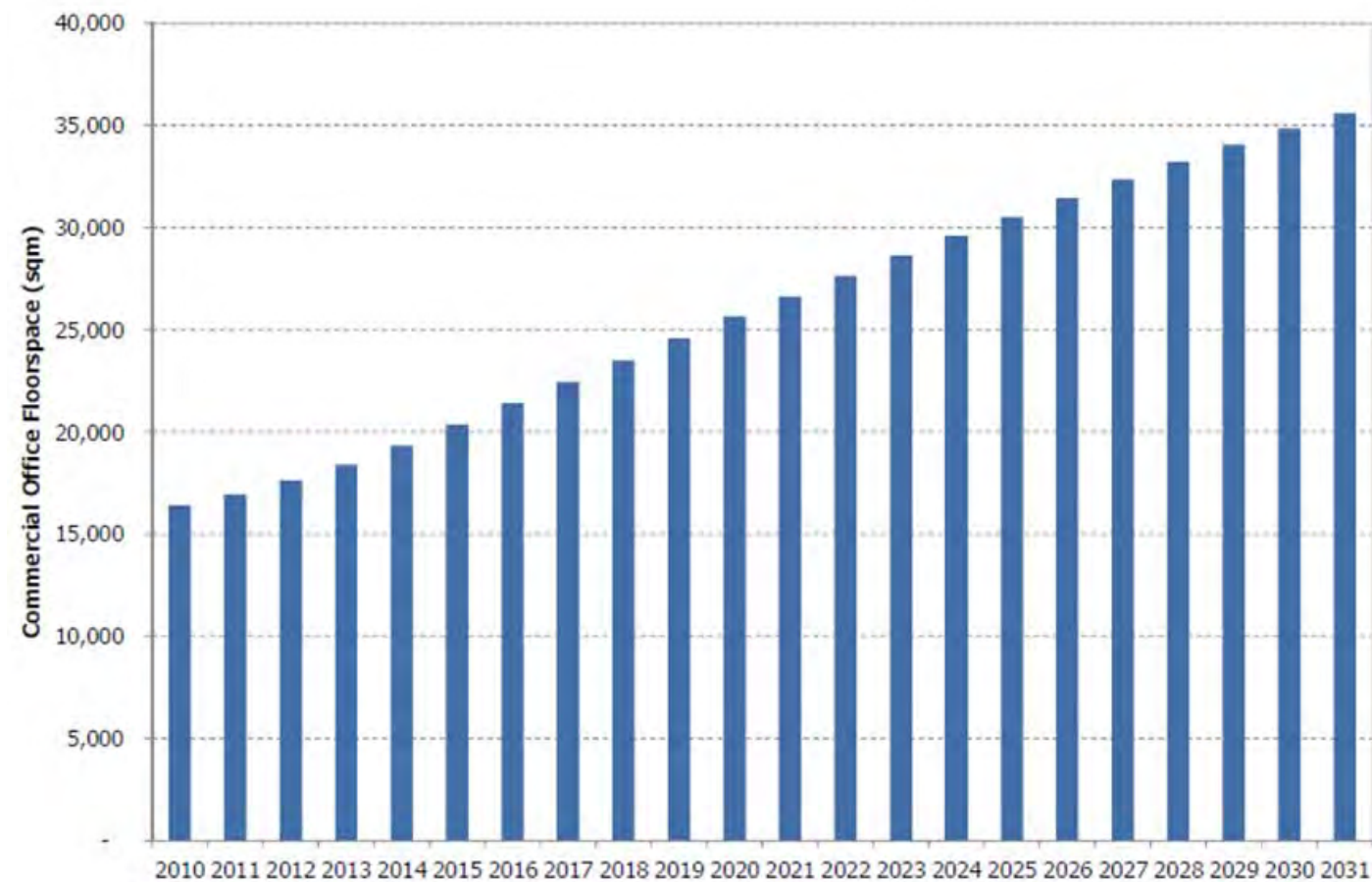


Figure 3.11: Commercial Office Floorspace Demand, 2010 to 2031 (Source - AEC group, 2011)

Retail and Commercial

Demand for retail and commercial floor space in the City is expected to grow significantly over the next 20 years, in response to strong population growth, increased residential settlement and growing incomes. By 2031, retail demand is expected to reach at least 135,000sqm (over 93,000sqm more than current levels). However, in the immediate term there is an urgent need to address the current retail undersupply of cafés, restaurants/takeaways, groceries and shop retail offering in the area.

The current undersupply of commercial floor space also needs to be corrected, as this is placing additional pressure on the retail market (with commercial office premises now competing with and often occupying valuable retail space). In addressing the shortfall and increasing demand for retail and commercial floor space at an LGA level (growing to just over 35,000sqm in 2031), it is important that the type of property products offered in various catchments (i.e. Port Hedland West End, South Hedland Town Centre etc) are complementary and appropriate to their activity

centre role and function, and help facilitate increased levels of specialisation in the medium to long term.

Industrial

The industrial property market is characterised by significant supplies of strategic industrial land (associated with Port Authority and Dampier Salt operations, along with the Boodarie Strategic Industrial Area) and non-strategic industrial land (including the Port Hedland light industrial and Wedgefield industrial areas). Whilst there appears to be sufficient zoned land supply for both strategic and non-strategic industry demand in the short to medium term, a key challenge is to provide increased location choice (particularly for general/light industry and logistics operations) beyond the existing estate areas such as Wedgefield.

Additional industrial land supply, over and above anticipated future demand, is required in the medium to long term and ideally needs to be provided in new locations to maximise choice for prospective tenants and encourage further specialisation

(particularly into emerging 'green economies' and supply chain areas associated with the resources and export industries).

Key Challenges and Opportunities

The Town of Port Hedland is projected to experience continued robust growth in demand across all property markets (doubling or even tripling of demand in some markets), resulting from not only growth in the local population and economy, but also from demographic, settlement, and income and wealth changes. Current supply pipelines are generally insufficient to accommodate this demand with some markets unable to respond to even short-term requirements. This reflects a range of factors including, but not limited to:

- Overly concentrated supply locations;
- Lack of choice in the market;
- Lack of strong supply pipelines to mitigate against demand shocks and reduced perceptions of supply shortages;

- Development feasibility issues, relating to environment, infrastructure and development cost constraints; and
- Lack of a local labour force for both construction and operational phases of development.

These challenges have in part contributed to current supply gaps in select markets (such as Café, Restaurant and Takeaway retail and short-term visitor accommodation), while the responsiveness of other markets has been constrained by uncertainty regarding future demand along with inflexible planning and approvals processes (particularly for larger projects).

Nevertheless the growth in demand for land, floorspace and activities in the Town of Port Hedland, reflects its emergence as a genuine residential population centre, with associated local services, facilities and offerings. This maturity represents the underlying driver of the Pilbara Cities project and will naturally result in increased economic diversification (in the form of increased non-mining employment) and greater residential settlement.

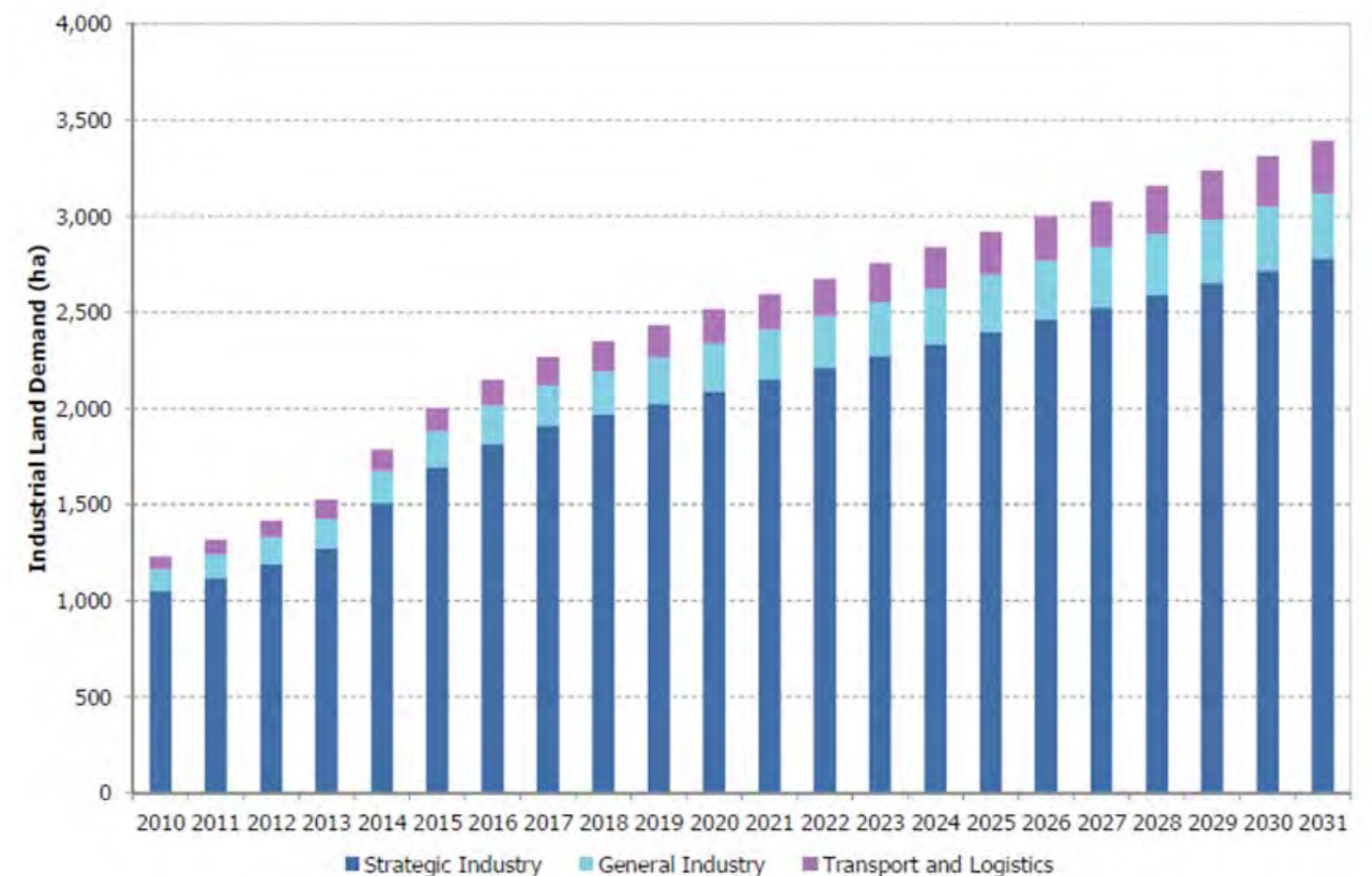


Figure 3.12: Industrial Land Demand 2010 - 2031 (Source - AEC group, 2011)

3.4 LOCAL COMMUNITIES, CULTURAL HERITAGE AND LANDSCAPE CHARACTER

Demographic and Socio-Economic Profile

Port Hedland's socio-demographic profile is consistent with that seen in regional resource towns across Australia. It has a relatively young population, with an average age of 31.2 years, and a high proportion of children (under the age of 15 years) and working aged persons (between 25 and 34 years). Of the estimated 3,089 households (in 2006), the majority are family type households with children. Being a major industrial hub, however, there is also a high proportion of lone person and group households.

Over 80% of Port Hedland's population is Australian born, which is in line with the cultural heritage trends of the broader Pilbara region. Port Hedland has a significant level of indigenous Australian presence (over 15% in 2006) relative to the wider Pilbara region (ABS, 2007). This highlights the importance of considering this significant group of people in the future growth of the city.

Average incomes of Port Hedland residents are well above the

Perth and Regional WA averages (Australian Tax Office, 2010). This is not surprising considering the resource and industrial focus for the economy which generally have higher paying wages to secure specialist and high demand skilled workers. Over the past four years, the distribution of earnings by residents changed significantly, with a much greater proportion of workers earning in the higher wage ranges. This is evidenced by almost 20% of the population earning over \$104,000 a year in 2008 compared to 6% of the population four years ago.

Whilst the income profile of Port Hedland shows increasing levels of high earners and a decreasing proportion of low income earners, there is a widening gap emerging between those who are benefiting greatly from the mining boom (including those high income earners) and those who remain relatively disadvantaged. Levels of relative socio-economic disadvantage (calculated using a combination of indicators such as age, employment, ethnicity, access to services etc) are seen to be particularly high in parts of South Hedland and surrounds, whilst the West End, East End and Pretty Pool areas of Port Hedland are shown to experience relatively little disadvantage. The strong locational correlation

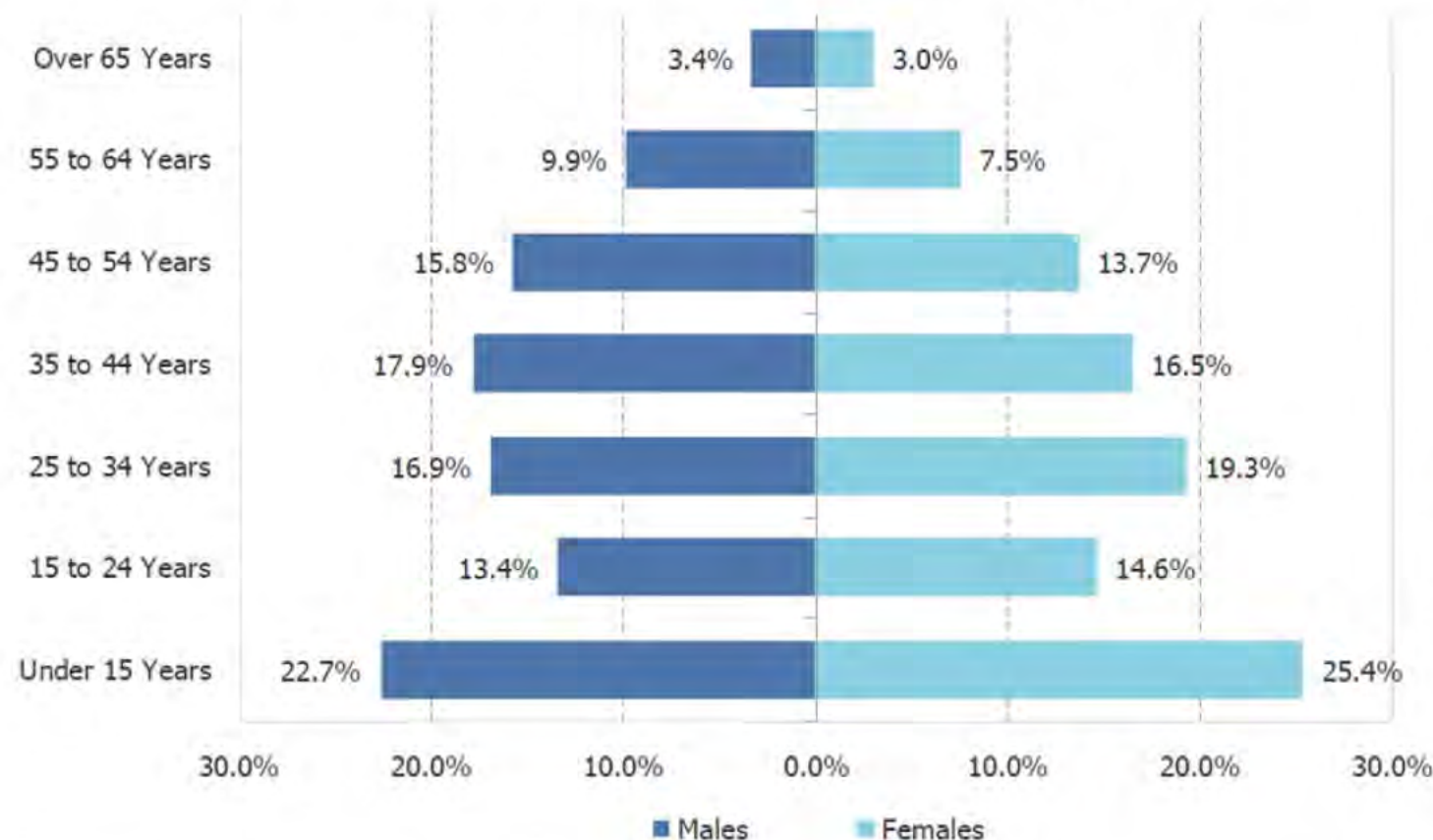


Figure 3.13: Age and Gender, Port Hedland LGA 2009 (Source - ABS 2010a)

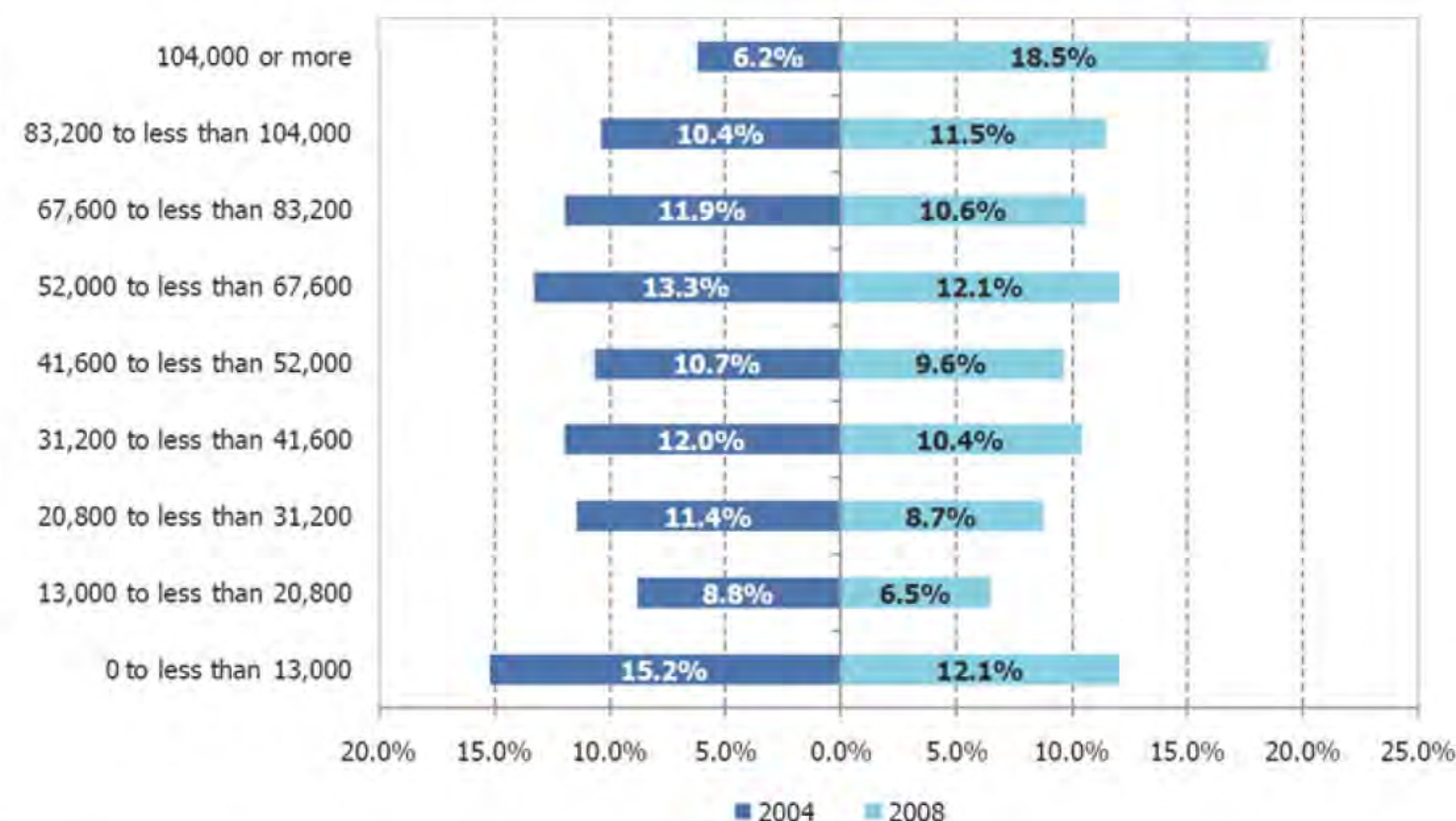


Figure 3.14: Wages and Salaries, Port Hedland LGA, 2004 and 2008 (Source - ABS 2010b)

between levels of relative advantage/disadvantage between the two main settlement areas presents a unique challenge to be considered in planning for future growth and creating a city where people want to live and are proud to call home.

Indigenous Heritage

Port Hedland is the oldest functioning centre in the Pilbara. It has a rich history and culture that extends far beyond its current role as a major port/logistics and resource centre. Port Hedland also has a rich Aboriginal culture extending back over 4,000 years, with the Kariyarra speaking people living in the Port Hedland area and the Ngarla people and Nyamul speaking people living to the north and south respectively.

Port Hedland has significant Indigenous cultural heritage sites such as Two Mile Ridge, Pretty Pool and Twelve Mile Camp. A range of engravings, Thalu, shell middens, artefact scatters, ceremonial, mythological and camp sites are also recorded in the Port Hedland area (McCarthy 1961).

Within the Port Hedland local government area there are 850 sites included on the Department of Indigenous Affairs Register of Aboriginal Sites. A further 448 potential sites are recorded as Other Heritage Places, a category which covers those items yet to be assessed for inclusion in the register.

The Kariyarra name for Port Hedland itself is Marapikurrinya, which references the finger-like formation of the tidal creeks that mark the coastline in the harbour: *Mara* meaning hand, *pikurri* meaning pointing straight and *nya* denotes a place name marker. This traditional name is honoured with a park of the same name that sits at a premier location on the waterfront in Port Hedland's West End.

An integral feature of Port Hedland's Indigenous cultural heritage is connectedness. Sites do not exist in isolation, but in continuity of time and landscape. The limestone ridges that cross the region are often found to contain extensive series of engravings. It is most likely that these limestone ridges, a high point in the landscape, provided a conduit, a camping area, a source of fresh water and a method of easily accessing the mangrove resources.

The limestone ridge engravings, whilst the most readily known indigenous cultural heritage sites in the area, comprise just one facet of a range of site types that reflect the Indigenous use of the area prior to settlement.

Living Legacy

In addition to the many traditional sites and historical heritage, there is a living legacy and continuation of cultures that are an important influence in Port Hedland today. With a greater Indigenous presence in the town than in the broader Pilbara region, a strong cultural and language centre, a growing Indigenous arts community and rich traditions of knowledge to draw from,

it is important that these aspects of Indigenous heritage are also reflected in the Town's planning and development.

This cultural knowledge and experience of the town as it grows has begun to be explored through projects such as the recent exhibition by FORM with the Spinifex Hill Artists, *Before the Town Got Big*. This exhibition and catalogue explored the artists' memories of the region at a time before the town grew to its current state and their experience of that growth.

These sorts of initiatives that tell the stories of the living, growing, adapting cultural heritage are an important part of keeping this intangible heritage a part of the town's identity and rich

cultural asset base. It is through storytelling and fostering the continuance of cultural production that these assets can be sustained. Therefore, it will be important to explore opportunities and programming for celebrating continuing heritage and living cultures as continuance of past – the living legacy.

It is also through these initiatives that more meaningful consultation and understanding of the full extent of heritage assets can be understood. One of the common themes that emerged through consultation as part of programming initiatives is a sense of loss of heritage that stems from interruption to access to key sites or spaces. Equally, heritage can be an important means of developing a sense of renewal and transformation.

These aspects of Indigenous life are important elements to take into account in the planning process.

Initial consultations with the indigenous community have also indicated several areas of priority for the community, including:

- Affordable housing for Aboriginal people and reduction of waiting list time frames

- Funding and amenity support for parents and community members to teach Indigenous singing and dancing (such as through the Youth Centre)
- Demonstrated progress on key projects, with greater coordination of efforts to focus on issues of real import to Indigenous people
- A market place and space for art work sales
- Assistance for Aboriginal people to participate in society
- More community dwellings and caravan parks
- Regular public transport between Port and South Hedland
- Banks in South Hedland
- Expanded Post Office

While the first stage of consultations have been started to begin to inform the growth planning, more in depth consultation process with the Kariyarra people and other indigenous groups of the region will need to be undertaken beyond the Growth Plan process.

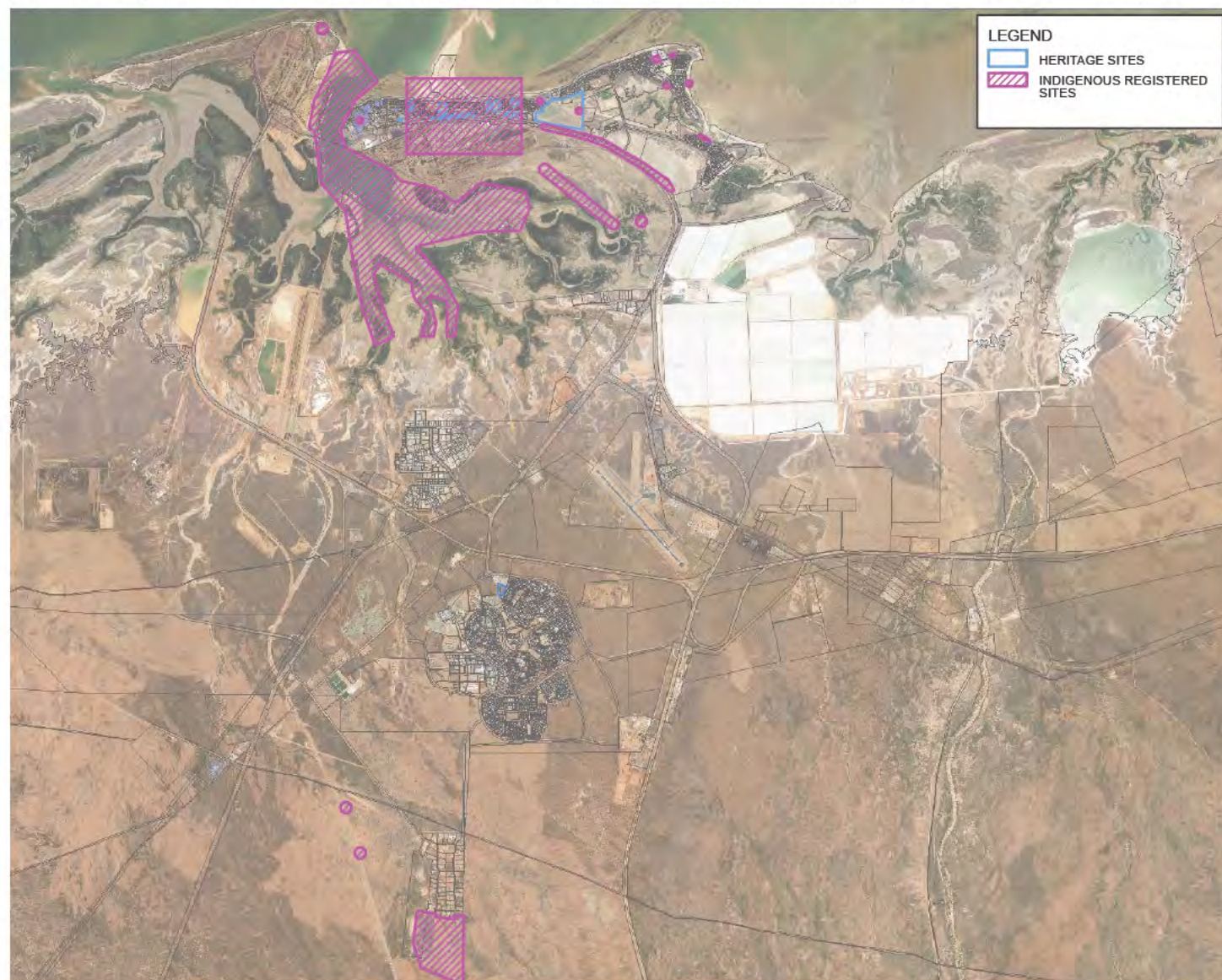


Figure 3.15: Heritage and Indigenous Registered Sites.



Native Title

In August 2011 a South Hedland Native Title Agreement was signed by the Minister for Lands for and on behalf of the State of Western Australia and the traditional owners. The Agreement helps South Hedland move towards the Pilbara Cities Vision and forms the basis of a strong and successful relationship with the Kariyarra people. The area of the Agreement is shown at Figure 3.16 and covers the area needed to grow the town over the coming years. Areas shown for expansion in the medium to long term, in the very south of South Hedland, will need a further agreement in due course, with the timing of any negotiations being linked to demand and supply requirements.

In Port Hedland, Native Title negotiations between the Yamatji Marlpa Aboriginal Corporation and the State Government are also being progressed to reach a similar agreement as that reached in South Hedland.

Indigenous Equality and Inclusiveness

Beyond the value and importance of indigenous heritage and the continuation of cultural knowledge, there remain opportunities to be addressed with regard to indigenous reconciliation and providing better opportunities for local Aboriginal people to access affordable housing and employment.

Whilst many existing residents are currently finding it extremely difficult to secure affordable housing in Port and South Hedland, Indigenous Australians are particularly affected by this issue given other challenges associated with accessing education and employment opportunities. These pressures are forcing many Aboriginal people into sub-standard accommodation arrangements and even homelessness. It is therefore crucial that sufficient levels of public housing and other temporary accommodation solutions are identified and provided to address issues of homelessness in the indigenous community.

In addition to housing and accommodation, gaining access to education, training and employment is another key challenge for local Aboriginal people living in Pilbara's Port City. According to Census data (ABS, 2007), indigenous residents of Port Hedland are far less likely to travel to work by car (as the driver) compared to non-indigenous residents, and are much more likely to travel to work by public transport (bus), by walking or as a passenger in a car. Whilst employment opportunities are being made available to Aboriginal people, they are often unable to be accessed due to a lack of work readiness and/or a lack of affordable and convenient transport options. In addressing this key challenge, alternative forms of affordable transport provision need to be identified, along with other programs and mechanisms to improve Aboriginal education and employment/business opportunities (ideally based on/building on proven and successful initiatives already present in the local community or other regional cities).

Non-Indigenous Heritage

The first known non-indigenous landfall on the East Pilbara coast occurred in 1628 when a vessel commanded by Captain De Witt grounded at Cape Thoun approximately 40 kilometres west of Port Hedland. With the onset of European settlers the settlements of Port Hedland and the Condon Townsite were established in the late nineteenth century. Early development of the area focused on the pastoral and mineral industries together with transport of products through the port facilities. More recently, the city has attracted a rich multicultural community from many different countries worldwide, with 20% of the total resident population born overseas (ABS, 2007).

The non-indigenous heritage items within the Town of Port Hedland are recorded across all levels of government. There are 76 items

registered on the WA Heritage Council database as being located within the Town of Port Hedland local government area, including Boodarie Station Homestead, Condon/Shellborough Townsite, and the Esplanade Hotel. 60 items are also identified within the Town of Port Hedland Municipal Inventory of Heritage Places.

Through the Growth Plan and future planning and development, there exist opportunities at a local level to promote Hedland's unique multi-cultural heritage in an integrated manner, conserving heritage assets and celebrate the diverse range of local cultural and historical elements through the creation of new public spaces. At the regional level there is the opportunity to promote increased awareness and exposure to cultural assets (through tourism for example) in areas such as Condon or on pastoral stations such as Boodarie.

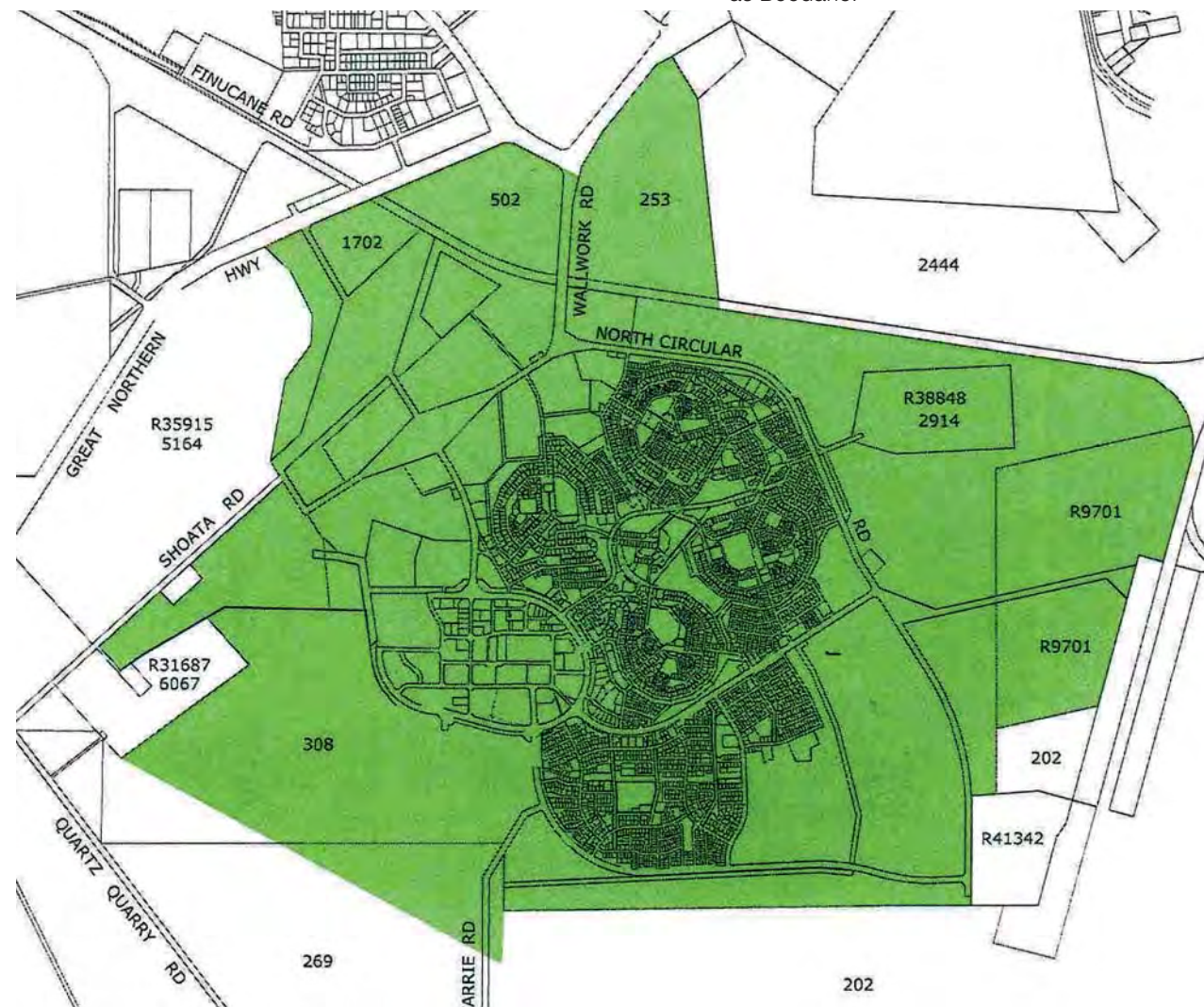


Figure 3.16: South Hedland Native Title Agreement Area





Landscape Character

The relationship between a city's people and its built and natural landscape plays a significant part in defining the character of a place. Port Hedland's unique physical and environmental characteristics influence the way residents and visitors view and experience the landscape character of the area. The following factors play a critical role in the way Port Hedland's landscape is perceived and experienced;

- The experience of the landscape is defined by the spaces between developed areas. This is where long views are possible from highways to the horizon and surrounding Pilbara Landscape;
- In built up areas, views are generally contained to local catchments with a lack of elevated areas that allow outward views (with exception to the coastal dune & railway bunding);
- The coast represents a point of refuge where from the dune views are possible out over the ocean to the North as well to the South over Port Hedland to industry and rail infrastructure;
- Esplanade roads in built up areas offer outward views and a connection to the surrounding landscape;
- Industrial areas and rail infrastructure to the south of Wilson Street create iconic visual elements;
- From the East End of Port Hedland, views to the south are constrained by the railway corridor (south of Wilson Street) but maintain a visual connection to the industry of the region; and
- The mangrove flats of Redbank and coastal areas are a dominant and significant landscape feature of the area.

Community Character and Culture

Community consultation has indicated three particular dimensions that must be addressed in future development. Out of these three challenges arise important guiding considerations that will cut across the themes of the Growth Plan:

- Attachment to Place and Livability
- Distinctiveness and Community Character
- Aspirations

Given the difficulties of a population which currently embodies a high level of transience, engaging loyalty to place and forming long term communities is of central concern to the future of Port Hedland, particularly considering plans for rapid growth and increased residential populations. Therefore, it is vital to consider the factors that attach people to place.

In a recent study of 43,000 people in 26 communities in the U.S.A. over three years, three main qualities were identified that attach people to place: "social offerings, such as entertainment venues and places to meet, openness (how welcoming a place is) and the area's aesthetics (its physical beauty and green spaces)" (*Gallup, 2010*). Moreover, residents rated their communities' availability of arts and cultural opportunities and social community events highest in importance among social offerings. (Social offerings overall include vibrant nightlife, good places to meet people, other people that care about each other, availability of arts and cultural opportunities and availability of social community events).

Port Hedland seeks to grow into a place that offers the things that will sustain its community in the long-term. To achieve this planning must enable social offerings: particularly arts, cultural and social opportunities, a sense of welcoming and inclusiveness, and a quality, attractive environment, in line with the factors influencing attachment.

These elements will be critical for the sense of livability that is articulated as a leading priority across Local and State government policies pertinent to Port Hedland.

Livability as the town grows will also be influenced by the ability to provide a full range of services, facilities and cultural offerings that set cities apart from towns. Given the trends of current lifestyles and economies, people are increasingly seeking convenience, choices, chances to explore and experience a range of things, and access diverse opportunities – to learn, work, contribute and live the life they would like to lead. It will also be necessary to ensure these fundamentals are in line with the local character and behaviours, quality, and with a view to sustainable community.

In addition to providing the range of community and cultural offerings desired, there remains an imperative to provide a strong

economic platform to sustain such activity. As stated in the Gallup study (2010), "...the cities with the highest levels of resident love and passion for their community, or resident attachment, also had the highest rates of GDP growth over time." In this sense, Port Hedland is starting from a position of strength with rapid GDP growth.

In addition to the landscape character of the region, the distinctiveness of place and character of the community is important to factor into planning. The character or personality of place forms a critical basis for growth, building on inherent strengths and maintaining a sense of authenticity that can anchor community growth.

Character also references attitude: the spirit that underlies a region. This spirit is captured in the principles for the Growth Plan, which have been shaped by community input. These reflect the desire to build on the community's resourceful character and make Port Hedland a welcoming home, valuing its diverse strengths and features and embracing its growing international focus.

Through previous community workshops and consultation the community has identified the following characteristics they would like to foster (Source: FORM, 2010):

NOW

Maintain and Nurture Qualities We Currently Have

- Sunny
- Adolescent
- Hard working
- Open
- Calming
- Inner Beauty
- Child Friendly

FUTURE

- Well-balanced
- Big hearted
- Has its own identity
- Organised
- Self assured
- Tolerant
- Proud
- Welcoming
- Matured
- Honest
- Self Reliant
- Sense of human
- Innovative
- Effervescent





In consultations carried out as part of the Growth Plan, one of the clearly identified sources of pride for the community was the perception that Port Hedland was the friendliest place among competitor towns in the Pilbara region. Another characteristic that was highly valued was a perceived sense of humour and quirky character, exhibited for instance through small artworks or humorous displays placed on the salt flats.

In distinguishing between the two towns that will become the Twin Cities of the Pilbara, it is also often cited among community members and stakeholders that Karratha has a greater foothold as the commercial and retail centre in the Pilbara, however Port Hedland is identified as a greater cultural hub. These distinguishing characteristics offer points of difference that can be nurtured for the benefit of the town. These are examples of the characteristics that will define the place.

Grounding growth and identity in such characteristics of place is critical for more than passing reputational benefit. These factors become attractors for residents and visitors alike and build 'place brand' value. In a study of '36 Hours' (CEO's for Cities, 2008), a reporting series on tourism attractions in different towns and cities, four key place attributes were identified that were common attractors to visitors and a source of positive visitor experiences: Variety, Superlatives, Authenticity and Distinctiveness.

First, cities must have a range of options in terms of price, quality, and type of offering - Variety. Superlatives matter, with an attraction indicated for places described as the 'first', 'best' or 'only' in the region, country, or world in some respect. Distinctiveness is also important, with reporters for the 36 Hours series seeking out places and experiences that stand out when compared to the surrounding options, but that also typify a place. Authenticity is also clearly indicated with visitors wanting to be among locals, doing the things locals like to do.

In terms of tourism attraction these attributes are important guides, making community and landscape character and distinctive experiences vital. As Port Hedland looks to tourism as one of the leading planks of economic development strategies, these attributes of place are reinforced through the experiences Port Hedland offers.

Finally, the aspirations of the community must guide the town's development. The Growth Plan is a prime opportunity to signal the aspirations of the community and its leadership. For that reason, the quality of built form and the urban environment, accessibility through connections and neighbourhood activity, and concentration of activity to build a sense of vibrancy must be taken into account.

Key Challenges and Opportunities

- Catering for the large and growing proportions of families and increasing birth rates, particularly in the areas of child services and associated social and community infrastructure to support young families;
- Meeting the requirements of a large and transient indigenous population, particularly with regard to affordable housing, accommodation, education and access to employment opportunities;
- Ensuring that the benefits of economic growth and increased prosperity are shared across the municipality;
- Ensuring development is carried out in sympathy with, and to enhance, existing heritage items (good practice examples include the sympathetic rejuvenation of towns such as Newcastle and Kalgoorlie);
- Develop links and connectedness between Indigenous and non-indigenous heritage through sites such as Two Mile Ridge and Pretty Pool; Old Port Hedland Cemetery; Boodarie Landing; Twelve Mile Camp with particular regard to tourism;
- Celebration of cultural heritage in areas outside the Port Hedland and South Hedland town sites, such as Condon with particular regard to tourism;
- Continue to progress native title resolution requirements where city growth requires and cultural heritage provides;
- Creation of new rest stops and landmark sites/points of interest which celebrate unique aesthetic qualities, cultural heritage assets and the industrial character of Port Hedland with particular regard to tourism;
- Opportunities to create new pathways and connections between places of interest and key community facilities (e.g. connecting Cooke Point and Pretty Pool with the West End);
- Managing the visual impact of new development along key highway corridors and entry points into town site areas with particular regard to tourism;
- Improvement in streetscape character and quality through new plantings, footpaths, minimization of front fencing etc;
- New open space opportunities adjacent to road corridors by providing fitness or recreational assets in large road reserves, pocket parks and unused land; and
- Planned and managed delivery of community and civic facilities at the local level through to regional city wide needs as growth pressures continues.

3.5 CLIMATE AND ENVIRONMENT

Climate

The Pilbara region of Western Australia experiences a hot, semi-arid climate. Summers (October to April) are very hot with an average maximum temperature average of 31.8 °C (and maximums close to 40 °C) and winters are generally mild with temperatures ranging from a minimum of 17.2 °C to an average maximum of 26.8 °C (BOM, 2011). Winds are characterised by the dominant westerly winds that occur throughout summer and prevailing easterly winds in the winter.

Most of the annual rainfall occurs during the summer period from scattered thunderstorms and tropical cyclones, with Port Hedland being located in one of the most cyclone prone areas in Australia.

Flooding and Coastal Processes

Major flooding events in Port Hedland are typically associated with storm and cyclonic activity and coastal storm surge. Heavy rainfall in interior locations can lead to localised flooding along the major river systems of the De Grey, Turner and Yule, which has the potential to impact low-lying areas.

The effects of a changing climate, especially in regard to the issues of sea level rise, the expected increased frequency and intensity of extreme storm events, such as cyclones, and increases in average temperatures have been identified as issues which will require ongoing adaptive management.

The recent Port Hedland Coastal Vulnerability Study (Cardno,

2011) was carried out to identify development opportunities and key constraints for Port Hedland and South Hedland as it continues to grow in population, and inform future planning and development decisions in the region. Specifically, the study used a comprehensive model to investigate the combined effects of elevated ocean levels and local surface water catchment flooding and their impacts on the City.

The study found that Port Hedland is vulnerable to tropical cyclone impacts from ocean and catchment flooding, with several key infrastructure elements at particular risk to damage or loss of function during major cyclone events, including wastewater treatment facilities and key roads. It also identified key challenges for new development areas, particularly in the East End of Port Hedland where recommended design water levels for new

development are provided (based on a 100 year planning period).

The findings and recommendations of the Coastal Vulnerability Study will form key considerations for any future development proposals in Port Hedland, particularly with regard to coastal setback distances, the preparation of emergency response plans and protection/planning of existing and proposed key infrastructure corridors. Provided at Figure 3.17 is flood level mapping for the Port Hedland area during major rainfall and storm surge events (allowing for climate variation and sea level rise over a 100 year planning period). The identification of appropriate design responses to such flooding and coastal inundation events consistent with state planning and environmental policies (including Statement of Planning Policy 2.6: State Coastal Planning Policy) presents a key challenge for the future sustainable development of Port Hedland.

Landform, Topography and Geology

The coastal areas of the Port Hedland consist of flat sandy lowlands, with broad areas of intertidal mudflats and mangroves, which are periodically inundated by sea water during storm events or particularly high tides. The interior is made up of river flood plains and the Pilbara Block, characterised by a low-lying, flat, and featureless landscape with sparse scrub.

The soils of the Port Hedland are generally comprised of deep red, often calcareous sandy soils over sandy loams. South Hedland soils are best described as being composed of predominantly red sandy loams.

The risk of encountering Acid Sulfate Soils (ASS) is highest in the coastal lowlands with the coastal mangroves, tributaries and identified flood plains of Stingray, Pretty Pool and Four Mile Creeks being mapped as containing high to moderate risk of ASS occurring within 3 m of the natural soil surface. South Hedland is identified as being of no known risk of encountering ASS within 3 m of the natural soil surface.

Hydrology

The most important groundwater resources for Port Hedland are in the alluvial aquifers along the major rivers from the Ashburton to the De Grey. These groundwater resources generally range from fresh in the interior through to brackish as proximity to the coast increases. Port Hedland relies upon the De Grey and Yule river aquifers to supply potable water to the town.

Surface water is present as coastal estuaries and numerous tributaries including Stingray, Pretty Pool and Four Mile Creeks. The ephemeral rivers of the interior which flow into the coastal estuaries are dry for the majority of the year however significant run-off is generated after heavy rainfall to provide water to these river systems.



Figure 3.17: Port Hedland Coastal Vulnerability Study Model Results(Cardno, 2011)

Biodiversity, Flora and Fauna

Port Hedland lies within the Interim Biogeographical Regionalisation of Australia region of Pilbara 4 and more specifically within coastal sub-regional bioregion of Roebourne (Thackway and Cresswell, 1995).

The Roebourne sub-region is described as:

“Quaternary alluvial plains with a grass savannah of mixed bunch and hummock grasses, and dwarf Shrub Steppe of Acacia translucens or A. pyrifolia and A. inaequilatera. Resistant linear ranges of basalts occur across the coastal plains. These uplands

are dominated by Triodia hummock grasslands. Ephemeral drainage lines support Eucalyptus woodlands. Samphire, Sporobolus grasslands and mangal occur on the marine alluvial flats and river deltas” (DEC 2002).

The mangroves of Port Hedland comprise a significant component of the coastal landscape and through the provision of habitat for marine and terrestrial organisms and nursery habitats for some commercially important species of fish and crustaceans perform an important ecosystem function. Additionally mangroves fulfil important physical functions, including the stabilisation and protection of shorelines and they contribute to the maintenance of coastal water quality through their action as a nutrient and

sediment sink.

A search of the Department of Environment and Conservation's (DEC's) Threatened (Declared Rare) Flora database, Declared Rare and Priority Flora List and the Western Australian Herbarium Specimen database revealed that there are currently no known Threatened Flora species within Port Hedland.

Four Priority 1, two Priority 2 and two Priority 3 flora species were recorded within Port Hedland.

A search of the DEC's Threatened Ecological Communities database revealed that there are currently no known Threatened or Priority Ecological Communities within Port Hedland.

Within Port Hedland identified key fauna habitats which include mangrove and tidal communities and the coastal dune system are considered likely to sustain a variety of conservation significant fauna including mammals, reptiles and birds. Threatened Fauna species known to occur within Port Hedland include the green and flatback turtles, northern quoll and crest-tailed mulgara.

A search of the Environmental Protection and Biodiversity Conservation Act Protected Matters Search Tool identified a range of migratory birds and other fauna that potentially may be present in the Port Hedland Local Government Area, including 18 threatened species and 55 migratory species.

Dust and Noise

The Port Hedland Air Quality and Noise Management Plan (Department of State Development, 2010), released in March 2010 after being endorsed by State Cabinet, is a comprehensive management plan for the ongoing air quality and noise management in Port Hedland. The Dust Taskforce makes recommendations to manage both issues on a number of fronts:

- Health risk assessment and analysis;
- Land Use Planning;
- Industry initiatives; and
- Governance.

The recommendations of the Dust Taskforce regarding land use planning are particularly relevant to the Growth Plan. Primarily this includes preparation of a plan which:

- Identifies sites for new development in the entirety of Port Hedland;
- Proposes new development in east Port Hedland;
- Identifies appropriate locations in the West End of Port Hedland for redevelopment as additional commercial

premises, entertainment complexes and short stay accommodation facilities;

- Provides greater guidance on residential density, dwelling types and building design for all areas of Port Hedland; and
- Prescribes additional planning controls to address amenity issues associated with living in an area with elevated levels of noise and dust.

Traditionally the policy and land use planning focus has been on preventing the steady encroachment of sensitive land uses in and around major port and freight operations. Port Hedland is unique in the sense that residential development in the West End has been slowly encroached upon by increasing port operations and its associated infrastructure. This has been a result of its changing role over time from an agricultural port to a bulk commodities port.

The changing role of the port has resulted in the need to accommodate its required expansion to support local, state and national economic objectives whilst respecting and balancing the rights of existing landowners and preserving the areas historic and cultural significance. Historically, this has not been the case, with industry being forced to implement strict environmental management control measures through Ministerial Statements.

The Dust Taskforce's essential role was to achieve greater balance between industrial management of potential environmental health risks with a change in the approach to planning and development in the West End.

A number of key issues are considered in relation to the requirement to prepare a development plan for the Port Hedland town site within Pilbara's Port City Growth Plan:

1. Construction of the proposed Outer Harbour was not considered in the final recommendations of the Dust Taskforce. This future expansion may impact on the capacity to achieve nominated noise and dust targets, including the extent of influence at Taplin Street even with best practice measures being imposed.
2. While modelling shows that recommended targets can be achieved by Taplin Street, it is still a model and there is undoubtedly the possibility of the target being achieved either side of Taplin Street.
3. Achieving the recommended air quality levels closer to the Port will be difficult. BHPBIO's mandate under Ministerial Statement 740 requires the target to be achieved at the Old Hospital site. As such there may be a higher risk in the short – medium term to permanent residential accommodation west of Howe Street
4. The area of assessment was focused on addressing air quality issues with noise being a secondary element. Noise

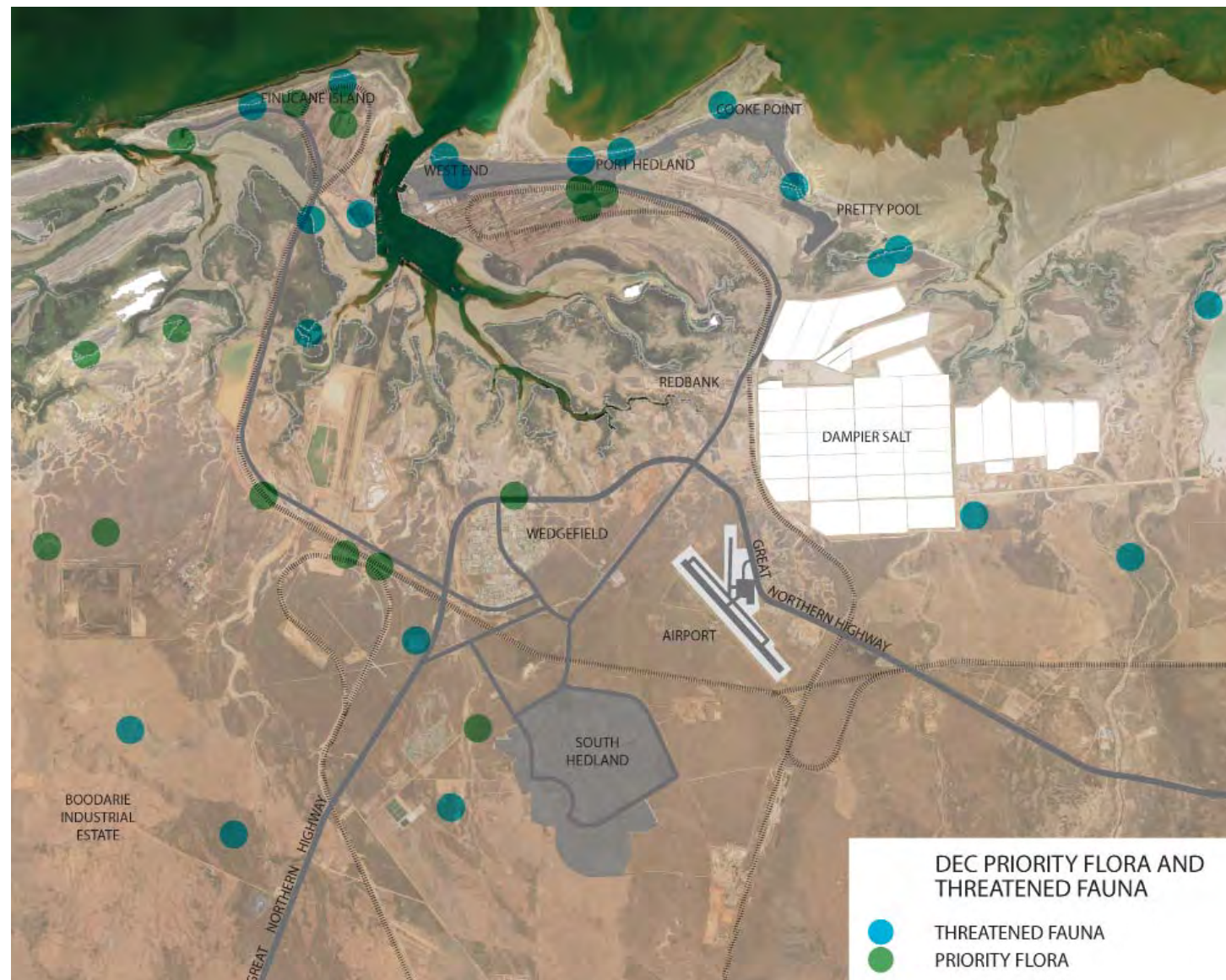


Figure 3.18: Threatened Flora and Fauna (Source - DEC, 2011)

levels, which will also increase with development of the outer harbour and full inner harbour will increase and may affect a broader area.

5. The land use and development restrictions recently imposed through an amendment to Town Planning Scheme No.5 (Amendment No.22, gazetted 27 April 2012) only relate to land zoned Residential rather than all zoned land where residential uses are permitted. Some of the areas not considered are actually closer to port operations and exposed to higher concentrations of dust levels on a more regular basis.
6. Regulating the use of short-stay accommodation by local governments is challenging particularly where they are fully self contained. Measures must be ultimately implemented by the Town of Port Hedland which will ensure that this accommodation is not made available for permanent residential use so to reduce the overall risk of exposure to the population.
7. The West End is experiencing a high level of redevelopment at the present time. This is the result of it being the largest area appropriately zoned to allow for redevelopment. Throughout the remaining areas of Port and South Hedland, there are only limited comparable opportunities for private developers. Similar opportunities for small and medium scale developers need to be made available as soon as possible to attract redevelopment elsewhere.
8. Changes to land use permissibility in the West End will need to consider impacts on land values and development potential, providing further certainty of future land use and development potential while delivering outcomes consistent with the Dust Taskforce recommendations.
9. Land ownership in the West End is dispersed however a number of major land areas are either in the ownership of the State or BHPBIO. Progressing development on these areas with outcomes that appropriately respond to the recommendations of the Dust Taskforce can influence the type of development momentum that will continue.
10. Land use planning will be one element in achieving the vision for the West End. Activation and place making will similarly form an important role in changing this area from residential to the new cultural and commercial centre of Port Hedland.

Contaminated Sites

Historical review, analysis of current document and site visits have identified the following areas of potential contamination in Port Hedland:

- Seven registered DEC Contaminated sites;
- Heavy industry including port activities and extractive

industries;

- Light industry including storage facilities;
- Some residential land uses;
- Utilities including the gas power plant, airport, landfill site, incinerator and sewerage treatment plants;
- Petrol stations, hospitals, abattoirs, rifle ranges and cemeteries; and

- Any land on which preliminary and detailed site investigations have been carried out that highlight contamination concerns.

Contaminated, and potentially contaminated sites, along with the presence of potentially contaminating activities, are a key constraint in the future planning and growth of Port Hedland, with site specific assessments and remediation requirements potentially adding significant time and cost to development time frames.

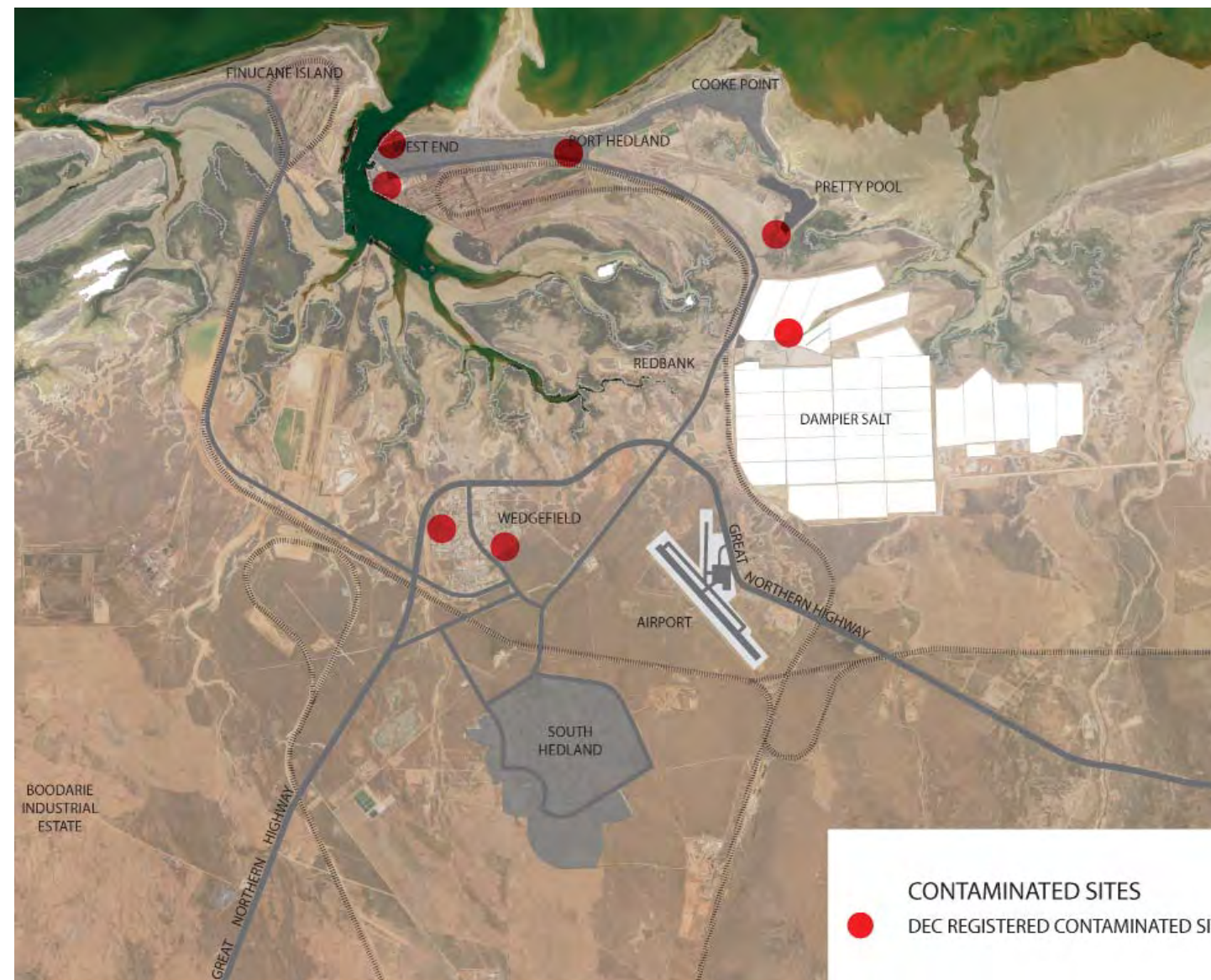


Figure 3.19: Contaminated Sites (Source - DEC, 2011)

Provided within the Environmental Technical Summary at Appendix B is mapping prepared by the Growth Plan consultant team identifying the various potential land use conflicts, areas of influence and best practice buffer areas applicable in Port and South Hedland (RPS, 2011). Whilst not a definitive map of land use exclusion areas, it does illustrate the highly constrained nature of Port and South Hedland given the range of strategic industrial activities and infrastructure present within the town.

Key Challenges and Opportunities

The key environmental factors which are considered likely to present a significant constraint for the future planning and development of Port Hedland include coastal and marine environments, terrestrial flora and vegetation, marine and terrestrial fauna, storm surge and flooding, drainage, contamination, dust and noise and vibration.

Where a future development opportunity is likely to be impacted by any of these factors more detailed site specific investigations will be required to manage any expected adverse impacts.

Key challenges and opportunities include:

- Protecting the coastal and marine environments.
- Protecting the local flora and fauna of the region.
- Mitigating the expected impacts of coastal storm surge and flooding and adapting to the challenges presented by climate change.
- Managing the risks to human health presented by dust, contamination and noise and vibration.
- Ensuring adequate separation distances between industrial and sensitive land uses and/or the implementation of appropriate mitigation actions to manage potential land use conflicts.

3.6 INFRASTRUCTURE

Port Infrastructure

Port Hedland's role in the global iron ore trade is a function of its port facilities. While iron ore mining is increasingly moving into the East Pilbara, there is even greater importance placed on the role of Port Hedland's Port in providing access to global markets.

Total throughput from the Port Hedland Port was approximately 178 million tonnes per annum (Mtpa) in 2009/10 (an increase of 12% on 2008/09 levels) and is expected at more than 200 Mtpa in 2010/11. This makes Port Hedland Port the largest bulk commodity port in Australia, ahead of Dampier and Newcastle.

There are nine ship berths at the port: Two BHPBIO at Finucane Island, three Port Hedland Port Authority public berths near the tug harbour at West End, two BHPBIO berths at Nelson Point and two FMG berth's at Anderson Point. The port also houses ten tugs to pilot the cargo ships into and out of the Port.

The Port Hedland Ultimate Development Plan (PHPA, 2007) predicts that by 2025 iron ore exports from Port Hedland could be as high as 574 Mtpa, with a likely figure of 525 Mtpa. This equates to a total predicted throughput of 536Mtpa in 2025, an increase of 200 percent from its current throughput. The number of vessels is predicted to be approximately 3,400 per year. This increase in port capacity will be achieved through a range of infrastructure upgrades, including:

- Increasing the inner harbour to a capacity of 320 Mtpa;
- Increasing the number of inner harbour berths from 9 to 23;
- Constructing an outer harbour with a capacity of 400Mtpa, including 20 berths; and
- Constructing four off shore bulk liquid terminals.

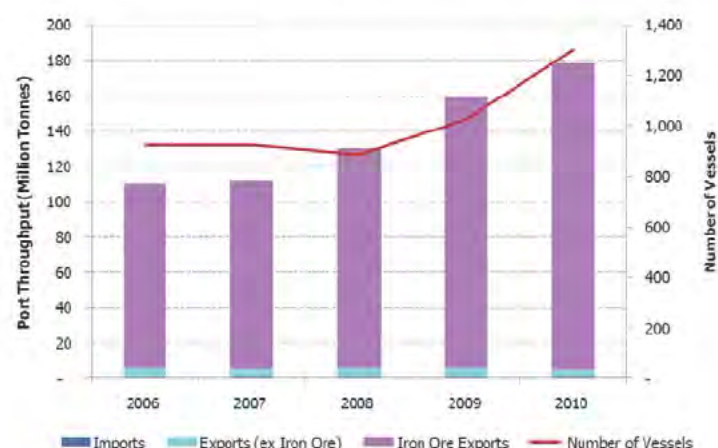


Figure 3.20: Port Activity, 2006-2010 (Source - Port Hedland Port Authority 2010)

The port upgrades have been developed to cater for the predicted increase in port demand. However, the facilities should also cater for container ships to reduce the freight movement by road.

Airport Infrastructure

Port Hedland International Airport is accessed via the Great Northern Highway (Broome Road), and covers an area of approximately 900 hectares, which is predominately owned by the Town. The airport serviced 280,000 passengers in 2010 (a 150% increase from 2005), and is currently serviced by 20,000 flights per year, the majority of which caters for FIFO (fly-in / fly-out) workers in the region. Key destinations include Perth, Brisbane, Melbourne, and Darwin. The airport has two runways: one 2.5 kilometres in length for Regular Passenger Transport and the other one kilometre for General Aviation.

Port Hedland airport is an important freight airport as it is the only one in the north-west that can handle Antonov freight aircraft. The airport also houses the Royal Flying Doctors Service, Polar Aviation, Golden Eagle, Pearl Aviation and Air BP.

The terminal and its infrastructure are struggling to cope with the current number of passengers and international flight requirements (such as customs and immigration). For example, the lack of car parking spaces at the airport was outlined as an issue in the Town's 2010 community survey. This is partly due to transit workers leaving cars at the airport while they are on their break.

Rail Infrastructure

The Town has a well-established, purpose-built and privately operated freight railway network that connects to bulk port facilities from regional mining operations. Diesel trains operate on these railways and currently there are no passenger services. There are two railway lines owned and operated by BHPBIO: Goldsworthy Line and Mount Newman Line. The Goldsworthy Line connects Finucane Island to Yarrie (200 kilometres east of Port Hedland). It is 208 kilometres long and services trains of 600 metre length. The Mount Newman Line connects Newman to Nelson Point. It is one of the longest privately owned rail lines in Australia at 426 kilometres. The railway services trains of 3.75 kilometres in length and it takes approximately eight hours to travel from Newman to Port Hedland.

FMG also operates a railway line into Port Hedland. This line is 280 kilometres long and carries trains of 2.7 kilometres in length. The railway line connects FMG's mines at Cloudbreak and Christmas Creek with their port facilities at Herb Elliot Port (Anderson Point). The trains are operated from Perth and the track carries up to six trains a day. Given the strategic importance of these rail lines to

port and industrial operations it is crucial that future development does not unreasonably encroach upon or potentially restrict the operation of these lines.

Road Infrastructure

The existing road network in Port Hedland is currently affected by the following key issues:

- Limited coastal access;
- Conflict between freight and local traffic around West End (e.g. Wilson Street Port Access);
- Efficiency and safety issues on the Great Northern Highway (Port Hedland Road) between South and Port Hedland;
- Indirect and impermeable street layout in South Hedland; and

- Limited access to surrounding tourist and rural communities due to seasonal flooding of access roads.

Crash Statistics show that the intersections with the highest occurrences of incidence include the four intersections with Great Northern Highway. These comprise a high majority of crashes (84 percent), and the most common type of crash involved right angle collisions, indicating that turning on to the Great Northern Highway poses the highest safety risk for the region.

Traffic volumes along Great Northern Highway are greatest between South Hedland and Port Hedland. Traffic volumes have been growing over the past four years, with average annual growth of 4.7 percent near Wallwork Road and 3.5 percent near Cooke Point Drive. Within this area the Heavy Goods Vehicles representation is in the order of 13 percent.



Figure 3.21: Existing Primary Road and Rail Networks (Source - AECOM, 2011)

To the south, the Great Northern Highway recorded 1,323 vehicles per day, with a very high representation of Heavy Goods Vehicles (38.4 percent). Similarly along the Great Northern Highway (road to Broome), the Average Daily Traffic was 1,158 with Heavy Goods Vehicles representing 39.1 percent of traffic.

There are a number of issues affecting the efficiency of the road network in the Town of Port Hedland:

- Travel within the Town is heavily reliant on the private vehicle. Of the 85.8 percent of the population that travel to work, 63.9 percent travelled by car (as driver), truck or motorbike/scooter, 9.4 percent travelled as a car passenger, 0.6 percent as a taxi passenger, 1.0 percent by more than one mode, and just 11.0 percent of the population travelled via walking, cycling, bus or other.
- The mix of tourist, commuter and heavy vehicle traffic along the Great Northern Highway (particularly between Port Hedland and South Hedland) poses a serious risk. The two-lane highway provides little opportunity for cars to overtake trucks, increasing the potential for conflict.
- There is a lack of priority for vehicles travelling along the Great Northern Highway at the problem intersections. This, combined with the number of road-level rail crossings, results in the need to frequently stop on a high speed road.
- The Great Northern Highway / Port Hedland Road intersection has inadequate capacity. It is understood from the MRWA Great Northern Highway Realignment Project Overview, that this intersection is experiencing difficulties due to high levels

of turning vehicles.

- Most of the local roads are operating at level of service and thus are free flowing with significant capacity, although Throssell Road, due to its location in the heart of South Hedland's Town Centre, carries significant traffic and has limited capacity.

Freight & Logistics Networks

Port Hedland's close proximity to substantial mining activity in the Pilbara and its coastal location reinforce its role as a regional transport hub. Goods are transported from the mine sites, by road and rail, to the Port Hedland Port from where they are shipped around the world. This results in a high level of heavy vehicles on the strategic road network connecting the mines to the port.

The main access to the port is via the Great Northern Highway and Wilson Street. Access to the BHPBIO facilities at Finucane Island is via Finucane Island Access Road, and access to the FMG facilities at Anderson Point is via a spur road off Finucane Island Access Road, just west of Wedgefield. Vehicles range from triple road trains down to passenger work vehicles.

The route along the Great Northern Highway and Wilson Street currently has no priority at Port Hedland Road, Wallwork Road and Pinga Street. It also crosses four railway level crossings, reducing safety and efficiency. This route also requires the port traffic to travel through the Port Hedland Town Centre which is causing conflict between port and local traffic. This was highlighted in the 2010 Community Survey (ToPH, 2010). The routes to the port provide no passing opportunities and limited rest stops which

impacts efficiency of traffic movement and safety.

According to Curtin University's *"From Projects to Places"* (Newman, Bilsborough, Reed and Mouritz, 2010), currently only five percent of goods are produced locally with the rest requiring importation. Most of the goods are being transported to Port Hedland by road from Perth (either via the Great Northern Highway or the North West Coastal Highway) due to the reduced economic viability of travelling by sea. Furthermore, the Port Hedland Port does not handle container freight.

The Main Roads designated heavy vehicle routes within the Town include:

- Great Northern Highway.
- BHP Access Road into the Boodarie Industrial Estate.
- The road network in the Wedgefield Estate.
- Wilson Street Port Access Road.
- Finucane Island Access Road extending from the Wedgefield

Estate / Great Northern Highway to Finucane Island.

Public Transport Infrastructure

There are two main privately operated bus services connecting the region to Perth. One operates once a week between Port Hedland, Newman and Perth, and another operates three times a week between Perth, Broome and Darwin. The relative infrequency of these services means that the region is fairly dependent on air travel to connect to Perth and other towns and cities.

Within the Town there are three public bus routes operated by Hedland Bus Lines, and taxi services are provided in both Port and South Hedland through local operators.

BHPBIO, as one of the main employers in the Town, runs a private bus service for employees. This service runs from Finucane Island to Western Yard to South Hedland, Nelson Point to South Hedland, South Hedland to Point Cooke / Pretty Pool and Nelson Point to Point Cooke / Pretty Pool.

An airport shuttle bus is currently provided from the airport to key destinations. This service can be booked on line and meets all



Figure 3.1: Port Hedland Existing Bus Network (Source - AECOM, 2011)



Figure 3.2: South Hedland Existing Bus Network (Source - AECOM, 2011)



Figure 3.3: South Hedland Existing Path Network (Source - AECOM, 2011)

airport arrivals. The Town also has a community bus which it hires out to community and sporting groups for use.

Further opportunities exist to expand and diversify the public transport/community transport offering in the city, particularly with regard to meeting the needs of the local indigenous population (e.g. through establishment of local transport companies, etc.). Opportunities also exist to improve the offering of driving school services in the city, with only two schools currently operating and difficult to access given high levels of demand. This is particularly important with regard to removing existing barriers for local residents seeking employment and education/training opportunities.

Pedestrian & Cycle Network

There is currently no pathway linking Port Hedland, South Hedland and Wedgefield. The 2010 Port Hedland Community Survey (ToPH, 2010) highlighted this as one of the community's top issues. The community requested that a path be provided to cater for those people who wish to walk or cycle to work at Wedgefield. This complements the high walk to work statistics for the Town.

Within Port Hedland all streets appear to contain verges wide enough to accommodate a pathway. However, most do not currently have a continuous path. Those that do mostly contain a path on one side of the road only. These paths are scattered throughout Port Hedland and in some cases are not linked at all or directly to the rest of the network. The paths are of varying widths,

but mostly do not appear wide enough to cater for both pedestrian and cycle movement (although the verge width appears wide enough). On some streets the location of the path changes sides forcing pedestrians and cyclists to cross the street.

The recently developed shared user path located along the foreshore has proven to be a popular recreation destination for residents, demonstrating the latent demand for such facilities.

The path network in South Hedland is more extensive and continuous than in Port Hedland. However, due to the street layout many routes are less direct than those in Port Hedland.

Water Supply

The supply of bulk potable water to the Town of Port Hedland is provided through the Water Corporation which operates the Port and South Hedland Water Supply Scheme. The scheme is reliant on groundwater extraction from the Yule and De Grey rivers which currently produce 13.5 gigalitres of potable water a year.

The Water Corporation have advised that the 13.5 gigalitres is currently fully allocated, with a further 5 gigalitres per year already met by existing customers. The Water Corporation is investigating a new water source area approximately 200km east of Port Hedland (West Canning Basin), which may present a long term solution to the Town of Port Hedland's water demands for a population base of 50,000 people. Until then, innovative solutions will be required to meet the immediate and short term demand for water.



Figure 3.4: Port Hedland Existing Path Network (Source - AECOM, 2011)

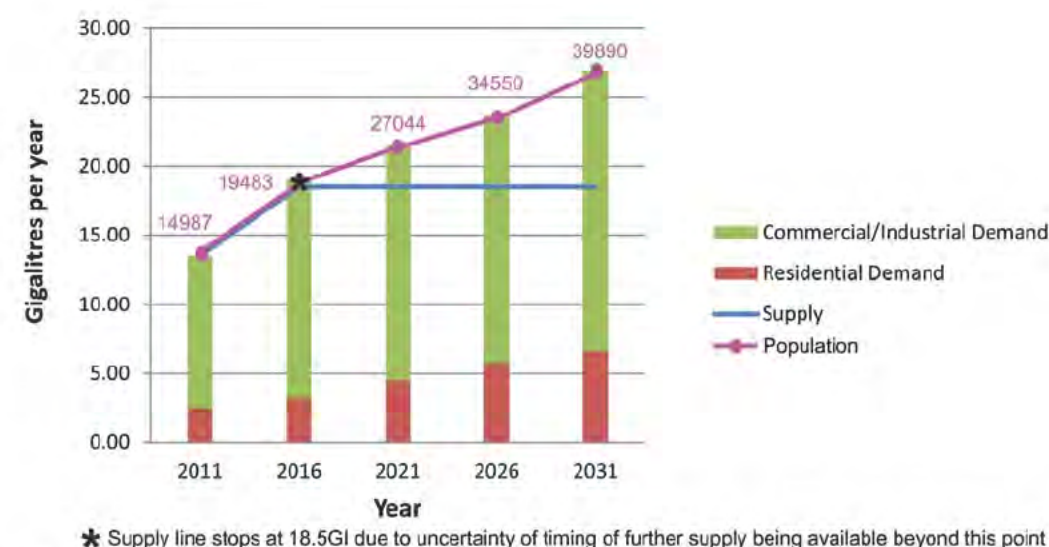


Figure 3.5: Water Supply and Demand for Forecast Population (Source - WGE, 2011)

Wastewater

The treatment and disposal of wastewater within the Town of Port Hedland is undertaken by the Water Corporation. The Water Corporation's wastewater reticulation system currently discharges to one of two wastewater treatment plants, one in Port Hedland and the other in South Hedland. The Water Corporation has advised that the South Hedland wastewater treatment plant is at capacity, while there is some limited additional capacity still available in the Port Hedland wastewater treatment plant.

In January 2011 the Water Corporation received \$106m in funding to relocate the Port Hedland Wastewater Treatment Plant to a combined upgraded facility in South Hedland. The expected completion time for this project is approximately 2014.

Power

Horizon Power is the supply authority operator of the Pilbara power supply grid. This grid is partially interconnected by high voltage power transmission lines owned by both Horizon Power and mining companies. Power supply within the established areas of the Town of Port Hedland are supplied via a high voltage supply scheme network of 22kV which is made up of a combination of overhead lines and underground power cables fed from by one of the three zone substations located within the Town. The substation in Port Hedland has minimal scope for upgrade, while

the substations in Wedgefield and South Hedland still have the ability to be upgraded.

To support further population growth, it is estimated a minimum of an additional three zone substations will be required. Horizon Power have identified strategic locations for zone substation sites and may also undertake a land swap should these sites fall within a proposed development. Horizon Power forecasts for the region suggested an additional 30-45MVA will be required over the next ten years, although demand may be substantially higher than this to achieve the growth rates required under the Growth Plan vision.

Gas

Despite being located in a region that provides a significant proportion of Western Australia's domestic gas supply, Pilbara towns are not provided with a reticulated gas supply network. There are no current plans to provide reticulated gas to the Town of Port Hedland, and this is unlikely to change due to the high establishment costs of installing the initial network. Provision of gas reticulation is typically only viable when provided to a suitable industry, otherwise gas bottles are currently the most feasible option.

Communications

Telecommunications infrastructure throughout the Town of Port Hedland is provided by Telstra. As of 1 January 2011 NBN Co. have been nominated as the future provider of telecommunications to the Town of Port Hedland.

Initial advice from NBN Co. is that for the short term supply of existing areas will be via satellite, however they will be also investigating opportunities to install their equipment in association with other authority works. An example of a potential opportunity to do this would be involvement with Horizon Power and their Pilbara Underground Power Project (PUPP).

Earthworks

Finished lot levels within the Town of Port Hedland are typically dictated by the need to be above the 1 in 100 year flood in South Hedland, with coastal areas (such as Port Hedland, Cooke Point and Pretty Pool) also subject to storm surge and sea level factors. The availability of suitable fill sources within the Town of Port Hedland is quickly becoming exhausted, and the cost to supply suitable import fill material to development sites is approximately twice as expensive (approximately \$40/m³) as it is currently in Perth.

Stormwater

Port Hedland is susceptible to storm surge and flooding given its coastal location in a cyclone prone area. Substantial fill will be required in some areas to ensure developments are above

storm surge and flooding levels or alternatively development sites should be identified where the existing levels are above flood levels.

Due to the intensity of storms, pit and pipe drainage systems are not typically used within the Town of Port Hedland. This is due to the large pipe sizes required for storm events and the high maintenance costs associated with keeping a pit and pipe system clean and operational. Instead, the treatment of stormwater drainage within is typically by the routing of run-off to open drains via the road network which eventually discharge to creeks. Co-ordination of a regional / district water management plan would assist in ensuring planned drainage outcomes are applied across the precincts rather than ad-hoc treatments that simply shift the problems downstream.

Waste Management

An industrial waste incinerator (Tox-Free) is located in the Wedgefield Industrial area and has been operation since 1995. It incinerates industrial waste including chemicals, oil and grease, drilling mud and contaminated soil.

The South Hedland landfill facility comprises 37ha and is located to the south east of South Hedland and accessed via the Outer Ring Road. It is a Class 2 Landfill facility, authorised to accept certain hazardous wastes including asbestos, synthetic mineral fibres and some potentially hazardous industrial materials. There are no recycling services provided at present, which poses a particular challenge for the development of a modern, sustainable regional city.

Key Challenges and Opportunities

- Future development of Strategic Port and Airport assets are supported by long term strategic planning documents including the Port Hedland Ultimate Development Plan (PHPA, 2007) and Airport Master Plan (ToPH, 2011);
- There will always be a requirement for heavy freight movement into the port, placing significant demands on key haulage routes and potential traffic conflicts with local/residential traffic given the port's proximity to existing urban areas;
- Opportunities to improve port access through new port access road improvements (also improving separation of heavy and small vehicles);
- Opportunities for freight consolidation and intermodal improvements to improve network efficiency;
- Traffic growth on local and strategic road networks and resulting congestion/safety issues;
- Opportunities for more flexible public transport options (e.g. DRT) and coordinated transport options for workforce populations; and
- Improvements in local pedestrian and cycle path networks;
- Water supplies currently at capacity, with little additional capacity being made available in the short term;
- Long lead-in time frames associated with identifying and developing new utilities infrastructure (e.g. water, electricity, waste water treatment), potentially limiting population growth in the short term;
- High infrastructure costs providing new infrastructure outside existing developed areas/beyond development front (offset by relatively low infrastructure costs within existing areas);
- Opportunities to reduce use of potable water for domestic (e.g. landscaping) and industrial purposes (e.g. dust suppression) thereby increasing the availability for residential expansion;
- Establishment of West Canning Basin borefield to supply non-residential applications thereby removing the constraint of potable water availability on current population goals;
- Relocation of the Port Hedland Wastewater Treatment Plant to an upgraded South Hedland Wastewater Treatment Plant, providing increased capacity and opening up new developable land area in the East End of Port Hedland;
- Potential for more sustainable methods of power generation to be employed (e.g. solar);

- The current availability of established fill sources is reaching its limit, with no guarantee on the suitability of fill from alternative sources (e.g. dredging operations or mangrove revegetation works); and
- Opportunities to establish a more sustainable and coordinated approach to water management through development of a Regional Water Plan / District Water Management Plan in conjunction with the Department of Water.
- Lack of recycling facilities and services at present. Opportunities for future improvements to local waste management and recycling operations to maximise sustainability principles and resource efficiency.



4.0 CITY GROWTH SCENARIOS

4



Growth in Port Hedland has been guided by a range of strategic documents over the last decade, including the Town's Land Use Master Plan. However, in an environment of ever changing demands and high growth, implementation of the Town's strategic vision for growth has been challenging.

The characteristics of Port Hedland, and the historical nature of development, suggest that more efficient use of land must be made given many of the identified constraints. Similarly, better integration and connectivity of settlement can be achieved given existing development stretches from Port Hedland's West End to the South Hedland Rural Estate.

Recognition of the continued growth of the resource industry, fostering of greater local economic development and community development support are all needed. Finally, the ability to achieve meaningful implementation in the immediate term within the Growth Plan vision was acknowledged.

Having regard to these matters, the Growth Plan identified three growth scenarios early on in the development of the plan, which were tested at Workshop number 1. These can be summarised as:

1. In-Land City Growth – Port Hedland South Expansion (Figure 4.2;
2. Coastal City Growth – Port Hedland East Intensification (Figure 4.3); and
3. Rapid City Growth – Port Hedland South & East Expansion (Figure 4.4).

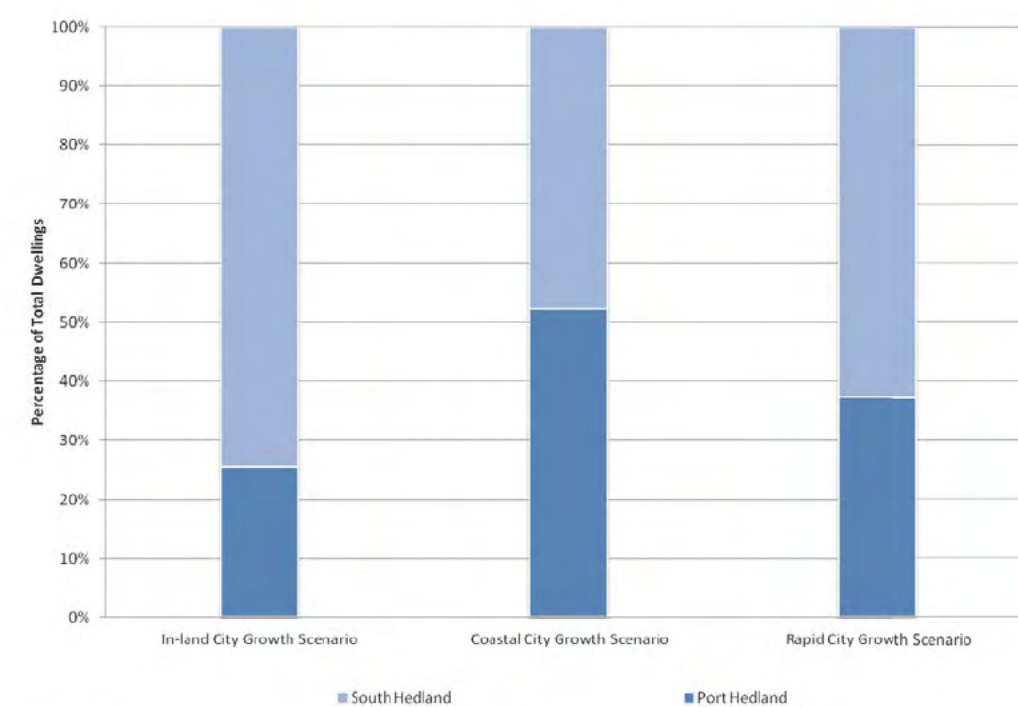


Figure 4.1: Spatial Distribution of Total Dwellings by Growth Scenario (Source: RPS 2011)

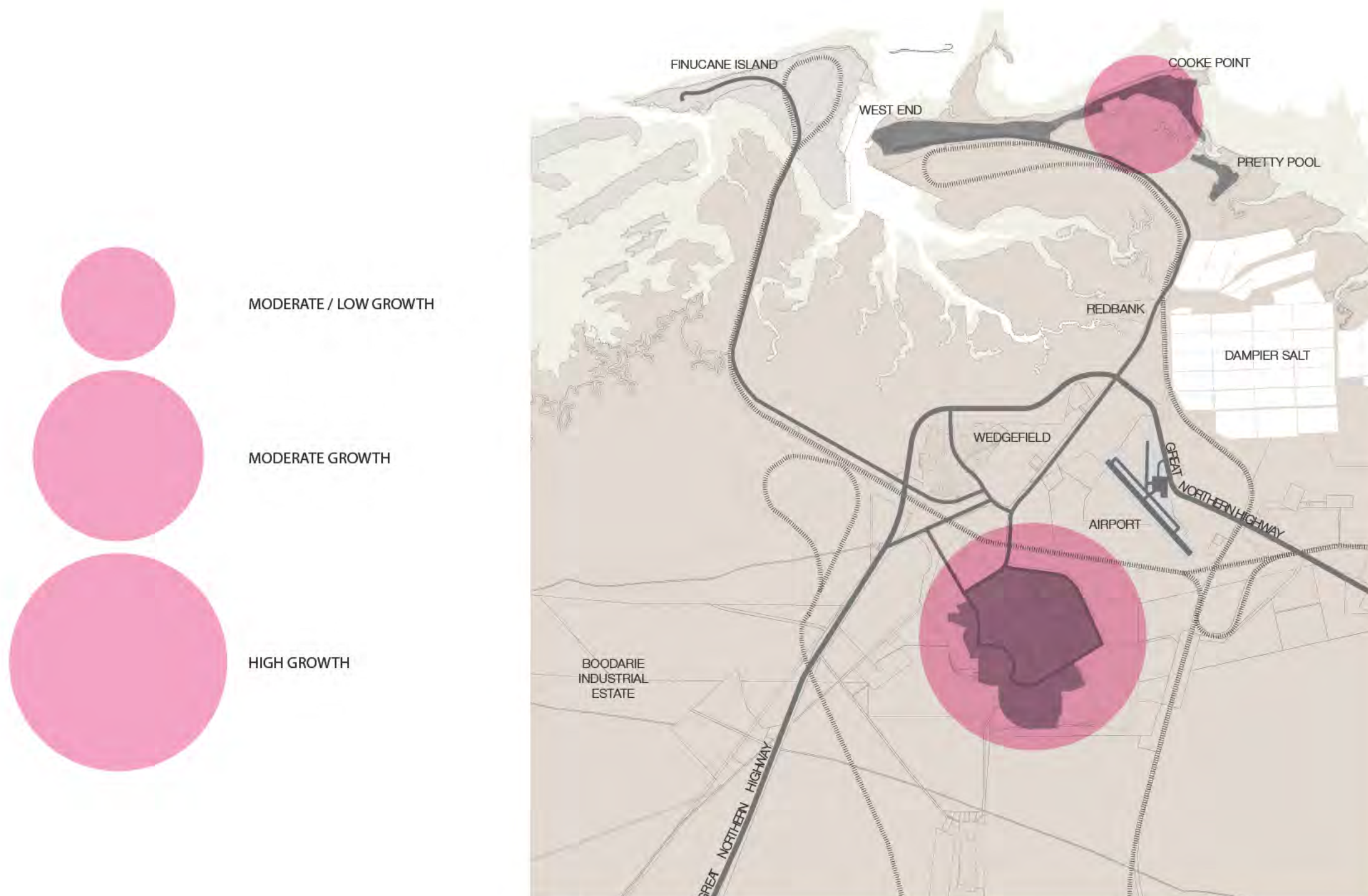


Figure 4.2: In-Land City Growth

4.1 SCENARIO 1: IN-LAND CITY GROWTH

The Growth Plan assessed this option with participants at Workshop #1 as being limited expansion in the established areas of Pretty Pool/Cooke Point, with only some limited new medium to high density development in the East End. The growth scenario assumed major public/private investment in South Hedland where almost doubling the size of the existing City Centre and surrounding catchment would be necessary.

Positive aspects of this growth scenario identified by participants included: timeliness of delivery; fewer heritage considerations; improves/enhances the role of South Hedland; lower cost development (assuming less fill); opportunity to re-brand; limited environmental impact; affordability improved; private sector developer opportunities; ability to integrate workforce accommodation and activates the City Centre.

Conversely, challenges identified included: a perceived under-utilisation of the 'east-end opportunity' in Port Hedland where significant culture and amenity exists; there was perhaps a greater disconnect with the West End and port expansion under this scenario; it would create a further separation of identity across the City; it lacked a relationship to the waterfront - being a great asset; it focused employment beyond industry almost solely at the City Centre of South Hedland and lacked an opportunity to diversify and it potentially increased the need to travel between centres.

Some of the intervention strategies identified under this scenario included: management of the rapid take up of urban land requirements surrounding South Hedland; greater government commitment than normal to deliver a meaningful public transport system; commercial strategy largely dominated by car dependency as people travel into primarily the City Centre.

4.2 SCENARIO 2: COASTAL CITY GROWTH

The option of significant coastal growth was recognised as an important one to consider given Port Hedland's unique natural environment and coastline and the amenity it offers.

Participants at Workshop #1 assessed this option as comprising relatively limited growth in the South Hedland centre, with limited low density take up of surrounding land. Conversely, Port Hedland's East End was assumed to support significant high density development comprising infill of established areas and intensification of all land around the Cooke Point Drive/Styles Road environs.

This option recognised the opportunities to build upon coast and the natural landscape, to offer urban settlement with relatively high amenity and to establish a significant sense of place in the East End. This scenario also provided strong supporting population catchment for sustainable commercial/cultural uses in and around the West End.

Challenges facing this scenario included the potential adverse impact on the environment and port operations that high levels of intensification would require. There would be a bigger divide between Port and South in this scenario with an already significant established population in South Hedland not appropriately serviced or having the benefit from public and private investment that would focus on the East End.

Choice of housing and affordable housing were not seen as being readily delivered under this scenario where there was expected to be a concentration of medium/high density dwellings and, with significant costs of development, likely high sale prices.

Some of the City Strategy work required under this scenario would mean significant environmental management work to avoid adverse impacts on the coastal environment or conflict with port operations expansion. There would be greater intervention required to manage the City's adaptation to climate change. There would also be less opportunity to deliver a culturally diverse cosmopolitan City, seen as a critical outcome.

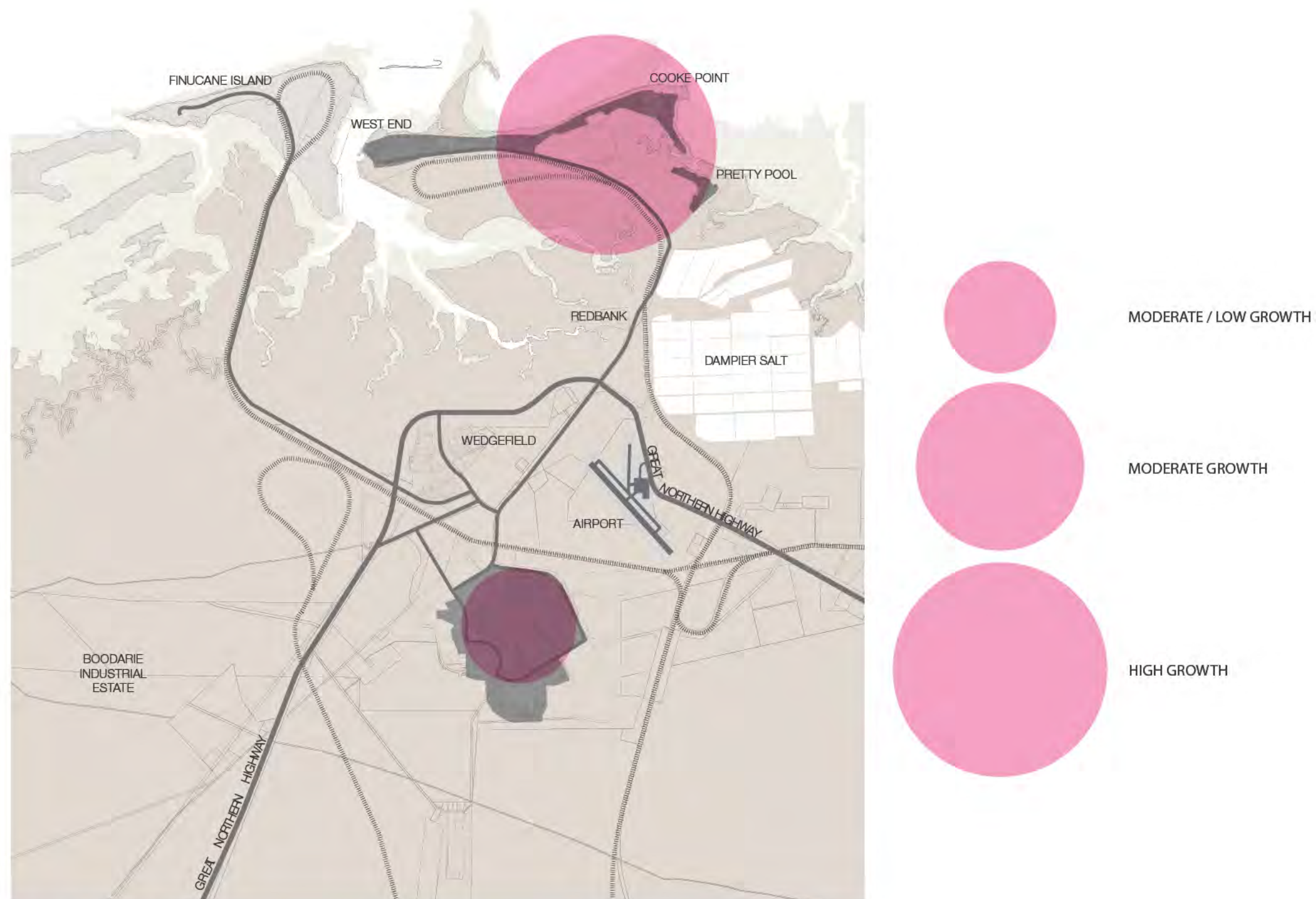


Figure 4.3: Coastal City Growth

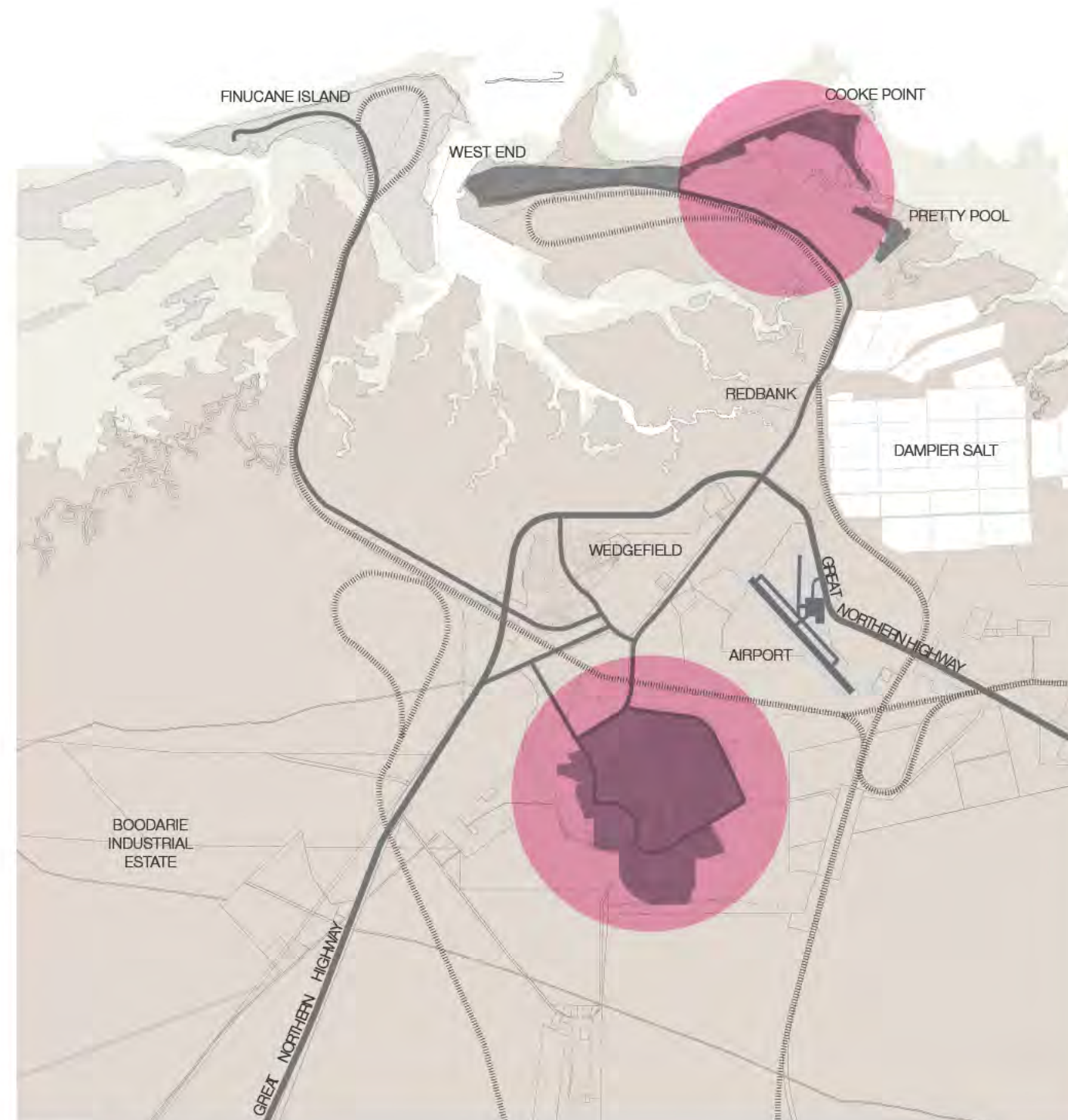


Figure 4.4: Rapid City Growth

4.3 SCENARIO 3: RAPID CITY GROWTH

The third growth scenario considered at Workshop #1 considered the expansion in a balanced manner between the two existing urban centres in the East End and South Hedland.

Participants determined this option as involving an expansion of the South Hedland City Centre as the primary regional centre of the City, with the East End developing a 'second tier' neighbourhood centre which would support local retail services and facilities, as well as community and recreation needs at this local level. Higher order regional facilities would be located in the City Centre of South Hedland, or where appropriate in a commercial/cultural precinct in the heart of the West End.

The opportunities identified under this scenario included the immediate release of land (in South Hedland primarily) for housing; resolution of a long term urban land use solution for Port Hedland in the East End which still respects industry and the environment (balances the level of development appropriately while seeking to take advantage of amenity and coast).

Importantly, this scenario was seen as the most resilient in being able to provide for rapid growth in the short to medium term, acknowledging that long term growth beyond 50,000 people will most appropriately be provided in South Hedland given the constrained nature of Port Hedland. Scenario 3 was also seen as providing the best opportunity to genuinely deliver a mix of attractive unique locations within the City, a choice of housing types around them as well as the flexibility to support short term demand for temporary workforce accommodation.

Some of the challenges identified under this option were the need to ensure that the 'divide' between Port and South is addressed both physically and socially. The importance of economic development being delivered and integration of culture and community in this spread of growth was also discussed. Transport and movement was acknowledged as important in this growth scenario where the choice of activity centres is beneficial only if meaningful access is provided to all through transport options.

4.4 OTHER SCENARIOS FOR GROWTH

Workshop #1 also briefly canvassed the following alternate scenarios, though they were not considered to be viable options for further exploration:

- **Lifestyle City Growth** – providing greater proportions of development further afield in outer lying rural areas, but seen as able to be accommodated in conjunction with a predominantly urban growth scenario;
- **New Settlement** – the potential to relocate land use, including airport facilities, and address the physical divide with the new urban settlement. This was not pursued further given the substantial public and private infrastructure commitments and reinvestment required; and
- **Employment Led Growth** – examined as a basis for locating settlement and intensity of development in areas more aligned with industry and other commercial areas. The geographic spread, and possible revert to fly-in/fly-out workers as well as strain on transport and infrastructure made this scenario unsustainable as a basis for growth of a permanent Pilbara City.

Having identified the three potential growth scenarios, a review of each scenario against the core Growth Plan themes was carried out. A summary of the assessment is outlined below:

Comparison of Growth Scenario's against Growth Plan Core Themes

Growth Plan Core Themes	Growth Plan Scenario 1: In-Land City Growth - Port Hedland South Expansion	Growth Plan Scenario 2: Coastal City Growth - Port Hedland East Intensification	Growth Plan Scenario 3: Rapid City Growth - Port Hedland South & East Expansion
1. Sustaining & Diversifying Economic Growth	Provides significant opportunity for increased services and employment in South Hedland. This is contrary to market attractor, being the Port and West End. May restrict local economic growth through inability to diversify economic investment in Port Hedland.	Increases economic focus away from South Hedland City Centre and risks further duplication of services which is not sustainable. Diminishes capacity to accommodate population in non-resource industry employment.	Assumes more employment opportunities created in Port and South Hedland through the diversity of a range of activity centres with clearly dedicated functions.
2. Strengthening Local Communities & Culture	Emphasis on services provided in South Hedland City Centre. Equity of service provision at local level, or in Port Hedland may be difficult. Relationship to the coast, and therefore many historical/cultural elements may be diminished.	Emphasis on Port Hedland East likely to place greater pressure for services in this location, in addition to South Hedland demand. May create an imbalance in equity of access to services.	Diversity of activity centres offers opportunity to respond to local service provision, while recognising wider sense of place and cultural opportunities. Offers diversity in tourism and the arts opportunities.
3. Housing Diversity & Land Supply Capacity	Emphasis on greenfields land releases to establish significant ongoing land supply program. Some medium-high density achieved in proximity to South Hedland City Centre.	Significant intensification of residential development in East End Port Hedland requires high density, predominantly apartment style living. Land efficiency and development costs likely to limit diversity of housing to accommodate significant numbers of traditional single residential.	Significant land release program of low, medium and higher density housing able to be provided in Port and South Hedland in a variety of styles and price points. Offers a strong opportunity to address affordability capacity improvement.
4. Environmental Protection and Change Adaptation	Emphasis on in land growth places less pressure on coastal process considerations, but may impact on natural landscape.	Priority for high coastal growth may lead to greater conflict with environmental protection and landscape value impact. Greater development pressure on flood affected areas.	Balanced urban growth pressure achieved between centres allows greater respect for the natural environment.
5. Building & Maintaining Infrastructure Capacity	Places increased emphasis on motor vehicle transport for workers living in South Hedland travelling to Port / resource operations. Requires water, wastewater capacity improvements in South Hedland particularly. Likely need to improve infrastructure within existing settlement areas.	Urban growth places significant pressure on upgrades and retrofit of existing infrastructure. Port Hedland Wastewater Treatment Plant relocation required as a priority. Significant upgrades to road network required to manage possible conflict of Port traffic increases with residential growth.	Supply capacity issues in both centres require improvement. Port Hedland Wastewater Treatment Plan relocation required. Connectivity between centres requires strengthening through land use activity/intensification on Great Northern Highway and road upgrades.

Figure 4.5: Comparison of Growth Scenarios against Growth Plan Core Themes

4.5 PREFERRED SCENARIO FOR GROWTH

Having regard to all the considerations identified as part of the Growth Scenario 'testing', Growth Scenario 3 was, on balance, identified as the preferred growth scenario for Pilbara's Port City (certainly in the short to medium term). This scenario recognises the importance of both existing urban settlement areas and how they should each play a role in shaping the future of Port Hedland as a place. It also offers the basis for strengthening the connectivity between Port and South Hedland through the early development and expansion of Wedgefield and Airport land.

The choice of activity centres this scenario offers will facilitate a cosmopolitan city and one which addresses a key theme for Pilbara's Port City of not only providing for physical growth, but community growth and diversification through a range of unique different places and experiences.

The Preferred Growth Scenario is explained in more detail in the following section. Emphasis is placed on a balance between infill and immediate extension of services to provide new development; with controlled new expansion into greenfield areas within South Hedland. This scenario promotes connectivity through the development of key public transport and the potential to deliver a more transit-oriented sustainable city. It will also allow infrastructure service providers to maximise efficiency in delivery and simplify the priorities for growth.

It is recognised, however, that the preferred scenario does require significant public and private ownership and investment, the basis for which is outlined in the strategies section. The timing and delivery of strategy items is detailed in the accompanying 'Implementation Plan'.

4.6 PLANNING BEYOND 50,000

An important legacy of the Pilbara's Port City project is to consider the model for growth beyond 50,000 people. Assessment of the Preferred Growth Scenario at this time considers the future of the city's next generation. By 2035, the scenario for growth is expected to have shifted the focus more heavily on the 'In-Land City Growth' scenario. This is premised on the primacy of the port and generally constrained nature of Port Hedland as opposed to the wider availability of land in South Hedland that will be more accessible from the port and its future expansion.

The 'Framework for Growth' and 'Precinct Plans' outlined in this document recognise this very long term need.

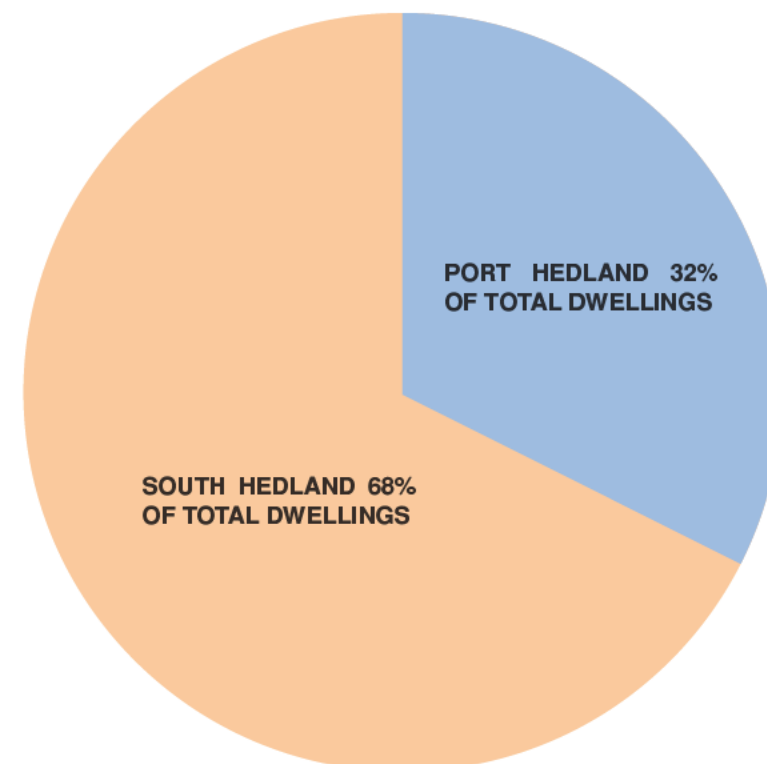


Figure 4.6: Medium Term Spatial Distribution of Dwellings Under Preferred Scenario (Source: RPS 2011)

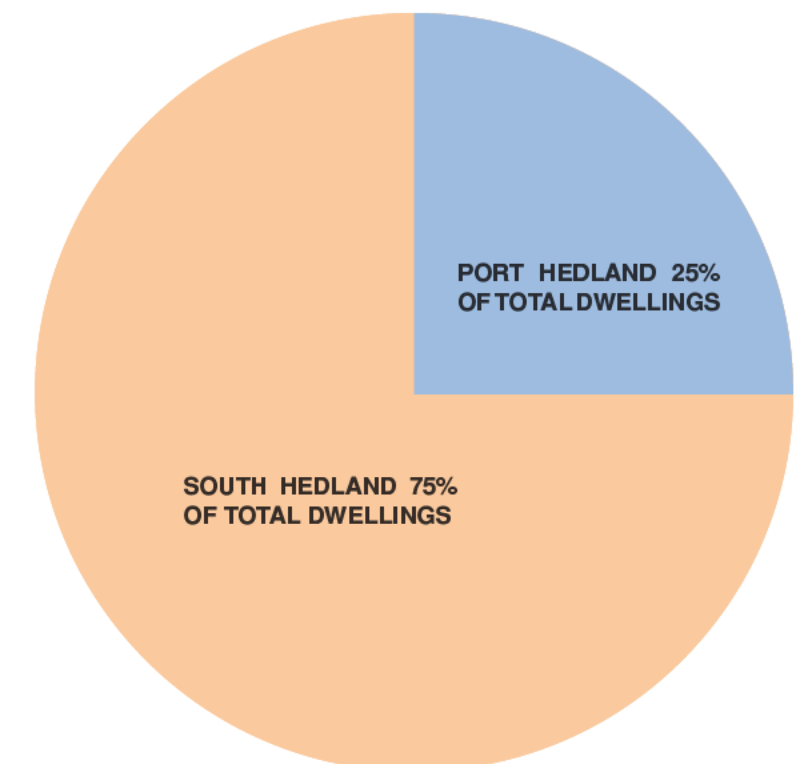


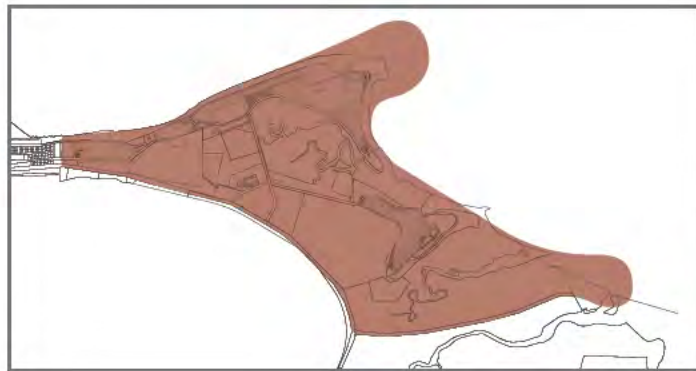
Figure 4.7: Longer Term Spatial Distribution of Total Dwellings (Beyond 50,000 people) (Source: RPS)



5.6.2 Precinct 2 – East End Urban Village

Precinct Statement

“The East End Urban Village is Port Hedland’s primary residential area. The area, encompassing Cooke Point and Pretty Pool, offers significant housing density and diversity together with sport and recreation opportunities, and school and community facilities. At its core is a retail and mixed use village offering a range of local convenience as well as dining and entertainment choices. Strong links to the coast and mangrove environs have been established offering residents and visitors alike a closer connection with the landscape.”



Key Figures (ultimate)

Area:	400 (ha) (indicative based on precinct boundary).
New Dwellings:	up to 5,643 (6,828 total).
New Short Stay (rooms):	491 (802 total).
New Transient Workforce Accommodation:	364 (814 total).
New Retail Floorspace (sqm):	22,344 (28,292 total).
New Commercial Office F'space (sqm):	4,500 (4,811 total).
New Light/General Industry (ha):	0 (0 total).
New Strategic Industry (ha):	0 (0 total).
New Schools:	1 PS (4ha), 1 HS (12ha).
New Sport Facilities:	1 District Recreation (23ha).

Summary of Influences

Landscape, Heritage & Environment

- Mangrove environs.
- Turtle Nesting at Cemetery beach and Pretty Pool beach.
- Pretty Pool and coastal foreshore environs.
- Original airfield on racetrack land, and racetrack history also recognised.
- Indigenous: Significant sites such as: Lock Hospital; Pretty Pool; Two Mile Ridge; Point Cook midden.
- Non-Indigenous: Including Racecourse; Old Port Hedland Cemetery; Railway Station; Don Rhodes Museum; Pretty Pool.
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.



Existing Land Use

- East End local Centre (Boulevard) and second centre in Cooke Point.
- Primary residential areas of Port Hedland including Cooke Point, Pretty Pool.
- Tialka Boorda community.
- Other Key Land Uses including:
 - Port Hedland Turf Club, Sport Facilities & Pony Club.
 - Waste Water Treatment Plan (WWTP)/ Telstra Site.
 - Hospitality/Tourism sites.
 - Local Primary schools, Council offices.
 - Coastal dual-use path/ parks / public art/ foreshore.

Current or Planned Projects

- WWTP relocation.
- Telstra Site and adjoining land redevelopment planned.
- Medium Density / Mixed use sites (two) at Pretty Pool.
- Landscape amenity improvement works.
- Old Port Hedland Cemetery upgrade project.

Precinct Plan Summary

Activities & Land Use

- Neighbourhood centre serving Port Hedland .
- Mixture of high, medium density residential.
- Protected mangrove environs – reflecting landscape character.

- District Sporting Fields.
- Landscape Buffer / Traffic separation to industrial uses/rail.
- Recognition/protection/education of flatback turtle nesting areas.

Community Development

- Coastal parklands nodes/lookouts, relationship to landscape through mangrove environs & public facilities.
- Activation of neighbourhood and local centre through art, events and dining uses.
- Coastal access improvements.
- Passive recreation and landscape protection.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

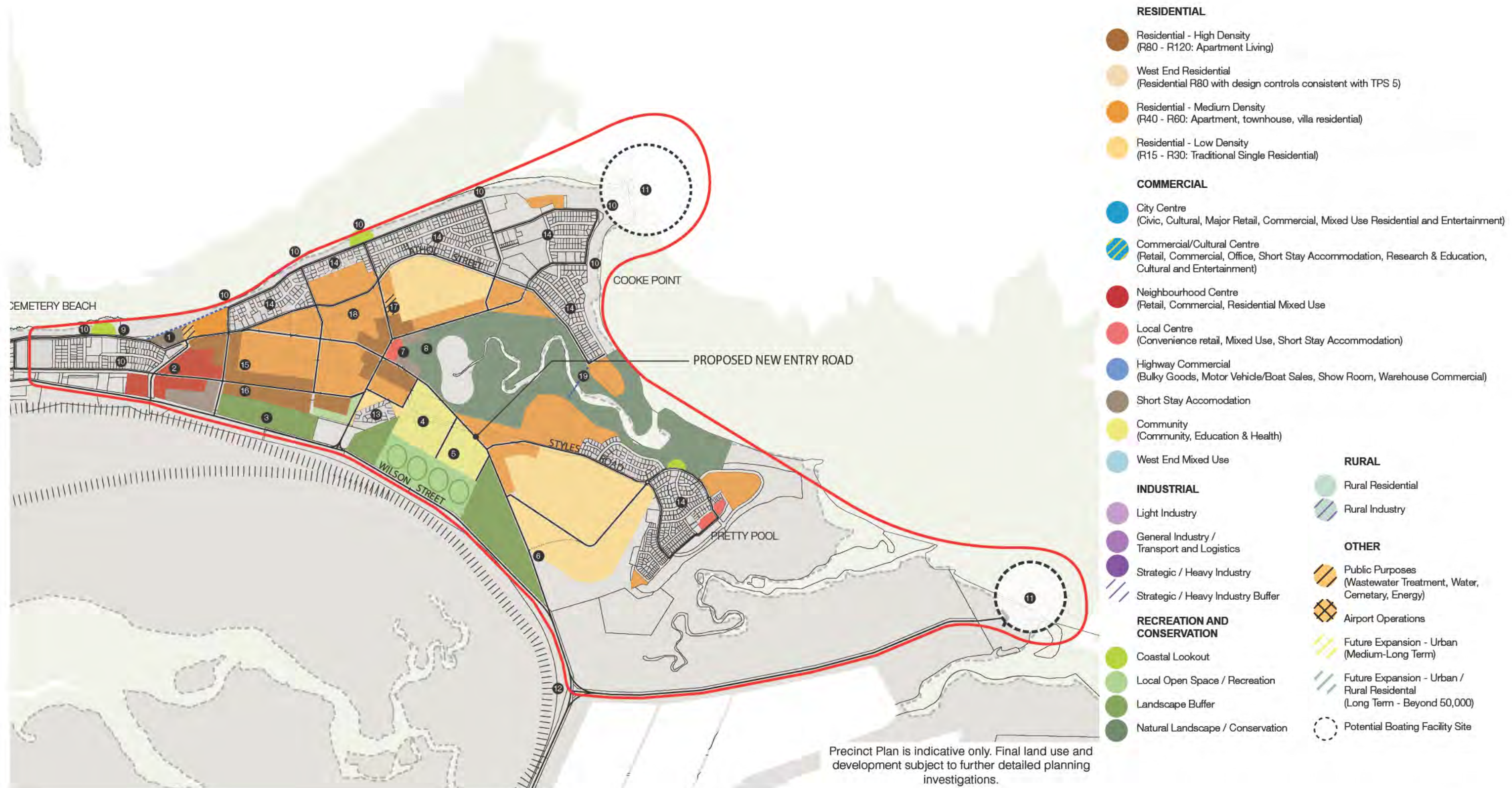
- Development will be subject to light spill compliance and related conditions for flatback turtle nesting sites.
- Coastal hazard management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Hazard risk management, assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- Facilitate higher density within close proximity to a new local centre once the Waste Water Treatment Plant (WWTP) decommissioned.
- Precinct encapsulated in TPS5 as a 'Development Plan' area.
- Development Plan to be prepared.
- Design Guidelines or Detailed Area Plans to address site, architectural style, climate and built form recommendations.
- Detailed design and feasibility investigations into widening of Wilson Street Port Access Road into two lanes in each direction.
- Discussions with MRWA/ToPH to establish early segregation of Port and residential traffic.
- Iconic development sites subject to relocation of existing use.
- No residential occupation to occur within existing 500m WWTP odour buffer until such time as the WWTP has been decommissioned.
- Progression of community layout plans for Tialka Boorda Aboriginal settlement.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.





Precinct Highlights

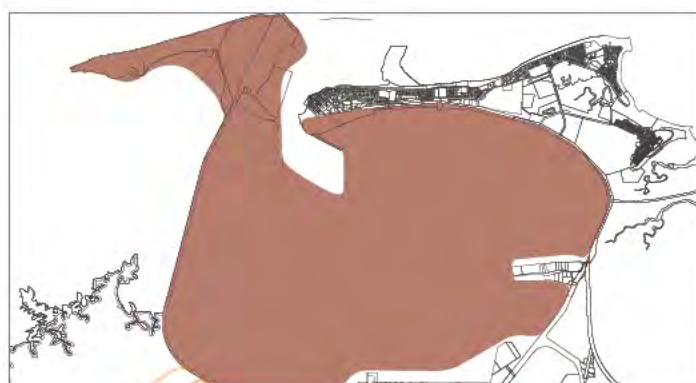
1. Mixed use/short stay iconic development site.
2. Neighbourhood centre providing primary Port Hedland mixed use/retail opportunities.
3. Setback to rail corridor subject to detail investigation, incorporating district recreation.
4. High School.
5. Primary School.
6. New entry road with direct connection to coastal drive.
7. Local convenience shopping/cafe/restaurant with 'mangrove experience'.
8. Short-stay accommodation next to mangrove environs.
9. Coastal drive (slow speed environment).
10. Coastal park/lookout.
11. East End coastal access opportunities (subject to detailed investigations of public safety and impacts on coastal environment, in consultation with industry, environmental agencies and local stakeholders).
12. Upgraded access to/from Wilson Street.
13. Existing community retained and integrated with surrounding residential development.
14. Opportunities for density increases.
15. Development to recognise historic past through links to racecourse and former airfield.
16. Future relocation of racecourse to facilitate development.
17. Future waste water pumping station site.
18. Existing Waste Water Treatment (WWTP) site to be decommissioned (no residential occupation within 500m until decommissioned).
19. Potential pedestrian/cycle link



5.6.3 Precinct 3 – Port Authority & Finucane Island

Precinct Statement

“The largest tonnage Port in Australia defines the Port Authority & Finucane Island precinct. It is a place where the primacy of the Port continues to service the growing resource operations and common user facilities. Opportunities for development through resource company projects and Port Authority growth plans continue, and strong connectivity to Boodarie and Wedgefield are provided for. Finucane Island’s western end is a popular recreation area for many seeking to take in the coastal mangrove environs or do a spot of fishing.”



Key Figures (ultimate)

Area:	5300 (ha) (indicative based on precinct boundary).
New Dwellings:	0 (0 total).
New Light/General Industry (ha):	0 (0 total).
New Strategic Industry (ha):	1071 (1553 total).

Summary of Influences

Landscape, Heritage & Environment

- Port Hedland Port Authority operations and wider lease area.
- BHPBIO lease area and operations.
- Resource Company port access corridors and operations.
- PHPA sub-leases for storage/industry adjoining Wedgefield.
- Finucane Island boat ramp / fishing location.
- Indigenous: Numerous Registered Aboriginal sites within and adjacent to the Precinct.
- Non-indigenous: Finucane Island - original townsite.
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.

Current or Planned Projects

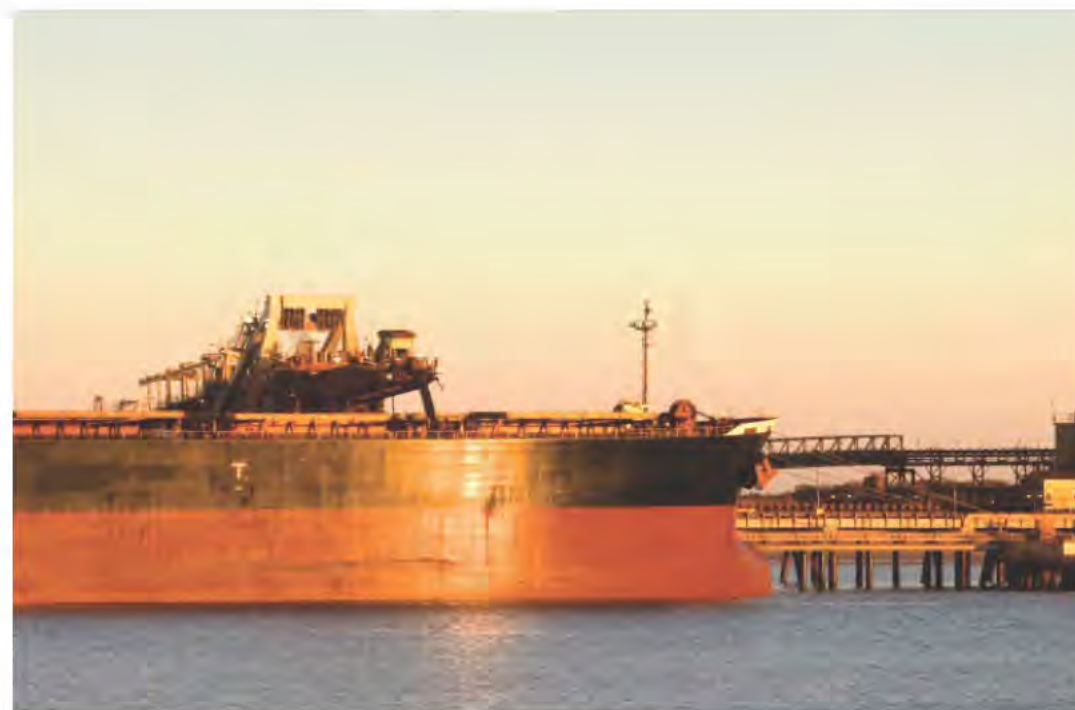
- Growth Programs underway for western side port expansion.
- BHPBIO Stockpile expansion planning (Quantum project).
- Outer Harbour Port Expansion planned.

- Assessment of infrastructure and logistics capacity available to support Australian Defence Force operations in the region.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Port expansion and development of land expansion will continue to be under the management of the Port Hedland Port Authority.
- Implementation of surrounding areas – including Boodarie and Wedgefield will be undertaken reflecting the extent and timing of anticipated growth in this precinct.
- No loss of public recreation access to Finucane Island.
- Ongoing management and monitoring of dust and noise levels and impacts on existing urban areas (particularly Precincts 1 and 2).
- Coastal hazard risk management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.



Precinct Highlights

1. Port outer harbour access and expansion.
2. Coastal access (fishing/tourist node).
3. Port inner harbour expansion.
4. Port facilities expansion.
5. Lumsden Point marine Common User Facility.
6. Established strategic industry.



Precinct Plan is indicative only. Final land use and development subject to further detailed planning investigations.

RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

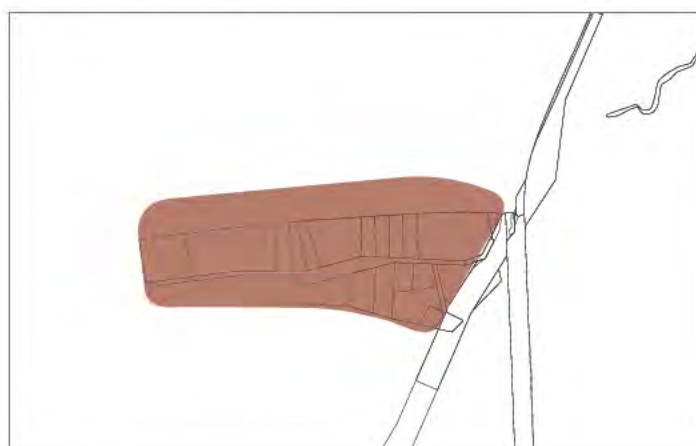
OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.4 Precinct 4 – Redbank

Precinct Statement

“Redbank is one of the many ‘fingers’ of land extending into the inlets that make up Port Hedland’s harbour. Its location suits some of our City’s rural industry uses, though in the long term the opportunity for it to form part of the wider port area is recognised”.



Key Figures (ultimate)

Area:	46 (ha) (indicative based on precinct boundary).
New Development:	limited to consolidation of existing rural uses in the medium term.
Strategic Industry (ha):	7.5ha short term, 42.0ha long term (49.5ha total).

Summary of Influences

Landscape, Heritage & Environment

- Significant areas of mangrove environs.
- Public health issues associated with nearby mangrove environment, including but not limited to mosquitoes and sandflies.
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.

Existing Land Use

- Storage / rural industrial uses.
- Rural-residential.
- Indigenous accommodation/facilities.

Precinct Plan Summary

Activities Land Use

- Rural industry (interim land use scenario) - restriction of any

further residential development due to public health concerns and local traffic/access issues. Further development limited to small scale rural industrial uses as defined by ToPH Town Planning Scheme.

- Strategic industrial (ultimate land use scenario) - consolidation of land use consistent with wider PHPA area (Precinct 3).

Implementation Indicators

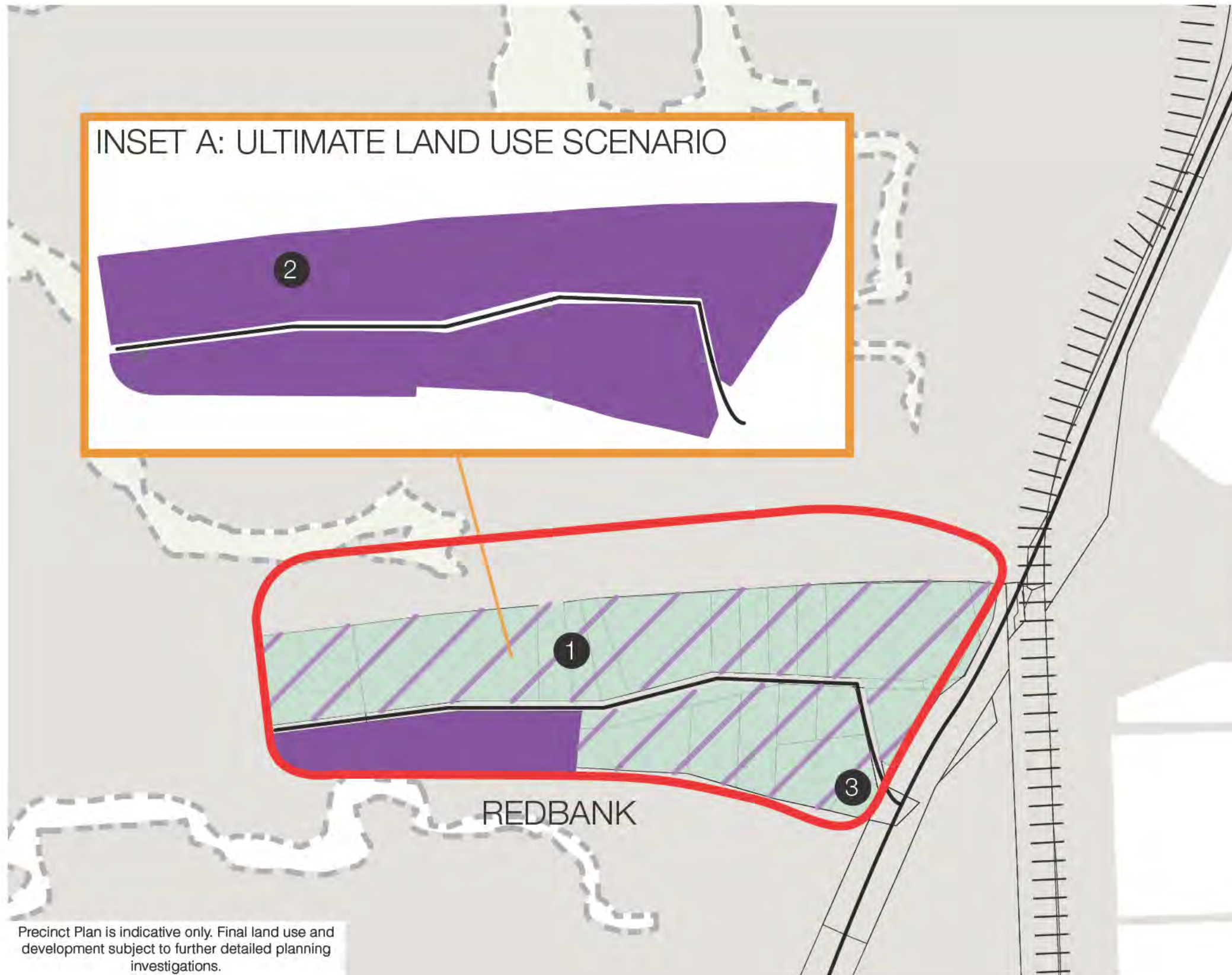
The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan’s objectives:

- Precinct encapsulated in TPS5 as a ‘Development Plan’ area.
- Development Plan to be prepared.
- The timing of any ultimate land use change to the precinct would need to be undertaken at the local level, in consultation with landowners and business operators.
- Discussion with MRWA/ToPH to establish future planning for improved access into precinct.
- Ultimate land use scenario of strategic industry having regard to environmental and port related strategic considerations.
- Review and clarification of Town Planning Scheme definition for ‘Industry-Rural’.
- Coastal hazard risk management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.

Precinct Highlights

1. Rural industrial uses recognised in short to medium term.
2. Ultimate long term use linked to wider port authority precincts.
3. Upgraded access into/from Redbank precinct.





Precinct Plan is indicative only. Final land use and development subject to further detailed planning investigations.

RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

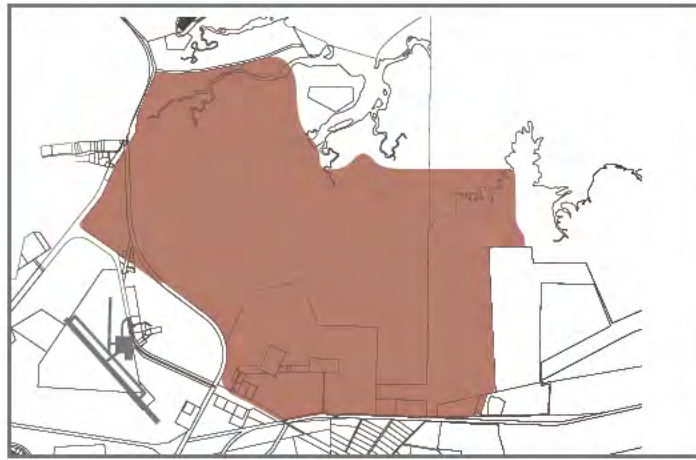
OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetary, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.5 Precinct 5 – Dampier Salt & Surrounds

Precinct Statement

“The Dampier Salt & Surrounds precinct will continue to service the growth of Dampier Salt operations. It is an area widely recognised with the salt ponds clearly visible by locals and visitors alike from across the landscape.”



Key Figures (ultimate)

Area:	3530 (ha) (indicative based on precinct boundary).
Motorsports (Kart Club) (ha):	17.5ha.
Dampier Salt Expansion Area (ha):	950ha total.
Explosives Reserve (and buffer) (ha):	540ha.

Summary of Influences

Landscape, Heritage & Environment

- Rural landscape to east.
- Indigenous: Registered Indigenous heritage sites within Precinct
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.

Existing Land Use

- Dampier Salt Operations.
- Hedland Kart Club.
- Explosives Reserve.

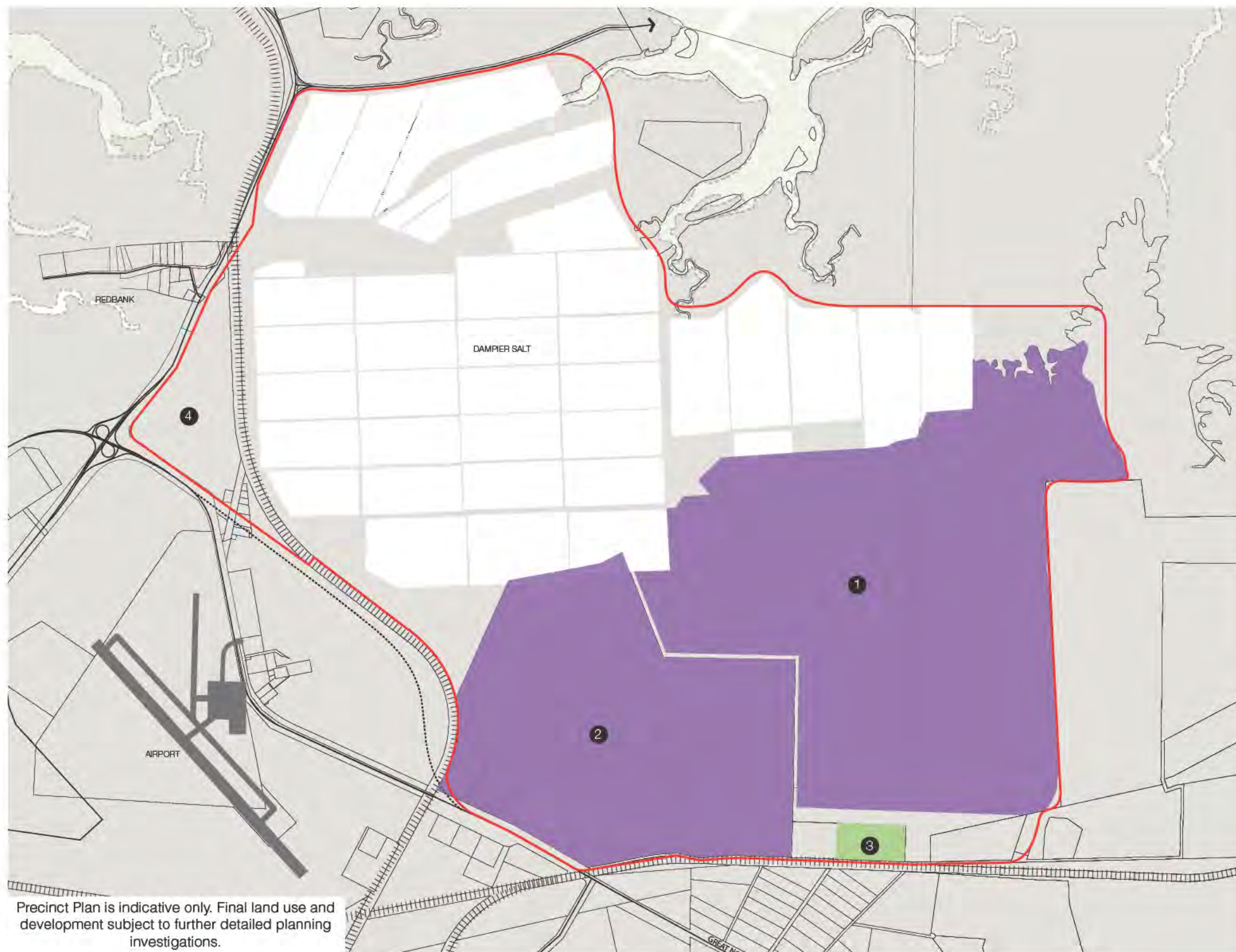
Implementation Indicators

Nil



Precinct Highlights

1. Dampier Salt expansion area.
2. Existing explosives reserve.
3. Motorsports Complex including Hedland Kart Club (subject to future regional motorsports facility master planning).
4. Potential tourist information centre location (subject to detailed investigation of transport and access arrangements).



RESIDENTIAL

- Residential - High Density
(R80 - R120: Apartment Living)
- West End Residential
(Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density
(R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density
(R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre
(Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre
(Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre
(Retail, Commercial, Residential Mixed Use)
- Local Centre
(Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial
(Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community
(Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry /
Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

- Public Purposes
(Wastewater Treatment, Water,
Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban
(Medium-Long Term)
- Future Expansion - Urban /
Rural Residential
(Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.6 Precinct 6 – Wedgefield Industry & Logistics

Precinct Statement

“The Wedgefield Industry & Logistics Precinct supports our City’s primary Light Industrial and Transport Industry businesses. Expansion of the precinct will continue to provide greater diversity of industrial land choice and act as the catalyst for improved amenity within established Wedgefield.”



Key Figures (ultimate)

Area:	700 (ha) (indicative based on precinct boundary).
New Dwellings:	0 (192 total).
New Short Stay (rooms):	0 (0 total).
New Transient Workforce Accommodation:	0 (0 total).
New Light/General Industry (ha):	220 (378 total) – includes transport.
New Strategic Industry (ha):	0 (0 total).



Summary of Influences

Landscape, Heritage & Environment

- Areas of mangrove environs to immediate north.
- Rural landscape to east.
- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Existing Wedgefield mix of light and heavier industrial uses, as well as care taker residential and transient workers accommodation.
- Surrounding undeveloped vacant land.
- Truck stop / service facility off Great Northern Highway .
- Consideration of air traffic obstacle height limitation surfaces given proximity to Port Hedland International Airport.

Current or Planned Projects

- Wedgefield Transport & Logistics Precinct land release.
- Light Industrial 'Area 5' (LIA5) land release LandCorp.
- Great Northern Highway by Main Roads WA expected to be completed by mid 2014.

Precinct Plan Summary

- Dedicated Transport & Logistics Area reflecting planned release of some 100 new lots ranging in size from 4500sqm to 5.0ha.
- Light Industrial – reflecting planned release of some 135 new lots ranging in size from 2000sqm to 7000sqm.
- Retention of existing Wedgefield with gradual relocation of heavier uses to other Growth Precincts more appropriately designated.

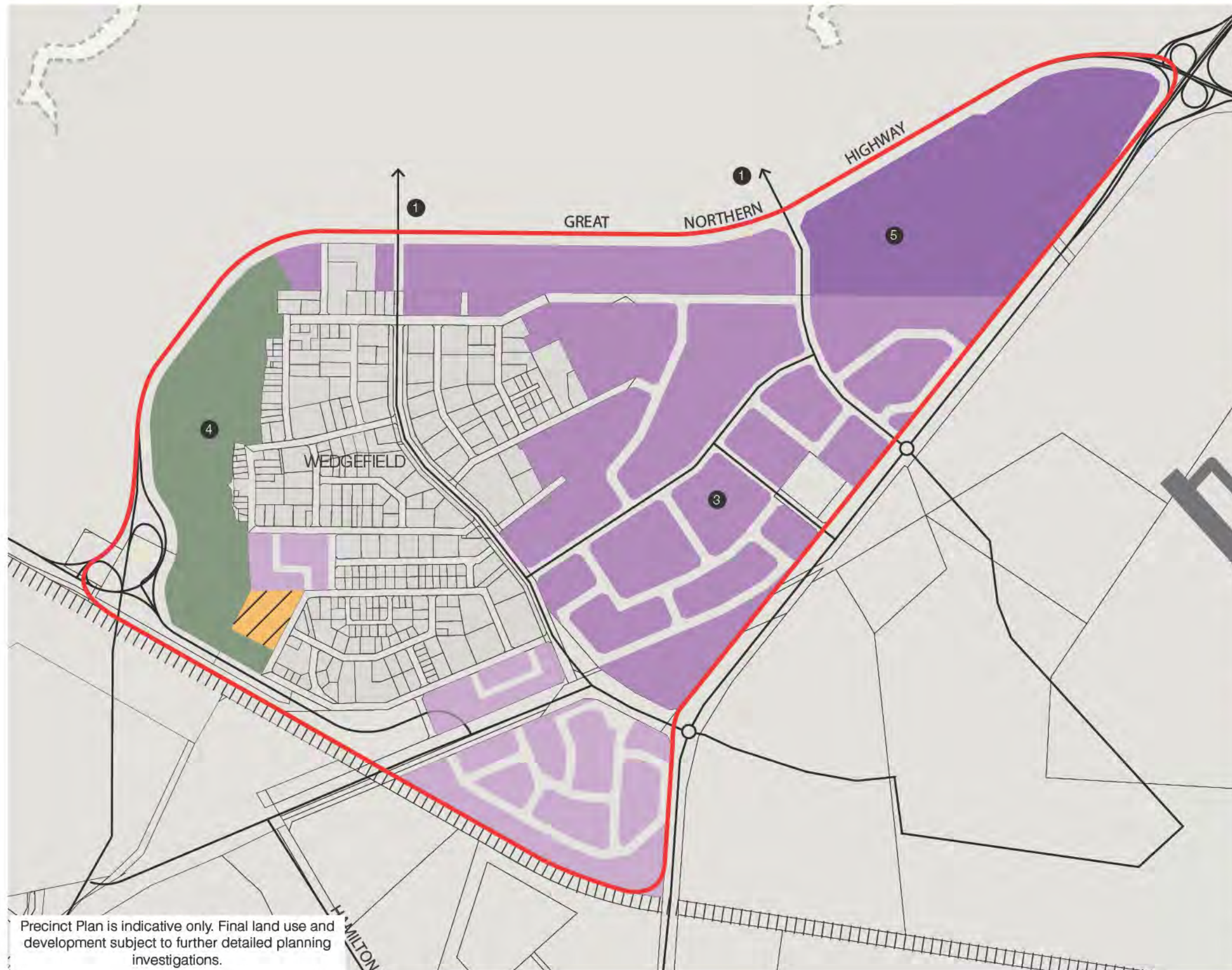
Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Wedgefield Industrial Expansion Development Plan (WIEDP) already adopted under TPS5 and delivery underway.
- Review of existing Wedgefield land use recommended following relocation of heavier uses in short to medium term. Review to determine opportunities for formal 'composite industrial' residential/light industrial use in limited western edge area.
- Consideration of air traffic obstacle height limitation surfaces given proximity to Port Hedland International Airport.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

Precinct Highlights

1. Access to port authority land.
2. Port authority expansion.
3. 'Hedland Junction' transport/logistics area.
4. South Creek environments.
5. Building height limitations associated with air traffic movements.



RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

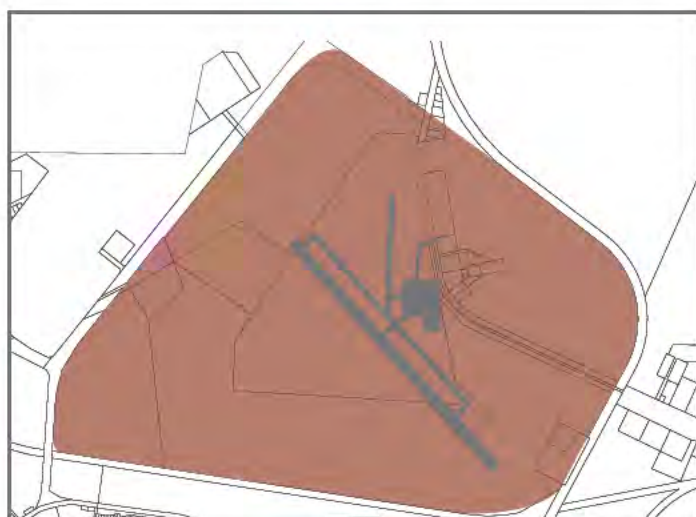
OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetary, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.7 Precinct 7 – Airport & Surrounds

Precinct Statement

“Pilbara’s Port City International Airport is a major gateway to the North West of Australia. The upgraded airport welcomes visitors at a standard reflective of any of Australia’s major regional cities. The surrounding area supports a range of logistics and related uses.”



Key Figures (ultimate)

Area:	1250 (ha) (indicative based on precinct boundary).
New Short Stay (rooms):	0 (164 total, excluding hotel opportunity).
New Transient Workforce Accommodation (temporary):	Up to 8,000 (9,394 total, ultimately replaced by permanent uses).
New Retail Floorspace (sqm):	9,401 (9,401 total).
New Commercial Office Floorspace (sqm):	46ha total highway commercial (0 total).
New Light/General Industry (ha):	250ha airport land industrial (some of which to be provided post 2021).

Summary of Influences

Landscape, Heritage & Environment

- Rural landscape to east.
- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Airport operations, including consideration of wider obstacle height limitations.
- Construction FIFO accommodation including Port Haven.
- Port Hedland Caravan Park.
- Bureau of Meteorology Station.
- Cemetery.

Current or Planned Projects

- 4000 man temporary workforce accommodation site (Airport Precinct 3, southwest of runway).
- Port Hedland International Airport Masterplan endorsed by Council as a guiding document for land use and development.
- Development investigations for International Freight Depot.

Precinct Plan Summary

The airport precinct has been identified as a major source of local employment in the medium term. Growth Plan calculations suggest that light industrial land south of the runway will be required from 2021 (planning will therefore be required earlier). The benefits of developing a highway commercial and light industrial precinct directly connected to the airport (and close to port operations) will be significant for the town in the medium term.

In the interim through to 2021 and the first stages of demand for light industrial land, the Growth Plan recognises the opportunity to consider short term workforce accommodation. While such a concept can be considered it will need to be of a scale, and timeframe that does not negatively impact wider growth objectives. Individual accommodation proposals will be required

to demonstrate legacy benefits to the city, be on timeframe terms that adhere to Growth Plan forecasts for use of the land, and be compatible with accommodation initiatives elsewhere within Pilbara’s Port City.

- Highway Commercial / Light Industrial.
- Facilitate limited short term development of construction workforce accommodation, and in responding to demand:
 - consolidate existing area on Great Northern Highway and deliver legacy of infrastructure; and
 - facilitate development progression within a defined area of Light Industry precinct, having regard to identified industrial demand timing.

Implementation Indicators

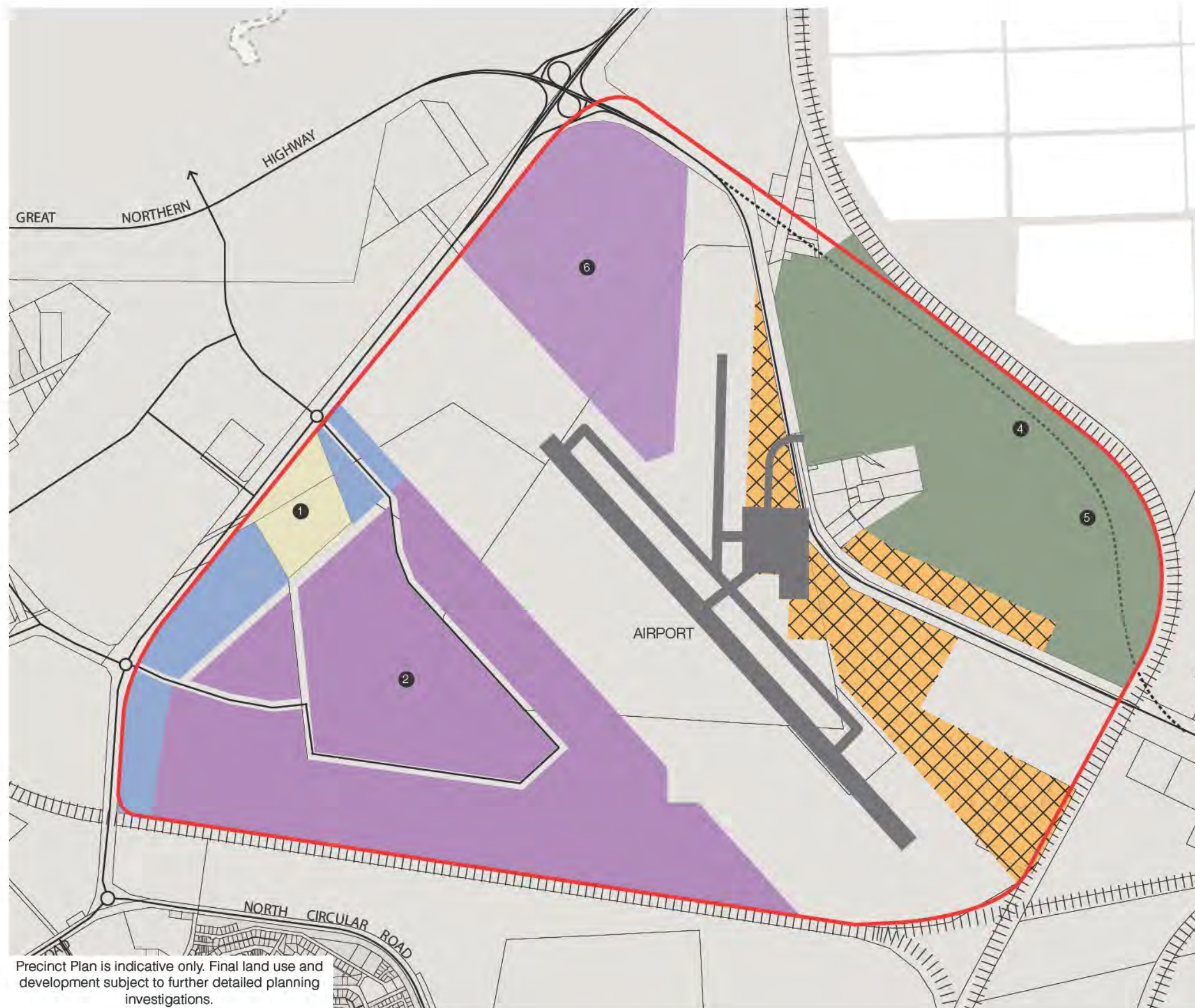
The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan’s objectives:

- More detailed airport masterplan progressing for adoption under TPS5 and thereafter implementation and delivery.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

Precinct Highlights

1. Port Hedland cemetery.
2. Short term workforce accommodation opportunity (ultimately replaced by industrial use).
3. Sustainable energy industry precinct (airport masterplan) (low impact development due to flooding).
4. Great Northern Highway realignment to facilitate improved access to surrounds.
5. ‘Green Gateway’ entry.
6. Height limitations associated with air traffic movements.





RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetary, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.8 Precinct 8 – Pippingarra

Precinct Statement

“The Pippingarra area is home to some of Pilbara’s Port City population enjoying a more rural lifestyle. Consolidation and limited expansion of the area has allowed new residents to seek out this lifestyle choice. The wider areas south of Great Northern Highway remain protected land bank for future long term City Growth needs should urban expansion pressures require.”



Key Figures (ultimate)

Area:	6451 (ha) (indicative based on precinct boundary).
New Dwellings:	limited to eastern expansion area.
New Short Stay (rooms):	0 (0 total).
New Transient Workforce Accom:	0 (0 total).
Future Urban Growth Area (ha):	4610ha.
Rural Residential land supply (ha):	502ha.



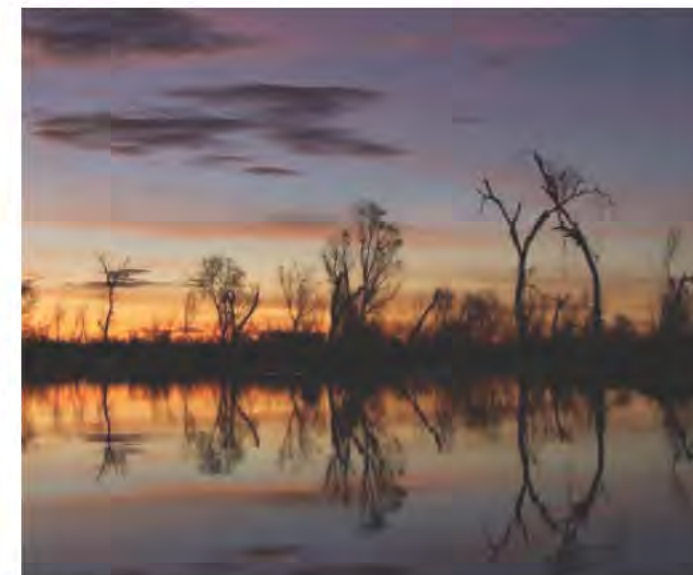
Summary of Influences

Landscape, Heritage & Environment

- Beebingarra Creek.
- Indigenous: Twelve Mile site over eastern boundary. Tjalku Warra Burial in adjacent Precinct 16.
- Non-Indigenous: Du Pont explosives bunkers and Pippingarra Homestead.
- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Limited area of rural small holdings at northern end.
- Great Northern Hwy traverses northern end.
- Rail loop at north western end.
- Aboriginal settlements including; Tialka Warra and Pippingarra.



Precinct Plan Summary

- Consolidation of rural small holdings to rural residential (subject to consolidation of land use/noise buffers associated with rail operations and Precinct 4 land uses).
- Long term land bank for future potential urban development (beyond 50,000 people).
- Industrial plant with associated buffer.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Precinct to be reflected within TPS5 to recognise long term land bank intent.
- Consideration of land use buffers/corridor separation distance to rail lines.
- Progression of community layout plans for Aboriginal settlements.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.

Precinct Highlights

1. Consolidation of rural small holdings to rural residential (subject to consideration of land use/noise buffers associated with rail operations and Precinct 4 land uses).
2. Limited expansion of rural-residential (subject to consideration of land use/noise buffers associated with rail operations and Precinct 4 land uses).
3. Industrial plant with buffer.
4. Potential location for consolidated private recreation facility (e.g. motorsports). Subject to detailed investigation.



RESIDENTIAL

- Residential - High Density
(R80 - R120: Apartment Living)
- West End Residential
(Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density
(R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density
(R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre
(Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre
(Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre
(Retail, Commercial, Residential Mixed Use)
- Local Centre
(Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial
(Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community
(Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

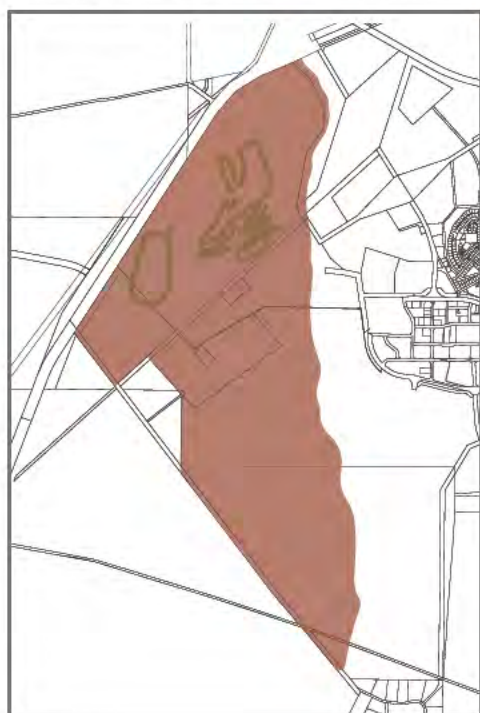
- Public Purposes
(Wastewater Treatment, Water, Cemetary, Energy)
- Airport Operations
- Future Expansion - Urban
(Medium-Long Term)
- Future Expansion - Urban / Rural Residential
(Long Term - Beyond 50,000)
- Potential Boating Facility Site

Precinct Plan is indicative only. Final land use and development subject to further detailed planning investigations.

5.6.9 Precinct 9 – Western Gateway

Precinct Statement

“The Western Gateway area typifies the Pilbara Port City lifestyle of sporting opportunity, being home to our equestrian precinct and golf club. It is the western gateway for visitors to our City Centre travelling from the south, or heading west where they enjoy the magnificent Pilbara sunsets.”



Key Figures (ultimate)

Area:	742 (ha) (indicative based on precinct boundary).
New Dwellings:	0 assumed (golf course estate concept subject to environmental approvals).
New Short Stay (rooms):	0 (0 total).
New Transient Workforce Accommodation:	0 (short term TWA use subject to environmental assessment).
Golf Course & Surrounds (ha):	183ha (includes land identified for golf course estate assessment).
Equestrian Precinct (ha):	103ha (comprising race track and stabling surrounds – approximate area).
Wastewater Treatment Plant (ha):	28 expansion (50ha total).
New Light/General Industry (ha):	0 (0 total).
New Strategic Industry (ha):	0 (0 total).

Summary of Influences

Landscape, Heritage & Environment

- South Creek environs and surrounding lower-lying land.
- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- South Hedland Golf Club.
- Hedland Turf Club Training Track.
- Leases in horse training/stables area adjoining track.
- South Hedland Waste Water Treatment Plant (WWTP).
- South Hedland Pistol Club.

Current or Planned Projects

- WWTP expansion planning.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Precinct 9 lies within Town Planning Scheme No.5 Boodarie Special Control Area which prohibits residential or other forms of accommodation. There is an opportunity to investigate the revitalisation of the golf course in conjunction with potential residential or tourism development. Precinct is outside formal S.19 legislation controlled Boodarie Core and Buffer.
- Precinct to be encapsulated within TPS5 as a 'Development Plan' area.
- Implementation of WWTP expansion to consider options to minimise impact on South Hedland urban settlement planning as a result of buffer requirements.
- Detailed consultation and funding required to facilitate equestrian precinct consolidation.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

Precinct Highlights

1. Potential residential/tourism development (subject to detailed environmental assessment and clarification of land use restrictions in Town Planning Scheme regarding Boodarie Special Control Area).
2. Potential short term workforce accommodation (subject to detailed environmental assessment and clarification of land use restrictions in Town Planning Scheme regarding Boodarie Special Control Area).
3. Port Hedland golf course.
4. Western 'gateway' entry road.
5. Turf club race track with grandstand off entry road.
6. Equestrian precinct.
7. Waste Water Treatment Plant (WWTP).
8. Potential future WWTP expansion area.





Precinct Plan is indicative only. Final land use and development subject to further detailed planning investigations.

RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetary, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.10 Precinct 10 – South Hedland West

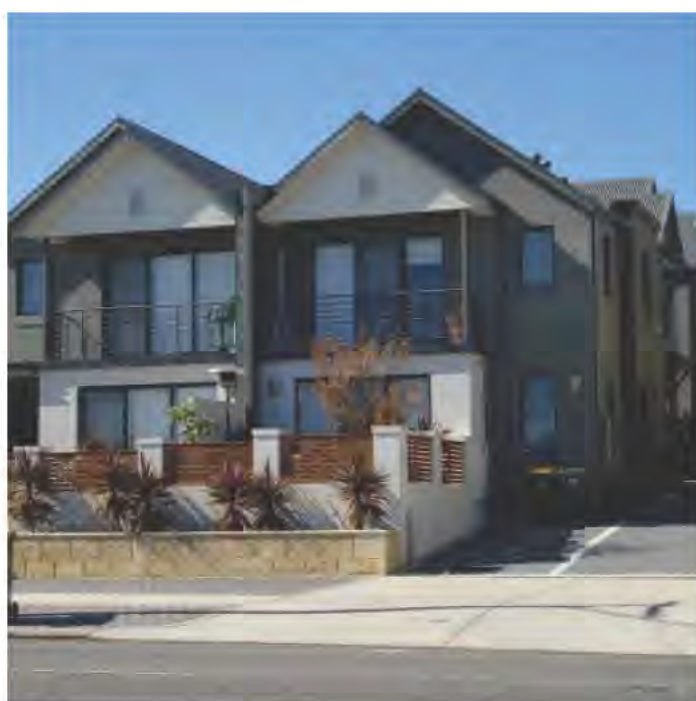
Precinct Statement

“South Hedland West is South Hedland’s newest land release area. It supports immediate and short term land supply, bringing a permanent population catchment to the west of the City. Densities are greatest in proximity to the City Centre, with more traditional home sites provided to the south west and south of the precinct.”



Key Figures (ultimate)

Area:	1070 (ha) (indicative based on precinct boundary).
New Dwellings:	Up to 7,210 (7,210 total).
New Short Stay (rooms):	0 (0 total).
New Transient Workforce Accommodation:	2,186 (2,642 total).
New Retail Floorspace (sqm):	6,287 (6,287 total).
New Commercial Office Floorspace (sqm):	0 (0 total).
New Schools:	1 Primary School (4.0ha).
New Sport Facilities:	1 Regional Level Facility (expansion to multi-purpose centre fields and facilities) plus local facilities.



Summary of Influences

Landscape, Heritage & Environment

- South Creek environs and surrounding lower-lying land.
- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Water tanks at north end of precinct.
- FIFO facilities adjoining Hamilton Road.
- Main Sporting facilities.
- Pilbara TAFE.
- Landfill facility to southeast of precinct.

Current or Planned Projects

- Major City Multi-Purpose Sport Facility.
- 'Site A' development for workforce accommodation & residential west of TAFE.
- 'Site B' development south of Forrest Cir / west of Scadden Road for permanent residential land uses.
- Expansion of existing Hamilton workforce accommodation.
- Masterplanning for 120ha of medium density residential housing commenced.

Precinct Plan Summary

- Medium/High density residential reducing to medium/low density further from City Centre.
- Drainage Corridors to west reflecting drainage/flood needs and retention of Pilbara landscape elements.
- Outer 'ring road' to define western edge.
- Workforce Accommodation opportunities at northern / western edge.
- Medium-longer term Urban Land Bank at southern end (potentially developed earlier if required, subject to resolution of Native Title, etc).
- District Sporting Facilities and associated land bank designated over existing landfill facility.

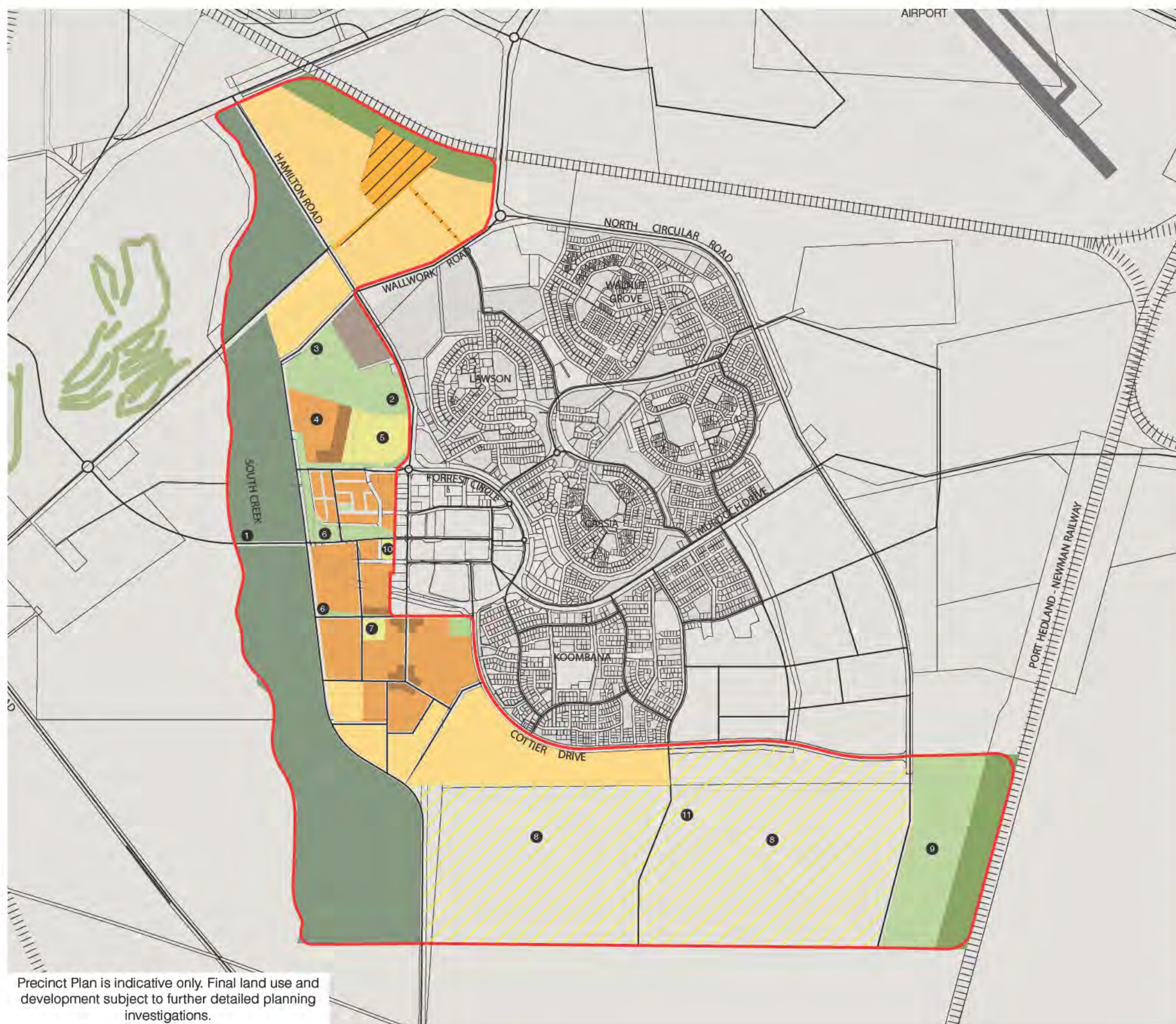
Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Immediate land release requirement of 120ha (western edge) requires fast-track 'intervention' approach to bring forward standard agency approval timeframes and facilitate a 0-2 year development and lot release timeframe.
- Immediate traffic planning required for western ring road.
- Landfill relocation planning required to remove buffer impacts to urban development land in southeast.
- Precinct encapsulated in TPS5 as a 'Development Plan' area(s).
- Development Plan to be prepared over priority development areas (leaving land bank areas).
- Flexible approaches to immediate/short term water and wastewater infrastructure provision required.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

Precinct Highlights

1. Western 'gateway' entry road connection with CBD.
2. Multi-purpose regional sporting facility.
3. Medium term expansion of regional sports facilities and playing fields.
4. Short term workforce accommodation.
5. Tertiary Education precinct.
6. Open space 'green links' to South Creek environs.
7. Future Primary School (location subject to detailed design).
8. Medium/long term future urban (linked to demand/supply requirements).
9. District sporting facilities (and future sporting land bank).
10. Tertiary Education Facility/Centre for Excellence precinct.
11. Compensating drainage basin required south of Cottier Drive.



Precinct Plan is indicative only. Final land use and development subject to further detailed planning investigations.

RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

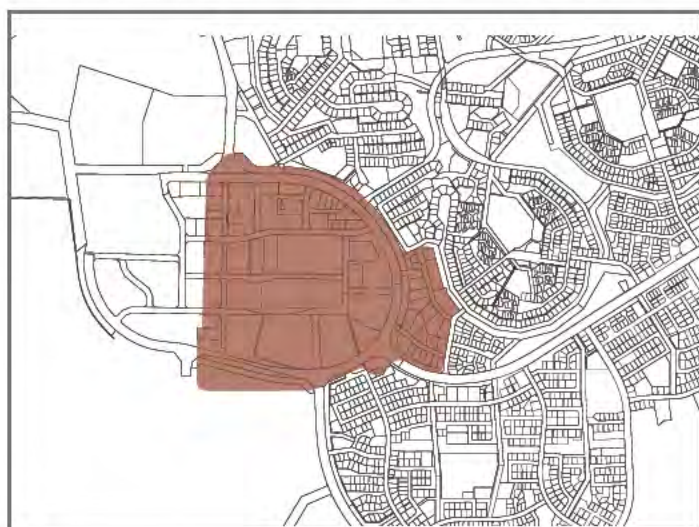
OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetary, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.11 Precinct 11 – City Centre

Precinct Statement

“A place of ‘northern Australian life’, Pilbara’s Port City Centre is a dynamic, accessible and inclusive place that is the heart of the South Hedland community and the major regional centre for the City of 50,000 people. It is an exciting destination for visitors, business people and residents. It has great public spaces, friendly streets, landmark buildings and innovative architecture. There are many visual cues through public art and spaces, and a strong association with indigenous heritage and the natural landscape. Like the many other destinations throughout Pilbara’s Port City, culture and social destinations are woven into the fabric of the City Centre”.



Key Figures (ultimate)

Area:	85 (ha) (indicative based on precinct boundary).
New Dwellings:	up to 1,470 (1,470 total).
New Short Stay (rooms):	294 (533 total).
New Retail Floorspace (sqm):	38,086 (63,831 total).
New Commercial Office Floorspace (sqm):	7,500 (15,971 total).
Hospital Expansion (ha):	4

Summary of Influences

Landscape, Heritage & Environment

- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Civic / Justice uses in proximity to Forrest Cir / Hamilton Road.
- Multicultural uses in proximity to Hamilton Rd/Rason Ct.
- Local recreation facilities / Community Services in proximity to Colebatch Way / Forrest Cir including Library, Aquatic Centre.
- Main Shopping/Retail area of Port and South Hedland.
- Primary office/commercial area of Port and South Hedland.
- Regional Hospital and Health Care.
- Commercial/retail east of Forrest Circle (Hunt St and surrounds).

Current or Planned Projects

- Town Centre Revitalisation Project (ToPH / LandCorp / Pilbara Cities) works currently underway to establish / facilitate:
 - ‘Main Street’ and connection to Murdoch Dve.
 - Mixed Use Development Sites.
 - Shopping Centre revitalisation and expansion.
 - Medium/High Density residential development sites.
 - New ‘Town Park’.
 - Hotel and Residential Apartments.
 - General upgrade to road network and connection to Eastern commercial area via Hunt Street.

- Mixed Use Development (apartments, café, commercial) at corner of Colebatch and new Murdoch Drive extension.
- Library redevelopment and community facility building (ToPH).
- Aquatic Centre revitalisation and expansion (ToPH).
- Relocation and redesign of skate park.
- Commercial Entertainment Complex feasibility investigations (cinema, bowling alley).
- Townhouse and multi-storey residential building development by BHP Billiton.

Precinct Plan Summary

As Port and South Hedland continue to develop, the South Hedland City Centre (SHCC) will play an increasingly important role not only as the primary activity centre catering for the retail and service needs of a growing population, but also as a visual focal point and constant reminder of Hedland’s modernisation and emergence as a “nationally significant, friendly City where people want to live and are proud to call home”. In this sense, the development and revitalisation of SHCC has the potential to act as a catalyst for further development and growth, engendering business confidence as well as local community pride and ownership.

The City Centre precinct is currently undergoing a transformation under the guidance of an adopted 2009 Master Plan, which has seen the delivery of a new ‘main street’ and release of a number of land parcels for mixed-use redevelopment. To align with the Pilbara’s Port City Growth Plan and Implementation Plan, a new 2012 Master Plan is also being finalised to align with current visioning and achievements to date. At the local level, the SHCC Master Plan provides a spatial plan and urban design framework for the City Centre that seeks to facilitate/stimulate development and meet the needs of a rapidly growing population. This includes:

- Facilitating the orderly and timely release and development of SHCC land to meet the ongoing needs of a rapidly growing population;



- Guiding development to ensure best practice, high quality built form and public space outcomes;
- Identifying the required levels of retail and commercial floor space to facilitate local economic development and increase the offering of services and facilities for residents and visitors;
- Increasing housing supply, product choice and affordability;
- Improving movement network efficiency, sustainability and attractiveness; and
- Providing a level of certainty and confidence for the private and public sector to operate within.

Retail and commercial floor space demand is expected to grow strongly in the Town of Port Hedland over the next two decades,

with SHCC positioned to play a central role in meeting this demand. SHCC is currently the largest concentration of retail floorspace in the LGA, and possesses the greatest capacity for floorspace expansion to meet future demand growth. Meeting retail demand will require not only an increase in retail and commercial floorspace, but also further diversification away from core grocery and specialty food stores towards an increased supply of café and restaurant, specialty stores, Discount Department Stores (DDS) and full Department Stores. There is also a requirement for some larger format retail and commercial offerings, to supplement Main Street, Shopping Centre and Mixed Use formats that traditionally define City Centre offerings.

The commercial office market in the City Centre will grow over the next 20 years, in response to a critical mass of local labour force and collocation with major medical facilities generating health-

based floorspace demand. While it is expected that the West End (Precinct 1) will play an increasingly important role in the Town of Port Hedland as a primary concentration of premium and A Grade office floorspace (fulfilling its role as a Commercial and Cultural Precinct), SHCC has a critical role to play in maintaining and increasing the diversity of office accommodation locations and availability across the LGA. This will assist in providing a “release valve” for future potential pressures in office space demand. This commercial analysis is considered further in the SHCC Master Plan.

In addition to increased retail and commercial floor space, further provision of medium and high density residential development is to occur throughout the City Centre. The incorporation of increased residential development (in some locations incorporated as a mixed use development with retail and commercial offerings) will also help to revitalise South Hedland by bringing significant numbers of people into the core. The inclusion of a residential component also helps facilitate the provision of affordable housing alternatives in areas of high amenity and close to key services.

The key objectives for the SHCC Master Plan are to facilitate positive experiences for greater numbers of visitors and permanent residents by:

- Providing a City Centre focal point or ‘hub’ of activity where people can meet and interact on an organised or chance basis and which supports a variety of services and functions;
- Providing stronger pedestrian / cyclist and vehicular connections into the City Centre making travel more convenient;
- Providing shaded pedestrian walkways and open areas in an attractive setting within the City Centre that encourage people to remain and spend time;
- Introducing a greater permanent residential population through the release of a variety of medium and higher density housing types reflective of a City Centre location;
- Providing a logical program for the redevelopment of available existing land and the future release of vacant land with an overall vision of a more vibrant place to live, work and recreate;
- Recognising demands for short-stay and tourism with the release of land for accommodation, entertainment and related uses.

Through a mixture of public works projects and private sector redevelopment, improvements to the public realm will be achieved in line with the following planning and design principles:

- Clear definition of public spaces, with each having a unique character and sense of place, and surrounding built form

interacting positively for ease of site identification and recognition.

- Functionality and usability of public spaces for a wide range of people, with appropriate levels of landscaping and public facilities to encourage activity.
- High levels of visual amenity and points of interest, including key destinations, landmarks and gateways.
- Ensuring that streets serve not only to provide for the safe, efficient movement of vehicles, but also for the movement of pedestrians and cyclists, and act as dynamic, interesting public spaces in their own right.
- Celebration of community heritage through the use of public art and landscaping to tell the story of the place and its people.
- Adequate levels of lighting, activity and passive surveillance to improve the safety of public spaces.

Streetscapes generally within the SHTC will be improved to include pavement treatments, street furniture, public art, interpretive signage, canopy street trees and shade structures within verges all promoting a positive pedestrian oriented environment. Further streetscape planning and development within the City Centre area will be assessed by the Town of Port Hedland and LandCorp in accordance with City Centre Design Guidelines.

Implementation Indicators

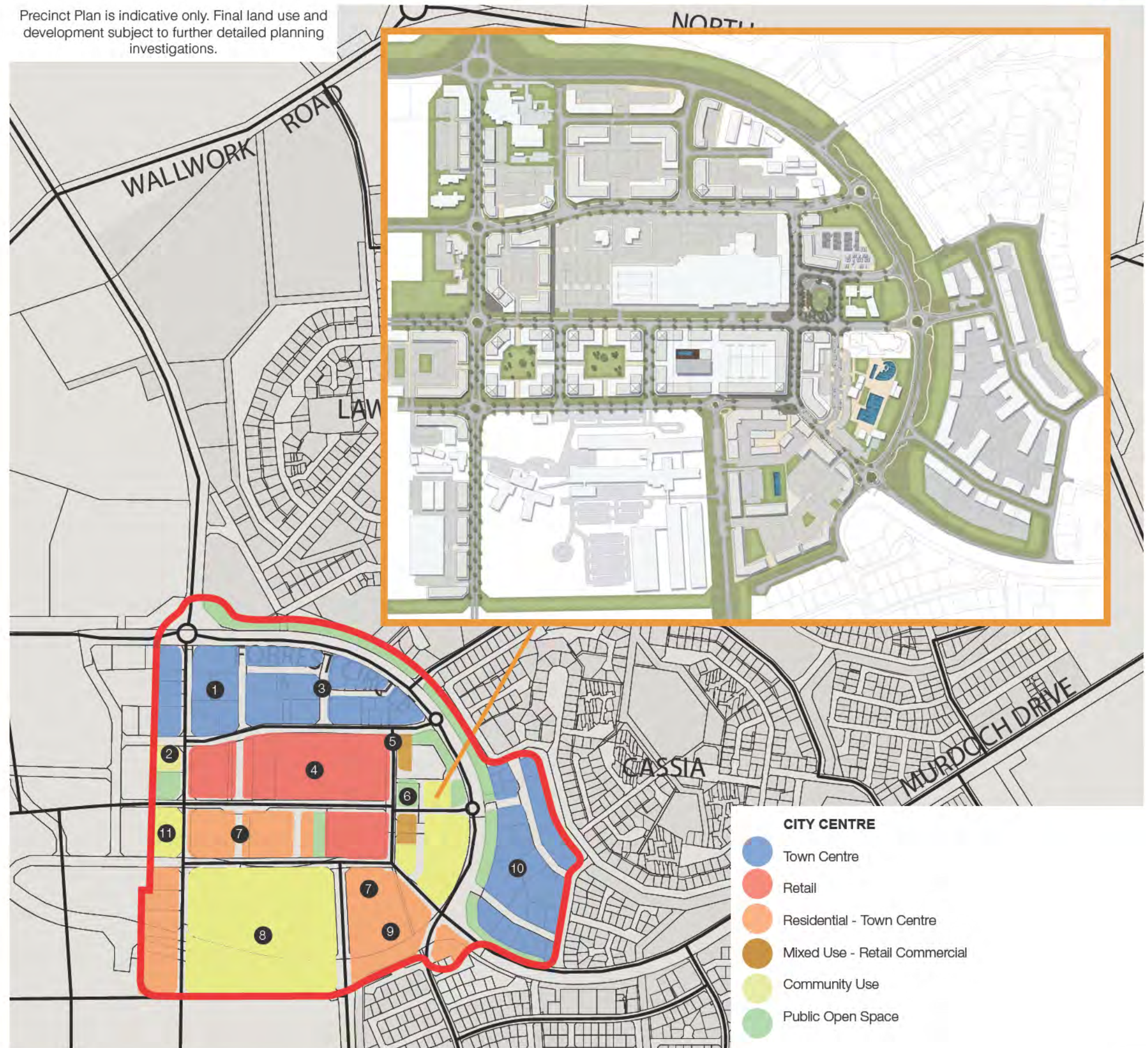
The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Review / refinement of existing South Hedland Town Centre Development Plan to reflect enhanced City Centre role.
- Use of a ‘City Architect’ in conjunction with urban design practitioners to ensure best practice development outcomes are achieved.
- ‘Phase 1’ deliver underway and continuing to deliver new “main street”, town park and associated land releases to the private sector.
- ‘Phase 2’ delivery of further road/infrastructure upgrades and release to private sector of residential/mixed use and commercial opportunities during 2011/2012.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.





Precinct Plan is indicative only. Final land use and development subject to further detailed planning investigations.



Precinct Highlights

1. Civic / Justice precinct.
2. Indigenous Culture precinct.
3. City Commercial / Office Precinct.
4. Retail / Shopping Centre.
5. 'Main Street' Activity Precinct.
6. Town Square.
7. High density mixed use residential.
8. Regional Health Centre Precinct (including expansion area for hospital).
9. High end medium density residential.
10. Mixed use commercial precinct connected to City Centre.
11. Tertiary Education Facility/Centre for Excellence precinct.

5.6.12 Precinct 12 – South Hedland East

Precinct Statement

“South Hedland East comprises the original four neighbourhoods of South Hedland, together with adjoining land to the south within Circular Road and Cottier Road. It is a place of safe, landscaped and connected streets and a place that continues to be regenerated through redevelopment and infill. A strong sense of community continues to develop through the celebration of local art and culture, community uses and sporting opportunity.”



Key Figures (ultimate)

Area:	715 (ha) (indicative based on precinct boundary).
New Dwellings:	Up to 6,070 (9,578 total).
New Short Stay (rooms):	196 (396 total).
New Transient Workforce Accom:	364 (550 total).
New Retail Floorspace (sqm):	7,137 (7,137 total).
New Commercial Office F'space (sqm):	0 (0 total).
New Schools:	1 PS (4.0ha), 1 HS (12.0ha)
New Sport Facilities:	1 District Recreation in addition to demand led local facilities – (20ha).

Summary of Influences

Landscape, Heritage & Environment

- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Predominantly residential (single with nodes of grouped and higher density).
- Hedland High School (encompassing Matt Dan Theatre).
- South Hedland Bowls Club.
- Vacant undeveloped land.
- South Hedland Water Tower.
- Black Rock Caravan Park.

Current or Planned Projects

- Water Park (ToPH).
- Community Centre Redevelopment (JD Hardie Centre) and improvements to Matt Dann Theatre.
- New Living Revitalisation Program.
- Parker Street planned residential project (Cedar Woods).
- Koombana School Site planned residential project (Jaxon).
- 'Site K' on North Circular Road / Murdoch Drive for residential.
- Landscape amenity improvement program.
- National Rental Affordability Scheme (NRAS).
- Town Planning Scheme Amendment seeking to upgrade all R20 zoned land to R20/30.

Precinct Plan Summary

- Significant on-going infill/redevelopment of residential land.
- Immediate term residential land release to south east.
- Education and community facilities.
- Mixed Use local centre at eastern end of Murdoch Drive.

Implementation Indicators

The following is a guide to some of the considerations needing to

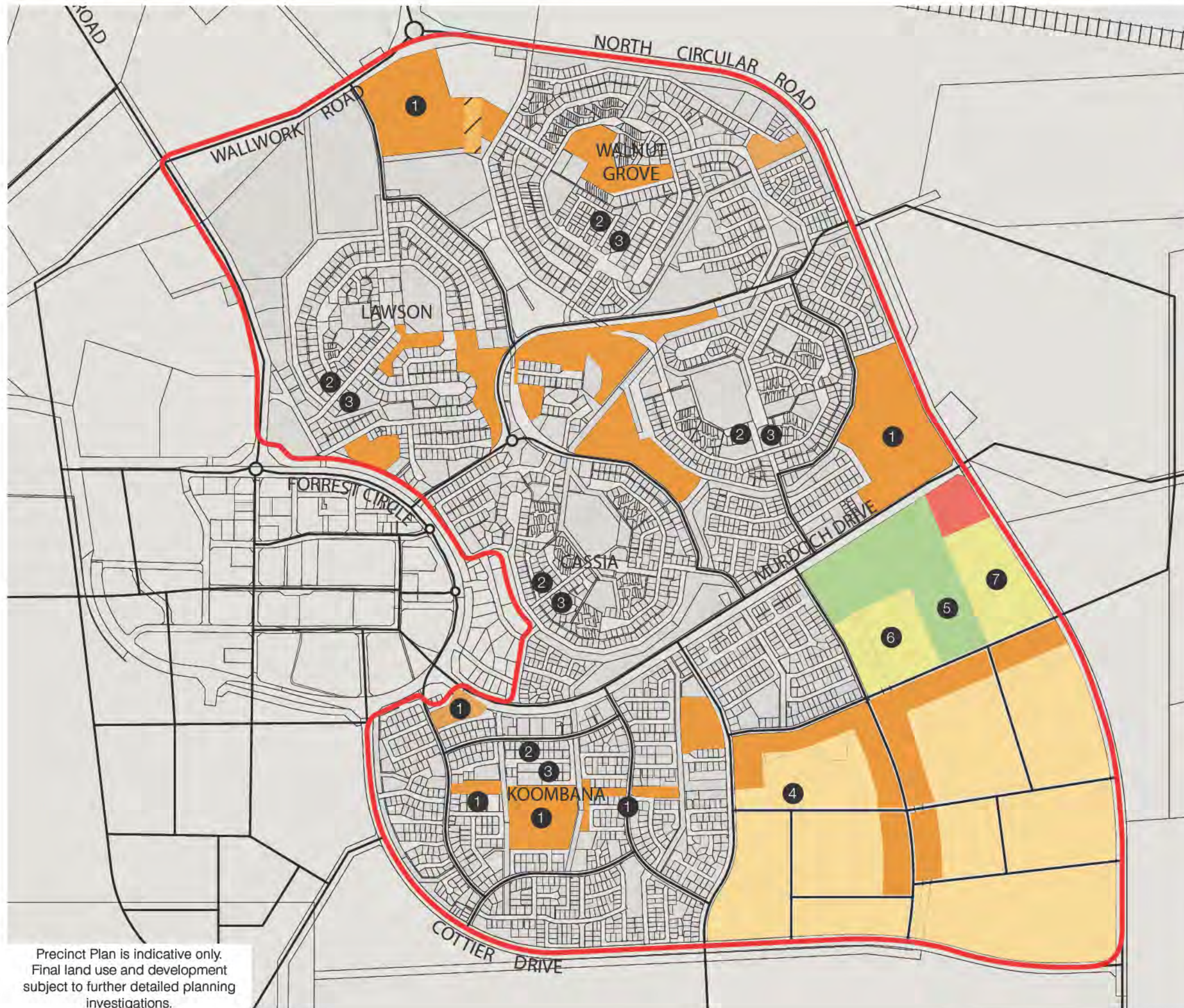
be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Master planning commencing (Department of Housing) for detailed site design and development of priority land release south of Murdoch Drive.
- Amendment to TPS5 proposed to facilitate continued regeneration of established areas following progression of 'New Living' program.
- Key immediate land release sites being progressed by the private sector and not-for-profit organisations.
- Flexible approaches to immediate/short term water and wastewater infrastructure provision required.
- Encourage improved development outcomes in terms of built form, urban design and placemaking to overcome negative elements of the previous 'Radburn' design (both through major new development proposals and ongoing renewal of established areas, e.g. through design guidelines)
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

Precinct Highlights

1. Immediate term housing supply opportunity.
2. Opportunities for density increases across neighbourhood.
3. Way-finding improvements through streetscape planting, signage and public art across precinct neighbourhoods.
4. Immediate / short term expansion of residential land supply east of Koombana.
5. District playing fields co-located with High School/Primary School (indicative location).
6. Primary School (indicative location).
7. High School (indicative location).





RESIDENTIAL

- Residential - High Density
(R80 - R120: Apartment Living)
- West End Residential
(Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density
(R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density
(R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre
(Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre
(Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre
(Retail, Commercial, Residential Mixed Use)
- Local Centre
(Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial
(Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community
(Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry /
Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

- Public Purposes
(Wastewater Treatment, Water,
Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban
(Medium-Long Term)
- Future Expansion - Urban /
Rural Residential
(Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.13 Precinct 13 – Eastern Gateway

Precinct Statement

“The Eastern Gateway precinct forms part of the much needed spatial growth of South Hedland. It supports a mix of urban development and consolidates the eastern entry to our City Centre via Great Northern Highway and Murdoch Drive.”



Key Figures (ultimate)

Area:	545 (ha) (indicative based on precinct boundary).
New Dwellings:	Up to 2,650 (2,650 total).
New Short Stay (rooms):	0 (0 total).
New Transient Workforce Accom:	729 (729 total).
New Retail Floorspace (sqm):	1,354 (1,354 total).
New Commercial Office F'space (sqm):	0 (0 total).

Summary of Influences

Landscape, Heritage & Environment

- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Predominantly vacant.
- Major drainage area off North Circular Road.

Precinct Plan Summary

- Low and medium density residential development opportunity east of North Circular Road.
- Medium to long term urban expansion.
- District sporting facilities to replace landfill site.
- Landscape buffers to rail corridors.
- Potential short term/interim opportunity for TWA development integrated with existing residential areas.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Investigation required to facilitate site planning and development of workforce accommodation (potentially housing construction workforce).
- Precinct encapsulated in TPS5 as a 'Development Plan' area.
- Development Plan to be prepared over priority development areas (leaving land bank areas).
- Detailed consideration of land use/noise buffer requirements to railway corridors.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.



Precinct Highlights

1. Eastern 'gateway' entry road linking Murdoch Drive to city centre.
2. Opportunity for short term transient workforce accommodation.
3. District sporting facilities (and long term sporting land bank).



RESIDENTIAL

- Residential - High Density
(R80 - R120: Apartment Living)
- West End Residential
(Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density
(R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density
(R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre
(Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre
(Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre
(Retail, Commercial, Residential Mixed Use)
- Local Centre
(Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial
(Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community
(Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry /
Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

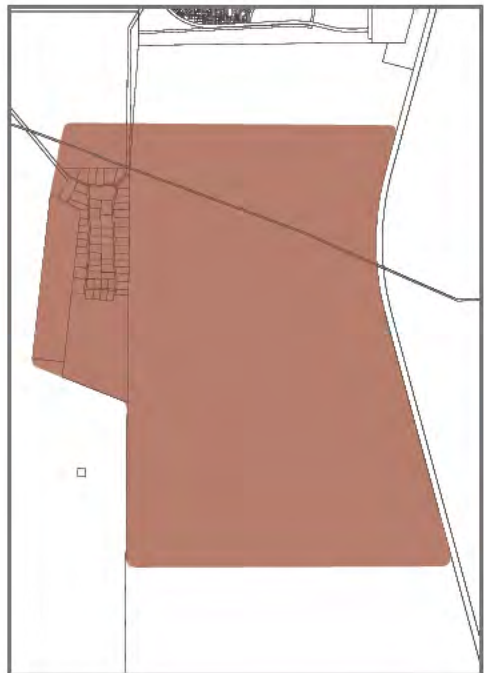
- Rural Residential
- Rural Industry

OTHER

- Public Purposes
(Wastewater Treatment, Water,
Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban
(Medium-Long Term)
- Future Expansion - Urban /
Rural Residential
(Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.14 Precinct 14 – Southern

“The Southern precinct provides opportunities for residents opting for a rural-residential lifestyle. Limited growth of the established rural-residential area is balanced with the need to protect the wider area for future urban development requirements.”



Key Figures (ultimate)

Area:	2300(ha) (indicative based on precinct boundary).
New Dwellings:	limited to eastern expansion area.
New Short Stay (rooms):	0 (0 total).
New Transient Workforce Accom:	0 (0 total).
Rural Residential Expansion:	92ha.
Future Urban Growth Area (ha):	1425ha.

Summary of Influences

Landscape, Heritage & Environment

- South Creek environs to the west and lower lying surrounds.
- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Limited area of rural small holdings at north west edge.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Precinct to be reflected within TPS5 to recognise long term land bank intent.
- Consider Rural Residential zone objectives and demand.
- Precinct encapsulated in TPS5 as a 'Development Plan' area.
- Development plan to be prepared.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

Precinct Highlights

1. South Hedland rural residential estate expansion.





RESIDENTIAL

- Residential - High Density
(R80 - R120: Apartment Living)
- West End Residential
(Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density
(R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density
(R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre
(Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre
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(Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community
(Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry /
Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

- Public Purposes
(Wastewater Treatment, Water,
Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban
(Medium-Long Term)
- Future Expansion - Urban /
Rural Residential
(Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.15 Precinct 15 - Boodarie

Precinct Statement

“The Boodarie Strategic Industrial Area is recognised as a priority strategic industrial area by the State and Structure Planning for the estate is funded under the Cabinet-endorsed Heavy Use Industrial Land Strategy. The area supports major down-stream processing, port dependant industrial land uses, noxious industry, utilities and general industrial support operations. Major infrastructure and rail corridors protecting connectivity between the port and Boodarie, as well as wider rail networks are recognised.”



Key Figures (ultimate)

Area:	15000 (ha) (indicative based on precinct boundary).
New Strategic Industry (ha):	1,090 (1,658 total) (Note: includes former BHPBIO HBI Plant & surrounds in modelling as existing).

Summary of Influences

Landscape, Heritage & Environment

- Significant mangrove environments (northern edges).
- Rock art sites.
- South Creek environments.
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.

Existing Land Use

- Predominantly vacant land.
- Rail line on eastern edge.
- Power Station off Great Northern Hwy on north eastern edge.
- Boodarie Station House.
- FMG Mining operations and rail loop.

Current or Planned Projects

- Boodarie Strategic Industrial Area Masterplan.
- Rail line expansions (under investigation) as part of PHPA expansion.
- BHP “Quantum” Project planning.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan’s objectives:

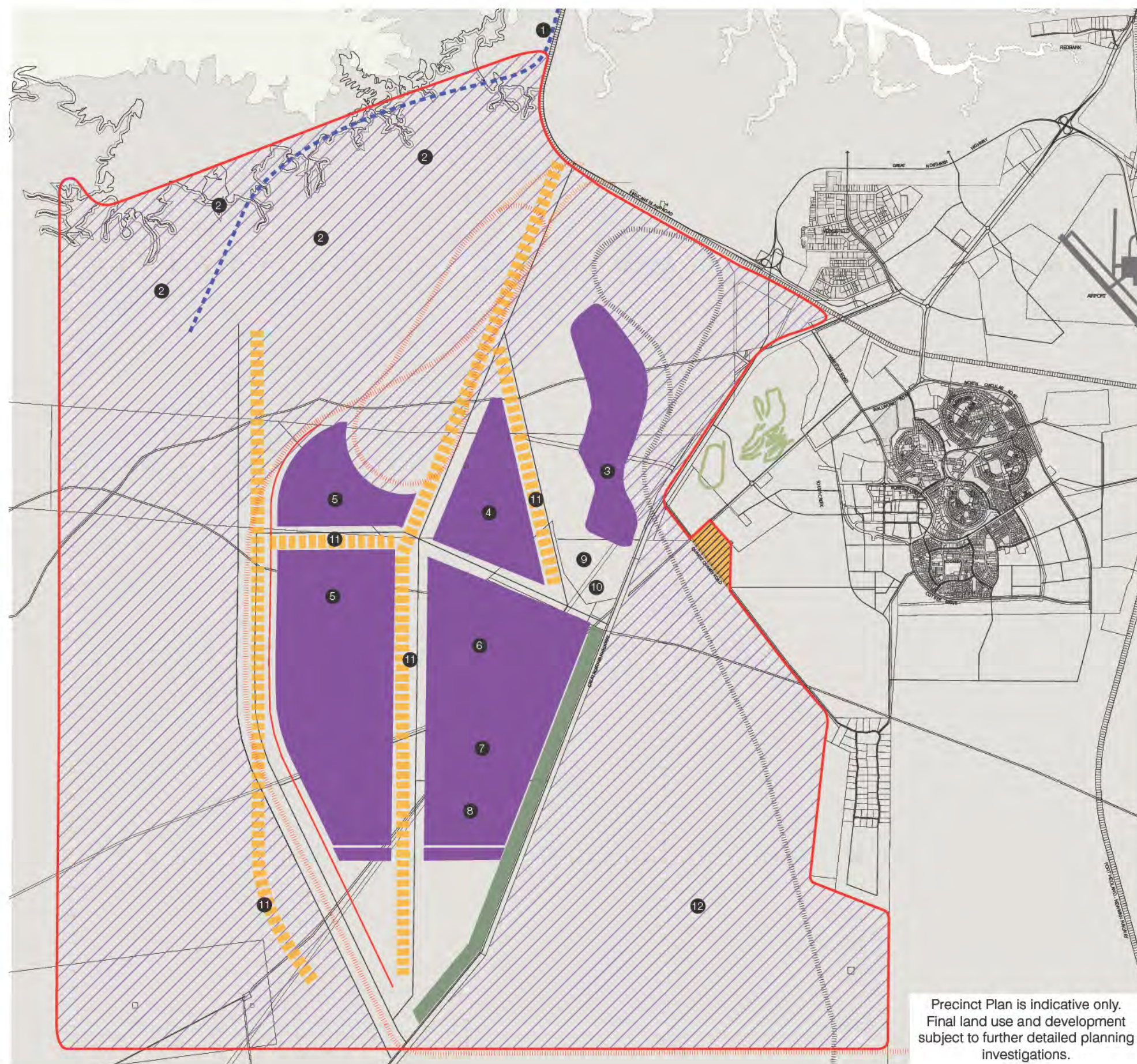
- Boodarie Development Pan to be completed and adopted under TPS5 as framework for development (under preparation by Department of State Development).

- Coastal hazard risk management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.

Precinct Highlights

1. Outer Harbour conveyor corridor.
2. New stockyards.
3. Industry Support Cell.
4. Port dependant operations.
5. Processing.
6. Utilities.
7. General/heavy industry.
8. Noxious industry.
9. Power station.
10. Energy.
11. Key corridors.
12. Potential future heavy industry (combine with Boodarie SIA operations and any buffers contained within existing Boodarie Special Control Area) - investigate for limited accommodation of uses not able to establish in Boodarie core area.





RESIDENTIAL

- Residential - High Density
(R80 - R120: Apartment Living)
- West End Residential
(Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density
(R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density
(R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre
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INDUSTRIAL

- Light Industry
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- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

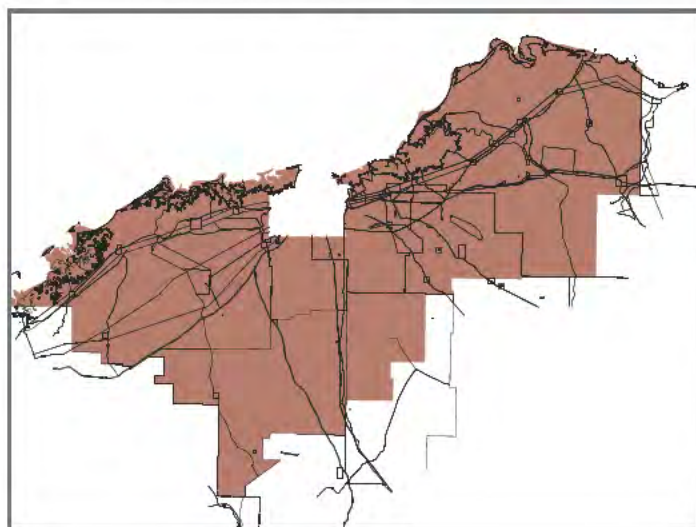
- Public Purposes
(Wastewater Treatment, Water,
Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban
(Medium-Long Term)
- Future Expansion - Urban /
Rural Residential
(Long Term - Beyond 50,000)
- Potential Boating Facility Site

Precinct Plan is indicative only.
Final land use and development
subject to further detailed planning
investigations.

5.6.16 Precinct 16 – Port & South Hedland Surrounds

Precinct Statement

“Coast and landscape define Pilbara’s Port City. Opportunities for connection and association with coast and landscape are typified through the recreation and tourism nodes that bring greater lifestyle choice in the wider Port and South Hedland areas. Camping, fishing and beach walking form an important part of the northern Australian life.”



Summary of Influences

Landscape, Heritage & Environment

- Historic De Grey Stock Route.
- Wider coastal landscape and environs subject to coastal vulnerability.
- Indigenous heritage throughout.
- Indigenous: Sites registered in Precinct with potential for currently unknown sites to occur. Boodarie Landing engravings.
- Non-Indigenous: Heritage items such as pastoral properties exist with potential for further unregistered sites. Condon/ Shellborough Pastoral properties include Pippingarra, Mundabullangara, Boodarie, Wallareenya, De Grey, Strelley and Woodstock Stations.
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.

Existing Land Use

- Pastoral Station Leases / operations.
- Informal camping/fishing.
- Aboriginal communities including; Yandeyarra (Mugarinya), Jinparinya, Ngarla coastal Njamal, Marta Marta and Strelley.

Precinct Plan Summary

- Key locations identified for coastal access, fishing and camping.
- Newman turn off identified for further investigation of transport and regional landfill uses.
- Improved provision of key services and infrastructure for remote indigenous communities.

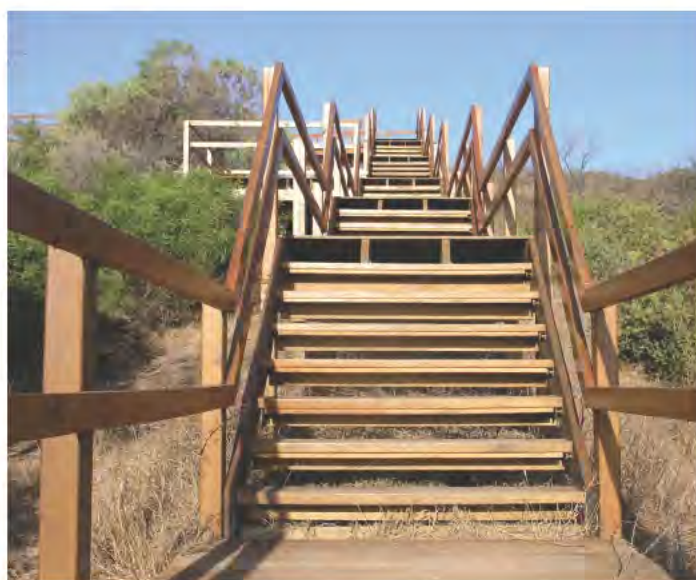
Implementation Indicators

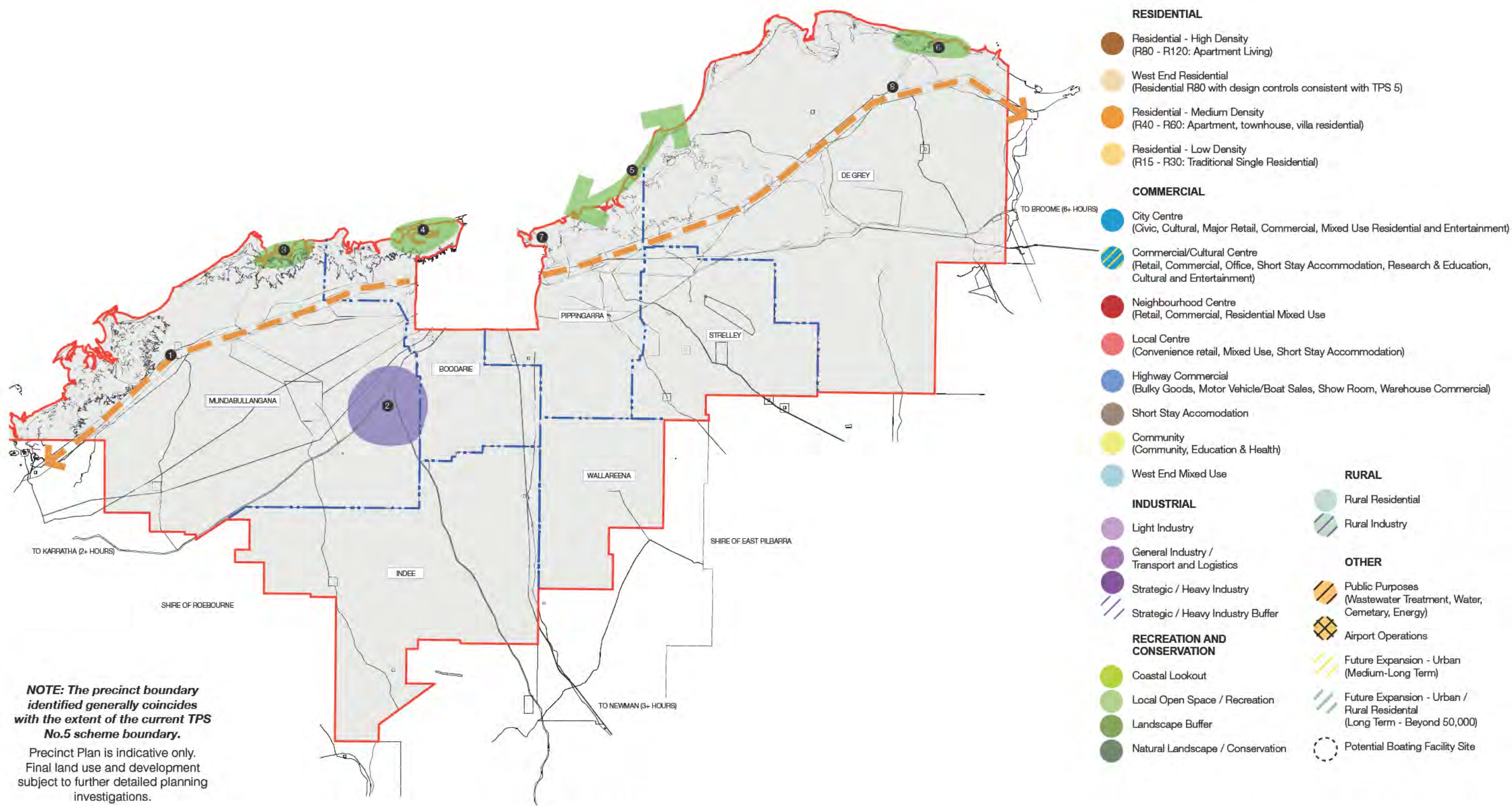
The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Coastal hazard risk management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Establishment of order of costs, timing and funding necessary to deliver earlier upgrades to identified coastal access locations.
- Wider coastal access study, particularly of Port Hedland, required to determine opportunities at a local level.
- Investigation of Area A as a priority.
- Progression of community layout plans and extension of infrastructure to Aboriginal settlements. Coastal hazard risk management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- All Western Australian pastoral leases are due to expire in 2015. The expiry of the leases in 2015 will provide an opportunity to negotiate exclusions from pastoral leases of key areas that may be required for public works, conservation, national park, nature reserve, tourism or other State purposes.

Precinct Highlights

1. De Grey-Mullewa stock route.
2. Investigation Area A: Newman turnoff (potential waste disposal transfer, industrial transport depot/storage).
3. Investigation Area B: Turtle Tourism.
4. Horseshoe and Bus Stop (camping, fishing locations) to be considered in context of Boodarie Station Management Plan.
5. Investigation Area C: (fishing, camping, swimming with improved coastal access).
6. Investigation Area D: Condon Shellborough tourism location (camping & coastal access) and/or within the De Grey station.
7. Investigation Area E: Development Investigation.
8. Current access to Shellborough.





5.0 CITY GROWTH STRATEGY



5

This section seeks to develop further the pattern of urban and commercial/industrial growth that Pilbara's Port City will require, as it grows to be a regional city, enjoying all the urban services and facilities, cultural activities and lifestyle opportunities enjoyed by cities around Australia.

The strategies for growth comprise a range of recommended initiatives and interventions of both a spatial and non-spatial nature. They will be used by all levels of government, community providers, key stakeholders and service agencies to understand how the growth of the City will be delivered at the local level and across a range of disciplines. Importantly, they are formed in the context of the existing and planned strategic resource assets.

The strategies follow initial discussion on the 'Framework for Growth' and are then articulated in the content of the Growth Plan's core themes aimed at addressing the many challenges and maximising the opportunities for growth.



Figure 5.1: Growth Framework Flowchart.

5.1 FRAMEWORK FOR GROWTH

The basis for Pilbara's Port City being a liveable sustainable city will be reflected in the delivery of the key elements of economic diversity, environmental protection, housing diversity and capacity, strengthening local community and culture as well as infrastructure capacity building. The elements of housing capacity (urban development expansion), economic diversity (activity centres and industrial development) and community (recreation and community facilities) are used here as a simple guide to understanding generally where growth will occur.

5.1.1 Urban Development Areas

Pilbara's Port City will provide an orderly land supply with immediate impact, and an ongoing choice of housing opportunities to ensure

a broad population can be accommodated. At a detailed level this is shown in the Precinct Plans forming part of this document, together with the Implementation Plan comprising a separate document.

Housing diversity and land supply, within the Growth Framework for Pilbara's Port City will be addressed through:

- Urban Expansion: reflected as an urban expansion framework in Figure 5.2. The detailed elements of the East End and South Hedland expansion areas, including indicative layout, yield estimates and other land uses are shown within the relevant Precinct Plans. Further detailed considerations of new development sites, deconstructing

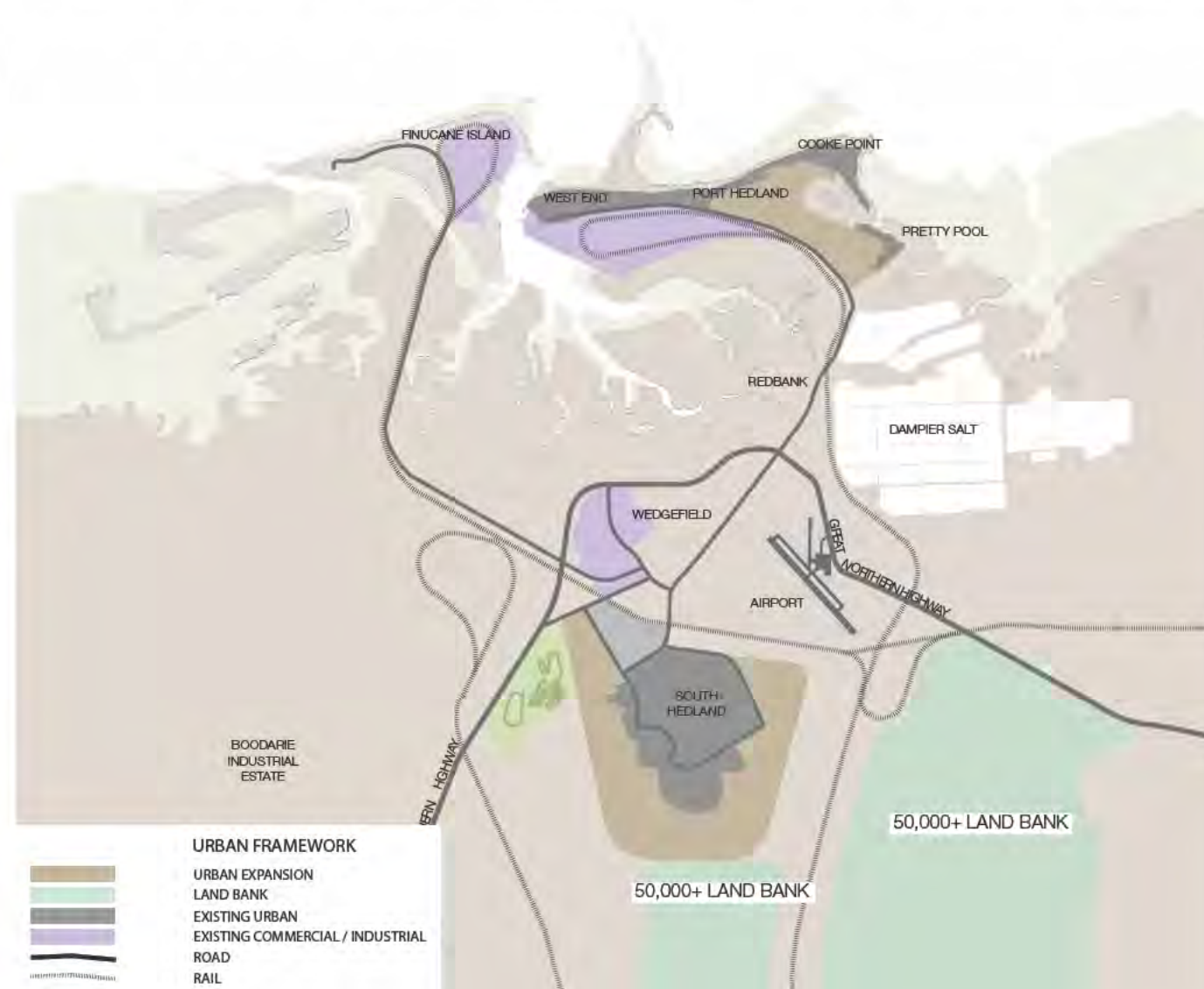


Figure 5.2: Urban Expansion Framework.

actions and delivery responsibilities/time frames is provided in the companion 'Implementation Plan'. Figures 5.3 and 5.4 demonstrate levels of identified new dwelling capacity in Port and South Hedland resulting from both urban expansion and infill development over the next 20 years. Figure 5.4 specifically demonstrates that there is sufficient capacity identified to meet in excess of the 50,000 population target.

- Infill Development: Port Hedland has the opportunity to provide for significant levels of new housing through the redevelopment of existing areas within Port and South Hedland. These areas are already provided with infrastructure services, are accessible by the established road network and encourage the regeneration and improved amenity of older established areas. While infill development occurs incrementally, it can play an important role in responding to demand. Infill development opportunities must be managed to require good built form outcomes and respond to the expectations of the community. They do provide, however, (through a performance based approach to development) for improved streetscapes and surveillance of public spaces, the inclusion of climate responsive design and local architectural vernacular, and the management of access, parking and landscape. Larger infill opportunities should also seek to improve sense of place through landscape and public art.

As infill development occurs gradually, performance based approvals are often a good basis for encouraging early redevelopment while also requiring minimum (high) standards of outcome. This approach can include allowing 'density bonuses' in which additional dwellings are supported subject to the inclusion of communal facilities, public art, or improved access and landscaping. Similarly, the opportunity to grant mixed use opportunities to development can encourage early and better outcomes.

5.1.2 Activity Centres

Diversifying the Port Hedland economy to increase local business, particularly small business, provide opportunities for entrepreneurship and local investment are key platforms to Pilbara's Port City growth. These are discussed further in section 5.2 of this document. The manner in which they are provided for within the spatial framework of the city's growth is detailed below.

An activity centre will support a range of functions that attract people including recreation, lifestyle activity, living, working, shopping and dining, together with community and cultural roles. These centres vary depending on the role and function prescribed, though all have in common:

- An integration with transport that encourages potential for walking, cycling, public transport access and generally reduced car dependency;

	IDENTIFIED NEW DWELLING CAPACITY (CUMULATIVE FROM 2011)			
	2016	2021	2026	2031
PORT HEDLAND	1,510	5,071	5,357	5,643
SOUTH HEDLAND	6,257	9,888	13,469	17,400
TOTAL	7,767	14,959	18,826	23,043

Figure 5.3: New Dwelling Supply Capacity, 2016-2031 (Source: RPS)

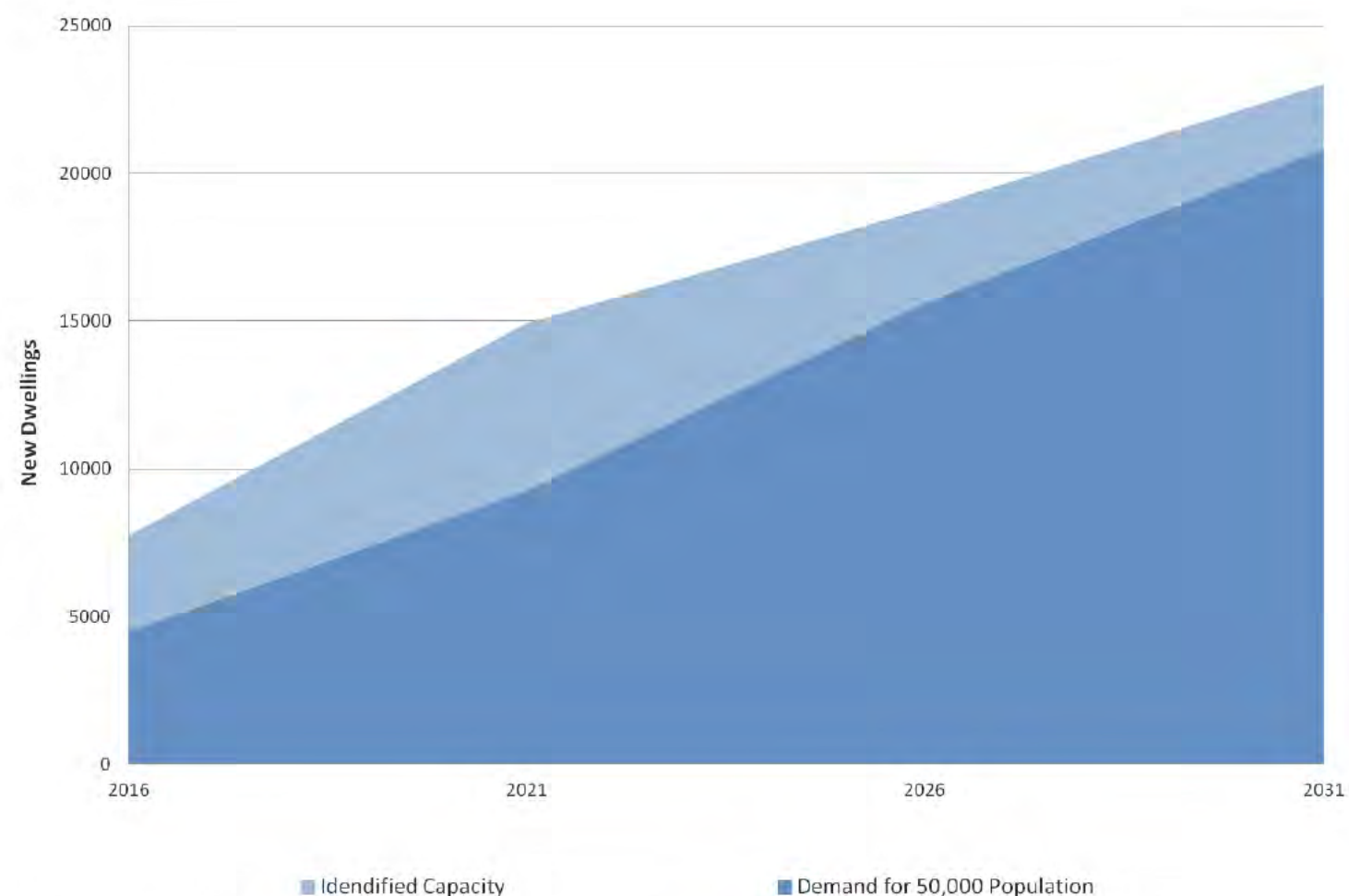


Figure 5.4: New Dwelling Supply and Demand (Source: RPS)

- Opportunities for living through mixed-use higher density housing or 'shop-top' dwellings that encourage an immediate population that supports local business and encourages people to meet and interact;
- Defined centre roles that can pave the way for synergies across common investment and business co-location;
- A role in the delivery of community development through arts, culture, landscape and sense of place through local identity; and
- Offer opportunity for employment and business investment relative to the scale and location of the centre.

Figure 5.5 illustrates the Activity Centre Framework. The role and function of each type of centre aim is outlined in Figure 5.6. This should be considered as a guide only to the role and

nature of each centre. Ultimate land use and development will be prescribed through the Town of Port Hedland Town Planning Scheme.

Ultimately the use of an activity centre framework within Pilbara's Port City will:

- Provide for a range of regional and local employment opportunities to support the city economy;
- Help to improve the existing level of non-resource employment;
- Diversify local economic drivers through a coordinated and understood choice of centres; and
- Ensure the continued long term supply of employment related land.

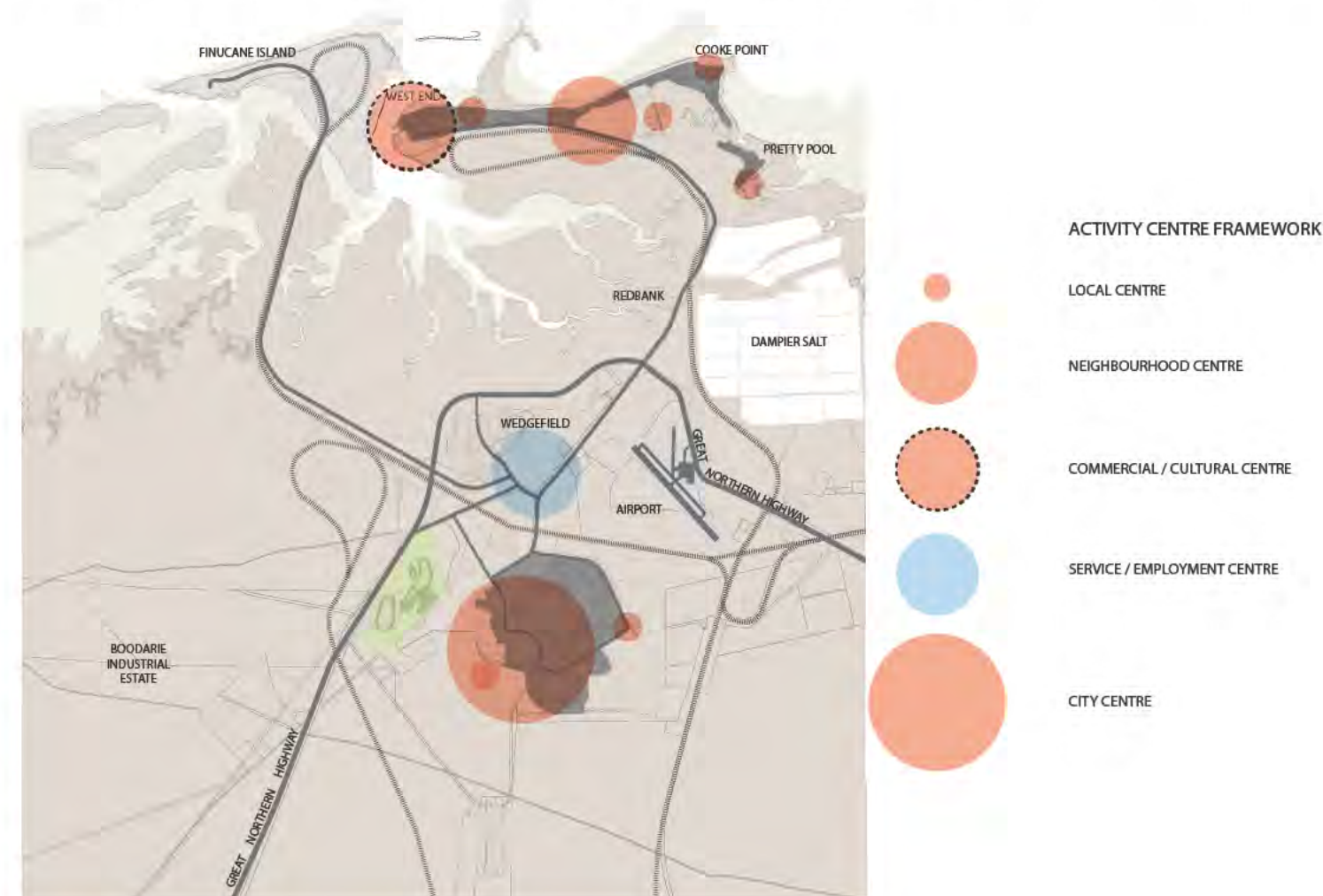


Figure 5.5: Activity Centre Framework.

Pilbara's Port City Growth Plan Activity Centre Role and Function

	Centre Hierarchy	Primary Purpose & Function	Connectivity	Indicative Uses	Indicative Activities
City Centre	1 – South Hedland CBD	Primary (largest) activity centre of the region. It supports the significant concentration of development and investment for Pilbara's Port City.	Focus for major arterial gateway routes, public bus network routes.	Department stores, Discount Department stores, Supermarkets, Specialty retailers. Major offices / Government agency offices, civic and justice premises, local government. Major regional Health facilities, health specialists. Personal services. Not for profit organisations.	Multi-purpose recreation facility, regional sports fields. Restaurants, cafes and cinema. Indigenous arts and culture precinct. Tertiary Education precinct.
Neighbourhood Centre	2 – East End Port Hedland	Supports the daily shopping, service, community and convenience needs for the East End population.	Transfer/connection point for work travel, shopping needs. High levels of accessibility (including public transport).	Supermarkets, personal services, small offices/professional services, convenience retail. Localised community service facilities. Not for profit organisations.	Catchment supports similar level of district facilities – sports fields, local gallery, smaller dining/cafe experiences.
Commercial / Cultural Centre	3 – West End Port Hedland	Specialised centre provides convenience needs to daily workforce, port operations and short-stay visitors. Acts as the alternative to commercial / cultural activity from uses in the CBD.	Significant driver for workforce travel demand. Connection point for tourist, short-stay professionals. High levels of accessibility and walkability.	Major offices, Port/resource related professionals, local professionals, local convenience retail, tourist and community services. Not for profit organisations.	Tourism uses, high end Art Gallery, research facilities, business incubation, waterfront development and entertainment.
Service / Employment Centre	4 – Wedgefield & Airport	Specialised employment precinct encompassing the light, transport and highway service industrial areas where local employment and logistics business synergies can be fostered. Offers opportunity for new/green technology industry to establish.	Connection point for local workforce travel demand and local population use of services. High levels of accessibility with demand responsive alternatives where full time public transport is not viable.	Full range of showroom warehouse, light industrial and airport/road transport/port logistics uses defined in Precinct Plans.	Potential accommodation of private sporting, arts or entertainment business including indoor sports, health club.
Local Centre	5 – Demand led but including: South Hedland - Eastern edge & South West edge; Port Hedland - Spoil bank, Cooke Point, Cooke Point Drive, Pretty Pool.	Local convenience needs only.	Connected by localised pedestrian/cycle network and passing traffic movement. Accessible by local public transport routes.	Local convenience store, cafe newsagents. Limited local professionals.	Dependant on local centre. Coastal centres or those related to area of natural amenity will offer unique environment or cultural experience.

Figure 5.6: Pilbara's Port City Growth Plan Activity Centre Role and Function.

5.1.3 Industrial Development

Industrial land supply and management within the growth framework for Pilbara's Port City will be addressed through:

- Industrial Expansion: the basis for orderly release and development of industrial land is shown in Figure 5.7
- Transitioning of Industrial Areas: Pilbara's Port City will facilitate the transitioning of its two long established industrial areas to more consistent 'lighter' industrial uses through the delivery of improved industrial supply choice
- Opportunities to foster early relocation and performance based new development are encouraged through Implementation Plan recommendations and via review of Town Planning Scheme No.5 provisions. The early progression of the Boodarie Special Industrial Area (SIA) is key to this evolution.

for heavy, noxious, general and logistics industry uses. The established Wedgefield and West End industrial precincts offer significant opportunity for new re-investment in the medium to longer term as existing uses relocate.

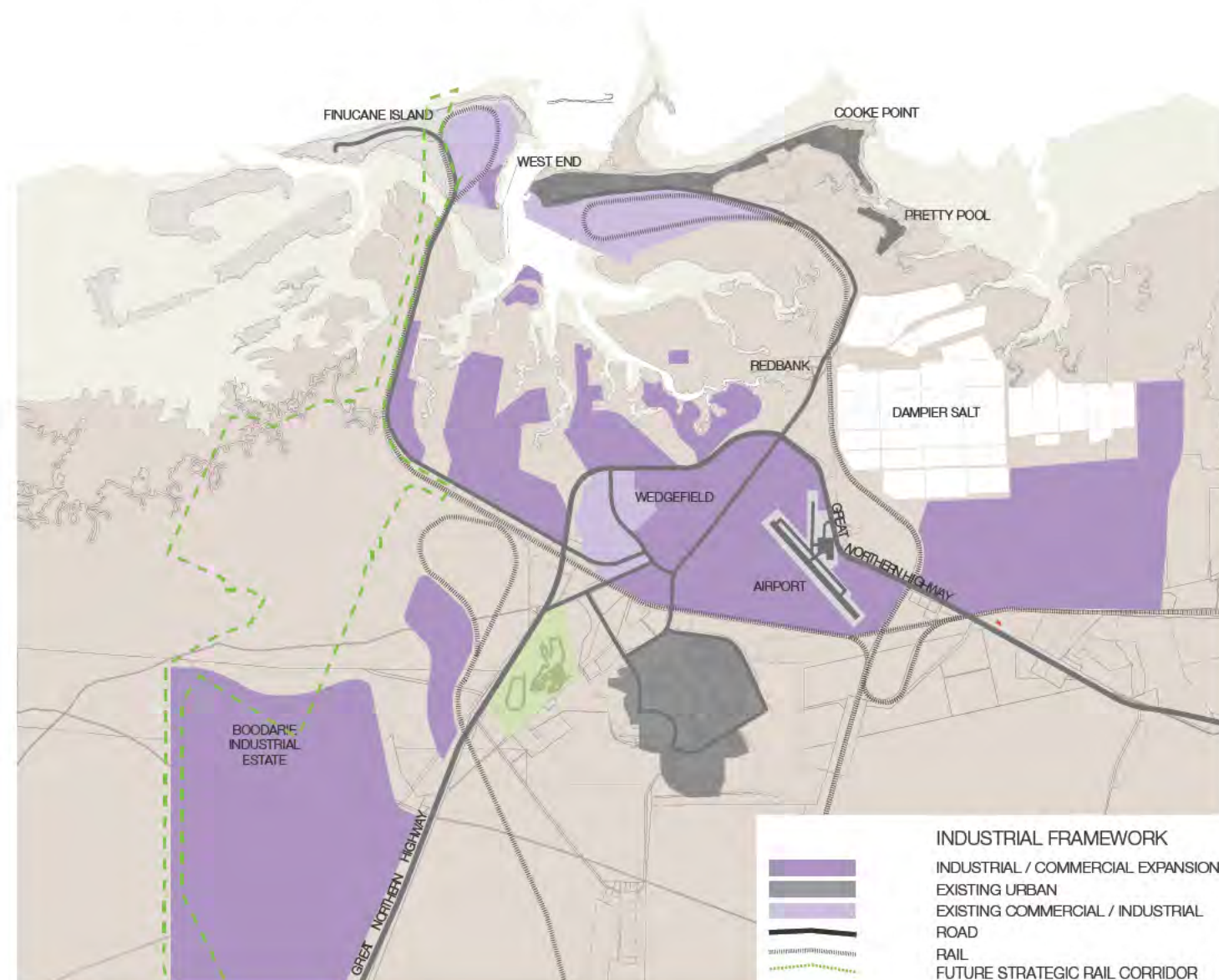


Figure 5.7: Industrial Framework

5.1.4 Recreation, Entertainment and Community Facilities

Pilbara's Port City must manage growth to ensure a sense of place, culture and heritage is retained and reflected, community and sporting facilities are provided and a safe, inclusive community develops. Many of these elements are discussed in detail within the strategy sections of this report. The hierarchy of recreation, entertainment and community facilities, together with cultural facilities, that Pilbara's Port City will support is shown in Figure 5.8.

The Growth Plan has been prepared having regard to the

recommendations provided by CCS Strategic as part of its 'Active Open Space' Strategy, as well as the emerging findings of the Town's Entertainment Facilities Feasibility study. Among other things, these studies identify district level sporting facilities and entertainment facilities to accommodate a population of up to 50,000 persons.

The Growth Plan makes provision for district level sporting facilities within the precinct plans, and provides a sufficient 'footprint' for such facilities, consistent with the requirements of the Active Open Space Strategy. The exact location and ultimate form and type of facility provided, will be further defined by detailed precinct planning and site investigations.

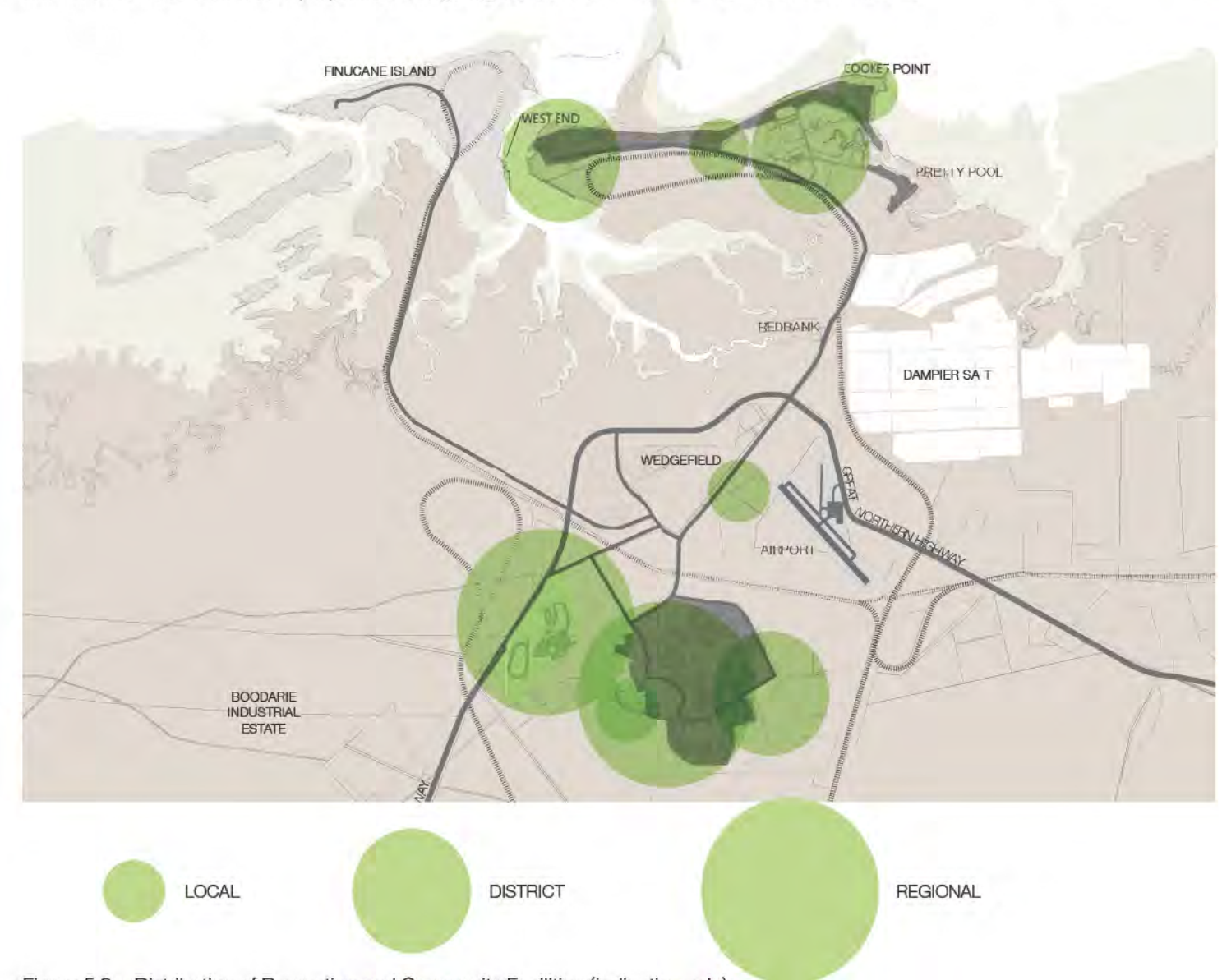


Figure 5.8: Distribution of Recreation and Community Facilities (indicative only)

Figure 5.8 provides a recreation and community framework for the City. This should be considered as a guide only to growth and distribution with additional detail provided within the precinct plans and Section 5.3 of this report with regard to arts, culture, and specific community infrastructure.

In addition to the Growth Plan, a companion document "Port Hedland: Shaping a Cosmopolitan City" (ToPH/Form, 2012) has been prepared to further articulate the community vision and guide the type and form of community and cultural offerings needed in the city.

Figure 5.9 provides an estimate of the core community infrastructure required for Port Hedland to accommodate a population of up to 50,000. Ultimately the planned location and distribution of recreation, entertainment and community facilities within Pilbara's Port City will:

- Form part of a wider 'suite' of community development initiatives including a culture plan encompassing arts and cultural heritage initiatives;
- Be informed by further detailed feasibility studies with regard to facilities capital works and ongoing management regimes;
- Provide for a range of sporting choice to support active and healthy lifestyles;
- Help to improve the existing level of interaction through sport and community meeting places;
- Diversify the offering of sporting and recreation opportunity though coordinated and understood choice of areas; and
- Ensure the continued long term supply of sporting related land.

5.1.5 Summary of Growth Framework

The Growth Framework provides a high level snapshot of how our City will develop, what roles the many activity centres will play, and how established and new areas will support growth.

Net Additional Demand for Community Infrastructure/Facilities, 2011-2031

	2011	2016	2021	2026	2031
Education					
<u>Primary Schools</u>					
Public	0	2	3	6	8
Private	0	1	1	2	3
<u>Secondary Schools</u>					
Public	1	2	2	3	4
Private	0	1	1	2	3
<u>Tertiary Education</u>					
Local Tertiary Facility *	1	1	1	1	2
Healthcare					
<u>Hospitals</u>					
Public Hospital Beds	0	5	22	43	71
Private Hospital Beds	34	42	53	67	85
<u>Community Health Centre</u>					
Local Community Health Centre	6	7	9	12	16
Neighbourhood Community Health Centre	0	0	1	2	3
District Community Health Centre	1	1	1	1	2
Children's Healthcare Centre (0-5)	0	0	0	0	1
<u>Care Facilities</u>					
Aged Person's Facility (Nursing Home) **	0	0	0	0	0
Local Neighbourhood House	3	3	4	5	7
Outside of School Hours Care	3	4	5	7	8
Emergency Services					
Police Station	1	1	2	2	3
Fire Station	1	1	1	2	2
Ambulance Station	1	1	1	2	2
State Emergency Service Unit	0	0	1	1	1
Arts & Performance Spaces					
<u>Neighbourhood Multipurpose Cultural/Performing Arts Centre</u>					
	1	1	1	1	2
<u>Regional Multipurpose Cultural/Performing Arts Centre</u>					
	0	0	0	0	0
Museum	0	0	1	1	1
Art Gallery	0	0	1	1	1
Libraries					
Central Library	0	0	0	0	0
Branch Library	1	1	1	2	2
Library Lounge	2	2	3	4	5

Notes

All figures quoted represent additional facilities required, cumulative from 2011 onwards.

* Potentially includes development of specialised/niche tertiary education facilities tailored to local needs and specialist skills requirements.

** There is currently a total of 6 aged care facilities in Port and South Hedland, with a total capacity for 56 persons. Whilst the table indicates no net additional demand for a new facility, the capacity and capability of these existing facilities will require upgrades to cater for sustained population growth over the next 20 years.

Figure 5.9: Net additional demand for community infrastructure/facilities, 2011-2031

5.2 STRATEGIES FOR SUSTAINING AND DIVERSIFYING ECONOMIC GROWTH

Housing has been identified as by far the most critical issue and impediment to future economic growth. The undersupply of housing is causing prices (both rental and sales) to increase beyond the point that residents can afford to pay. The end result (given the strong demand) is that housing is provided by employers. The resource companies are quickly becoming the only employers that can afford to purchase the existing housing stock, pushing residents further out of the market (and some businesses). Currently, the lack of residential housing means that construction workers cannot be accommodated, which puts additional impediments on constructing new residential dwellings.

This issue is pervasive throughout the economy, causing numerous companies to stay out of the region, making it impossible for local small businesses to expand and forcing some existing companies to consider leaving the market (and supplying the area from Perth). **Failure to address the housing issue could impair all future growth.**

Additional issues facing the future development of the economy include:

Reliance on the Mining Sector: The economy of the Town of Port Hedland is almost solely reliant on resources. The future risk is that any disturbance to mining, iron ore export or to one of the resource companies would jeopardise the entire economy of the area;

Shortage of Property: There is currently an undersupply of many types of property including industrial, commercial and retail. An insufficient supply of property across the economy could impair future economic growth;



Lack of Retail Offering: There is currently an undersupply of retail offering in the Town of Port Hedland, which can discourage future residents from moving to the area; and

Lack of Innovation & Knowledge: The economy currently lacks strong innovation and knowledge driven activities, which could assist in diversifying the economy away from its reliance on mining and iron ore export.

An economic development framework has been prepared as part of the Growth Plan identifying the core economic development activities that need to take place over the long-term in order to grow the economy in a more diversified and sustainable manner.

The focus for future economic development activities over the long term, together with a number of key initiatives is contingent upon achievement of the following core themes:

5.2.1 Being Prepared for Growth

Before economic development can be achieved, the Town of Port Hedland must ensure that the area is ready for this growth. Currently, the Town of Port Hedland has significant issues regarding the availability and affordability of housing. Additionally, existing shortages of industrial land and facilities, retail and commercial space as well as short-term accommodation are providing significant impediments to future growth. In particular, the housing issue must be sorted immediately before significant economic impairment occurs.

To this end, the Town of Port Hedland must ensure that sufficient land stocks are available for future residential, industrial, retail, commercial and accommodation provision. The use of government owned land as well as necessary incentives must be considered to resolve some of these issues. Council should consider utilising some of its land stocks to assist in this process.

To assist the Town of Port Hedland to be prepared for future growth, the following strategies are recommended:

- Immediately address housing shortage through using Council held land, providing high quality modular construction, providing incentives and other forms of inducement to deliver housing in the next six to twelve months;
- Ensure future land bank available for future residential development through a detailed property strategy, which identifies the sufficient amount and location of future residential lands (precincts 8, 13 and 14 provide these land bank opportunities);
- Ensure future provision of retail, commercial and industrial lands through a progressive property strategy and efficient facilitation of development approvals; and

- Establish proactive incentives schemes to facilitate development and create revenues, which will encourage development and provide potential future revenue.

5.2.2 Affordability and Accessibility

Two key themes have been identified that are critical to the housing affordability equation – certainty of supply and enhancing affordability and Market Accessibility.

Access to affordable housing has been identified as the primary constraint to current and future economic development, growth and diversification in the Town of Port Hedland. Current difficulty in securing affordable accommodation is creating skills and labour shortages and increasing labour costs for local businesses and employers.

The key consideration to improving the land supply equation and therefore the local economy is to address the housing issue and provide certainty with regard to the property supply pipeline.

By providing clear signals to the market of the existence of a large, responsive, targeted and flexible pipeline of property, volatility and speculation that characterise the current market will decrease. It will also provide a buffer to absorb short-term spikes in property demand, associated with the resource sector investment cycle and changes in global economic drivers.

To ensure sufficient supply of land and housing for future growth, the Growth Plan recommends the following range of initiatives and strategies:

- Immediately address critical housing shortage through using Council held land, utilising high quality modular construction methods and providing incentives and other forms of inducement to deliver housing in the next six to twelve months;
- Identification of priority land release sites to facilitate significant immediate and short term housing development in a variety of locations;
- Increase residential density in appropriate locations, with greater variety in housing types to achieve greater market segmentation;
- Ensure future land bank available for residential development, including 15 years of zoned land and 10 years of zoned and serviced land;
- Establish a defined retail network that provides direction for retail floorspace investment for all centre and format types;
- Establish a defined commercial and cultural precinct with planning and approvals frameworks that encourage commercial office development;

- Enhance supply of suitably located and supported industrial land, particularly collocated with key pieces of enabling infrastructure including the Port and Airport.
- Recognise the need for segmented industrial land supply, diversity of lot sizes and a strong forward pipeline.

The Precinct Plans go a long way to setting the foundations and 'goal posts' to facilitate achievement of the above, and further detailed information is provided in the Implementation Plan.

In addition to land supply initiatives and strategies, the following key initiatives to assist the Town of Port Hedland enhance affordability and market accessibility are also recommended:

- Investigate alternate tenure and purchase schemes involving Employer/Employee arrangements.
- Joint Tenure housing arrangements, rent-to-buy schemes, and deferred purchase/equity arrangements. The resulting shift to increased ownership (albeit part ownership) will promote greater "buy-in" to Port Hedland by workers and encourage long-term settlement;
- Investigate establishment of dedicated housing organisations including community housing associations and real estate investment trust funded through affordable housing bonds;
- Continue promotion of home-based business solutions. This will encourage increased local business establishment, providing a strong source of local demand for commercial office developments when home-based business grow. Allow flexibility in business location through provision of quality telecommunications infrastructure, while promoting clustering of business, personal and industrial servicing businesses.
- Permit on-site accommodation of construction workers for small and medium developments, to improve construction feasibility;
- Provide commercial/housing property packages to the market, providing business owners the opportunity to acquire both residential and commercial space to provide certainty on employee/owner access to accommodation;
- Promote uptake of modular or manufactured housing solutions to provide new housing stock in a manner that enhances the timeliness and cost of traditional construction methods;
- Promote decentralised, design-based approaches to addressing major environment and infrastructure constraints. This could potentially decrease the infrastructure funding burden on government and developers and decrease the cost impost on housing through developer contributions;



- Review Town of Port Hedland Town Planning Scheme and policy requirements to enable greater flexibility in dwelling types and densities; and
- Facilitate a more stream-lined and coordinated approach to the housing approvals process.

Another key initiative identified for the short term to address the affordability issue is to review the legislation governing the sale of crown land to government entities, LandCorp in particular (in this regard, consideration could be given to amending the legislation to enable government land suitable for development to be transferred at no cost to the social housing and not-for-profit sectors, even if it was limited to the Pilbara Region).

5.2.3 Transient Workforce Accommodation

As noted in Section 3, there is a short to medium term imperative to provide adequate levels of transient workforce accommodation

in order to cater for the necessary operational and construction FIFO workers and help relieve immediate housing supply issues.

In planning for and providing the necessary TWA facilities, there must be an appreciation that different design and location responses will be required depending on the type of FIFO workforce being catered for. Where possible, operational TWA facilities should be provided in locations close to or integrated within existing urban areas, encouraging enhanced integration between temporary and permanent residents and shared/common use of local facilities, activity centres and key services. TWA facilities for construction FIFO workers on the other hand may not be able to be located in (and integrated into) existing urban areas, with more self contained services and facilities being required.

Regardless of FIFO type, the Growth Plan advocates a balanced and dispersed approach to the siting and location of TWA facilities, and the imposition of clear time limits on the operation of TWA sites to encourage a shift to a more permanent and integrated

skilled workforce in Port Hedland.

Whilst certain locations are clearly more appropriate for TWA developments than others, the creation of very large, self contained TWA complexes (including all associated facilities and key services) in locations removed from existing or future planned urban development areas is contrary to the overarching aims of the Growth Plan to create a liveable, sustainable regional city. Development proposals for TWA sites should therefore demonstrate their ability to leave a tangible legacy for the City, along with a commitment to longer term 'City Building' in their own right. These requirements should be reflected and clearly articulated through the Town of Port Hedland's statutory planning and policy frameworks to assist prospective TWA developers in site selection and facility design.

5.2.4 Developing Unique Capabilities

The global competition for jobs and investment is fierce, particularly given the extended recession and slow economic growth in the United States and Europe over the last five years. In order to achieve the desired vision, the Town of Port Hedland must improve its competitiveness. Through the development of unique capabilities, the Town of Port Hedland can leverage existing advantages and generate nationally and globally unique competitive capabilities that will drive future economic growth and diversity.

Western Australia has an emerging 'clean technology' sector that is one of the fastest growing in Australia. The opportunity presents itself to take advantage of the significant solar resource in the Pilbara to become a leader in this sector and help diversify the local economy. An example of this includes the clean tech sector and associated research and development that is emerging in Newcastle, NSW, primarily with CSIRO. Other clean tech opportunities include water treatment technology (for potable water and wastewater) for remote mining operations and Aboriginal communities. Local food production or agriculture is something that could be used to diversify the economy and also have a social health benefit (which also includes reduced dependency on oil based food transport).

Key strategies to assist the Town of Port Hedland develop unique capabilities include:

- Encourage entrepreneurship (by mentoring, recruitment and retention advice) through local programs, including business incubation, business advisory, local investment funds and other programs geared toward generating new products, services and businesses;
- Support local clusters to grow and diversify by providing a platform, together with partners, for interaction, innovation and the transfer of ideas as well as opportunities to connect businesses;



supply and recycled waste water.

- Engage and work with employers and local indigenous groups/organisations to identify key opportunities for indigenous business and employment programs and ways to overcome existing barriers (e.g. transport, training).

5.2.5 Assisting Local Businesses

In most developed economies, existing businesses provide between 60%-80% of new investment and jobs. Given the unique nature of the Town of Port Hedland, local businesses (small, medium and large) would likely contribute at the top of this range. Focusing on ways to assist local businesses, particularly small and medium sized businesses would allow these companies to grow locally, employ more people and contribute successfully to the diversification of the economy. Supporting local businesses is a key function of local government.

To assist local businesses to grow and prosper, the following strategies are recommended:

- Engage regularly with existing businesses of all sizes in order to stay abreast of key issues, industry trends, opportunities and needs. This interaction is a critical element to deliver economic development and provides a strong basis on which to understand the needs of business to facilitate and support their growth;
- Work with partners to provide services to small businesses, such as business mentoring, business advisory (i.e. business planning, marketing and strategy development), networking and workforce development;
- Hold regular economic development forums to assist in identifying issues, sharing information and provide a platform for exchanging ideas relating to the future economic development of the area; and
- Provide regular economic updates (including labour force, unemployment, housing prices, building approvals, GRP, employment, etc.) to local business community in order to keep businesses informed about the health of the economy and key trends.

5.2.6 Marketing and Attracting Investment

The over-whelming dominance of the mining and resources sector in the local economy presents a significant challenge in trying to foster other businesses. Marketing and attracting investment to the Town of Port Hedland will assist in decreasing the reliance on the mining sector and assist in changing the perception of the area. Marketing the area as a sound business investment destination (instead of a resource boom town) will assist in changing existing perceptions and increase the marketability of financial lending to businesses in the area.

Key strategies to market and attract investment to the Town of Port Hedland include:

- Clearly define and market growth opportunities by preparing business cases, marketing information and other material to promote investment and growth opportunities;
- Conduct market research into identified industry opportunities in order to identify prospective investors, market trends and future requirements of these industries as well as develop specific marketing channels for distribution and promotion of marketing materials; and
- Identify prospective investors (e.g.: Defence Force, Freight and Logistics) through market research, marketing and business development efforts and engage directly with them regarding investment and growth opportunities in the Town of Port Hedland.

The Implementation Plan prescribes the manner in which initiatives identified can best be addressed in a practical sense.



- Develop innovation and R&D capabilities including exploring options to develop a local research centre of excellence together with major universities and resource companies as well as specific education and training programs leveraging the unique assets of the Town of Port Hedland (i.e. Port, access to mines and major facilities/infrastructure);
- Develop unique logistics capabilities including roll on/roll off facilities and a potential pre-assembled modules (PAMS) fabrication facility;
- Develop a strategic investment business case to attract 'clean technology' industrial development, for instance solar technologies;
- Develop a strategic higher education and research business case to support 'clean technology' industries, for instance a Centre of Excellence in solar technologies; and
- Investigate local/regional food production options to diversify the economy and provide fresh produce – particularly fresh fruit and vegetables – which can use fit-for-purpose water

5.3 STRATEGIES FOR STRENGTHENING LOCAL COMMUNITIES & CULTURE

5.3.1 Framework for Community Development and Place-Making

The Growth Plan is not intended to formally incorporate a Community Development Strategy, however, the principles of safe, attractive and livable neighbourhoods; fostering inclusiveness and diversity; setting the foundations for the provision of community infrastructure; and celebrating cultural assets are overarching considerations in the setting of strategies for the City's growth.

Figure 5.10 provides an indicative framework for Community Development and Placemaking Strategies. Further information and detail on the full range of Community Development and Placemaking strategies and action areas is provided in the companion document to the Growth Plan titled "Port Hedland: Shaping a Cosmopolitan City" (ToPH/Form, 2012).

Elements	Strategic Goals	Objective	Community Engagement Strategies and Initiatives
A city of art and creativity that preserves and encourages the diversity of language and culture.	<ul style="list-style-type: none"> Increased participation in creative industries. Encourage a shift from spectating to creating. 	<ul style="list-style-type: none"> Create places to allow creativity to flourish while investing in the quality of events and capacity of organisers. 	<ul style="list-style-type: none"> Progressive development of a comprehensive programme of community and cultural facilities upgrades e.g. multipurpose recreation centre; art galleries and exhibition spaces; Three-tiered cultural facilities development strategy addressing Regional, Local and Specialist facilities ; Investigate development of a Community Events Strategy, as part of the Cultural Strategy, including hierarchy of events, community presentation and consolidation across the calendar year; Conduct community/cultural group audit, including research into current capacity of community groups, as well as a gaps and needs analysis (as part of the Cultural Strategy); Programs to preserve languages and preserve links to unique Western Desert cultures; Program networking of 'creatives' with entrepreneurs to develop innovation projects and encourage seed funding to be made available to support initiatives that result;
A city of education choice and opportunity that promotes excellence.	<ul style="list-style-type: none"> Hone knowledge leadership; leveraging strengths in the industrial sector, through developing tertiary education that can lead nationally in specialist sectors. Provide greater educational choice for existing residents and retain more families. 	<ul style="list-style-type: none"> Provide educational facilities to allow outstanding teaching and research but also recognise and address the cultural, behavioural and public health issues affecting current educational outcomes. 	<ul style="list-style-type: none"> Conceive detailed concept for advanced technology economic development / tertiary education and develop investment case with industry partners, with this ultimately being marketed to educational institutions; Upgrade TAFE to provide more creative arts as well as applied vocational learning opportunities; Confirm target timing, location and strategy for a second high school considering junior/senior split, Catholic/other religious and private school options; Conduct cost-benefit analysis (including consideration of funding models - e.g. public, private, partnership models etc.) for weekday boarding facility aimed at improving educational outcomes of young Aboriginal people; Provision of high quality public resources centre / library services; Build on strengths in schools such as art specialisation and leverage these competitive advantages; Enhance attractiveness of learning environments and built forms;
A connected city of human engagement where people share skills and experience and where the gaps in employment outcomes are closed.	<ul style="list-style-type: none"> Strengthen the collective understanding of community priorities and an appreciation of the support available to social and business entrepreneurs. 	<ul style="list-style-type: none"> Cooperation to develop 'strategic capital'. Engagement of all people in the mainstream economy. Development of the economy to include high-value creative outputs. 	<ul style="list-style-type: none"> Map missions, authorities and current programs of agencies/actors in economic development, community development and Indigenous services sectors to identify opportunities for greater collaboration and effectiveness; Explore models for supporting these actors and removing barriers to progress; Program of partnerships between resources industry, training providers and local employers to increase work ready Indigenous workforce and provide appropriate employment opportunities; expand employment and training opportunities beyond industry focus; Program of strategic re-skilling to meet opportunities identified by the economic development strategies of 'import substitution' and small business support package (including identification of external economies of scale through 'clustering'); Program of artisan and craft entrepreneur projects including markets and new venture supports (e.g. media organizations, small or micro-business); Program of community service recognition and leadership development and community engagement; Events and programs that foster interaction and exchange;

Figure 5.10: Framework for Community Development and Place Making Strategies.

Elements	Strategic Goals	Objective	Community Engagement Strategies and Initiatives
An accessible city where public transport is readily available and places of interest are available to all.	<ul style="list-style-type: none"> Equity of access to public services. Promotion of participation in community life. 	<ul style="list-style-type: none"> Increase community participation and sense of belonging. 	<ul style="list-style-type: none"> Investigate barriers to youth transport and opportunities to sustainably address safe and equitable youth transport across the city; Implement a public transport strategy aimed at linking key activity centres and residential areas, particularly to locations of high cultural and civic activity such as the West End and South Hedland City Centre; Implement a public transport strategy including a youth 'call out' bus and separate bike paths/end of trip facilities with strong Port-South connectivity; Clustering of cultural land uses in a walkable West End precinct; Clustering of youth facilities around JD Hardie YouthZone; combine with diverse uses to enhance intergenerational interaction and passive surveillance; Co-location of government agencies in South Hedland City Centre; Provide reasons to travel between precincts, reasons to get out of the car and walk, bike, engage with public spaces through improved urban design and public art initiatives;
A place with its own sense of architecture and built form that reflects Port Hedland's cultural heritage and vibrant future.	<ul style="list-style-type: none"> Retain more families through enhanced amenity and attractive, aspirational environments. Distinctive housing that is affordable to purchase and to occupy. 	<ul style="list-style-type: none"> Enhance civic pride and amenity through distinctiveness. 	<ul style="list-style-type: none"> Precinct identity and character provisions in town planning scheme supported by covenants on land releases and demonstration housing partnerships; Confirm iconic sites for outstanding public buildings and investigate the feasibility for an international design competition; Further develop 'sense of place' and cultural vernacular elements to guide built form design considerations;
A place of tourism opportunity with links to landscape, indigenous languages and culture, and history.	<ul style="list-style-type: none"> A distinctive, vibrant local environment. Tourism products and development of additional experiences that make promotion credible. 	<ul style="list-style-type: none"> Enhance sense of place during growth to a regional city and develop the economy consistent with community values. 	<ul style="list-style-type: none"> Build on local strengths and distinctive attributes; Celebrate cultural, natural, historical or community features; Develop a Tourism Strategy for Port Hedland, building on distinctiveness with authentic and varied experiences; building on the new State indigenous tourism strategy and work in-progress on Pilbara tourism strategy; Develop a program of story capturing and story-telling including place making / public art initiatives; Preserve and celebrate cultural (indigenous and non-indigenous) heritage assets; Develop opportunities for cultural expression in contemporary forms; Develop the airport as a gateway experience for Port Hedland and marker of ambition and identity; Develop a place identity and communication strategy;
A city of healthy housing, lifestyle and sporting opportunity.	<ul style="list-style-type: none"> Preserve 'outdoors' culture and appreciation of Pilbara landscape. Infrastructure and services that underpin public health and well-being. 	<ul style="list-style-type: none"> Promote well-being by addressing current infrastructure deficiencies. 	<ul style="list-style-type: none"> Implement active open space strategy (currently in draft form) and a placemaking strategy to improve access to active and passive recreation opportunities, e.g. coastal walk in Port Hedland; Encourage partnerships between State and Local Government to mandate and promote renewable energy sources and integrated water cycle management; Pursue the timely expansion of the health campus, medical specialist visits and primary healthcare services expansion;
A rich and cosmopolitan city: a confident and outward-looking place that is inclusive and supportive.	<ul style="list-style-type: none"> Preservation of distinguishing character during growth. Normalise community demographics by addressing major distortions. 	<ul style="list-style-type: none"> Increase community cohesion and resilience to growth 'shocks'. 	<ul style="list-style-type: none"> Development of ToPH Reconciliation Action Plan ; Development of Placemaking Strategy; Build on resources sector relationships to program networking with 'facing' cities (eg. Jakarta, Kuala Lumpur, Singapore, Manila, Chennai, and Shanghai) and former (potentially future) residents (Pilbara alumni); Consult with Aboriginal people including transient groups to determine culturally appropriate forms of housing and appropriate locations in Port and South Hedland; Identify strategic landbank opportunities and a program of staged land releases; Adapt affordability strategies to Hedland context; Actively seek to resolve Native Title Agreements as a priority;

5.3.2 Attachment to Place and Livability

The Pilbara region has a highly transient and unstable population base. The region's index of residence instability is currently very high (66%) when compared to the average population 'churn' for WA (46%) and the Perth metropolitan area (45%). Within the region, this is more evident in some towns than others. Port Hedland experiences 65% instability slightly less than Karratha's 69%. (*Pilbara Framework Regional Profile, 2011*).

There remains a real opportunity to influence the decision of the population which is yet to decide on how long they will stay. The imperative is now to retain these people and attract newcomers, building these places into sustainable communities. Fostering greater attachment to place is extremely important.

The three main factors that attach people to place are social and cultural amenity, openness and beauty. Social and cultural amenity will be addressed in the sections below. Beauty will need to be a key design requirement and principle for development across all aspects of the Growth Plan, and this is also considered as part of the open space and connective strategies.

Openness (or how welcoming a place is) is the third critical element of attachment to place, making welcoming, inclusive and diverse communities fundamental to the success of Port Hedland's growth, and a critical condition to cultivate.

Fostering openness, inclusiveness and diversity will be essential for Port Hedland to grow into a more holistic, sustainable community and home to diverse residents.

As outlined earlier in the demographic profiles, although Port Hedland has average income levels well above Perth and Regional WA averages, it also has high levels of disadvantage. The wealth and employment divides within the community are significant. This is combined with a significant educational divide. Port Hedland has a highly educated and qualified population combined with illiteracy in other parts of the community.

Given the highly transient working population, and an indigenous population that can fluctuate enormously with a high proportion of temporary residents or visitors, accommodating these populations and ensuring opportunities to engage with the community are a challenge.

5.3.3 Enabling community infrastructure

Creative and cultural opportunities to participate will be important to the vitality of Port Hedland.

The challenge for Port Hedland will be finding ways to put in place the enabling infrastructure that can aid in the development of a more vibrant, healthy community. This is in the context of lack

of available spaces for amenities, prohibitive costs of housing and of doing business. These restrict both entrepreneurial small business and non-governmental organisations' abilities to provide enabling services.

5.3.4 Celebrating Cultural Assets

Another common theme cited by the community is the desire for greater celebration of their cultural assets in their built environment. One of the challenges of a fast growing town is that the demands for infrastructure and development can be so great that delivery ends up focusing on the essentials in their most basic form.

The intangible needs of a community are just as vital. Reflecting the cultural assets, identity and distinctive sources of pride for the community in the built environment and cityscapes have significant benefits for developing community spirit, pride in place and a sense of belonging.

The community has identified the rich history, indigenous culture, the landscape, and the community itself as resources to be celebrated and showcased through a place vernacular or design guidelines, programming, interpretive signage, trails or maps, events, storytelling, visual displays or other means. The community has also emphasised through consultations as well as the Growth Plan focus groups a desire to see community life celebrated through greater programming and activities in key city nodes such as the West End and South Hedland City Centre, thereby building a sense of vibrancy.

Celebrating and showcasing cultural assets are instrumental in a number of dimensions that have been identified through the Growth Plan process as necessary to the future of Port Hedland:

- **Distinctiveness:** Distinctiveness is about the competitive advantage that can be gained from strengths that are particular to a place and the character of the community.
- **Identity Development:** Cultural assets are pivotal to shaping the identity and character of a place.
- **Inclusiveness:** Cultivating the conditions for an inclusive and open place is a challenge faced by many places. However, fostering opportunities for meeting, mixing, interaction and exchange between diverse people is one means of building understanding and respect, enabling a foundation for greater community building.
- **Attraction and tourism:** The ability to attract a residential population and create additional tourism opportunities is critical to Port Hedland's future.
- **Community building:** Opportunities for exchange and relationship building are a central part of community building.
- **Signalling:** Cultural assets are also an important vehicle for

signalling intent and progress. As the Growth Plan is rolled out, the strategies for cultural and community engagement will be one of the most accessible means of conveying progress through quick wins.

These dimensions will be factored into the strategies highlighted above for strengthening local community and culture, as well as initiatives identified through the Implementation Plan.

5.4 HOUSING DIVERSITY AND LAND SUPPLY

5.4.1 Land Supply Capacity

The Overall Growth Plan Spatial Framework (Figure 5.11) recognises the primacy and significant expansion of the Port, while creating significant new areas of urban expansion for immediate and long term growth.

The Strategic Industrial Area (SIA) of Boodarie is recognised as playing a major long term role of offering downstream processing and resource industry associated business investment and employment.

The Port operations and significant expansion of the Port Outer Harbour are recognised, together with key infrastructure corridors to Boodarie and the various Port Authority development areas. Land is allocated for the much needed 'Common User Facility' within the Port at Lumsden Point. Logistics opportunities between Port, Road and Airport will be provided for through expansion at Wedgefield and the airport which link these areas.

The South Hedland City Centre is recognised as the major regional centre within Pilbara's Port City, supported by the uniquely located West End commercial/cultural centre with Australia's largest tonnage Port as its backdrop. The West End is planned to accommodate commercial investment, foster culture and the arts and promote tourism. It will provide significant opportunity for Mixed Use and Short-Stay development. An 'Urban Village' Neighbourhood Centre within the East End of Port Hedland will provide a central location for local residents to meet, shop, and recreate.

Land supply, affordability and choice will be met through diversity of product, location and strategies to respond to cost and timeliness of delivery. Greater density will be provided in the East End and around the City Centre. Opportunities for traditional lower density housing will be provided in the East End, but predominantly within the expansion areas of South Hedland. Short-term demand to accommodate short-stay accommodation workforce needs is considered in a range of locations that offer the potential for longer term legacy of infrastructure provision to the City through this form of immediate development (with a finite life).

Pilbara's Port City will be a connected city with provision for upgraded road infrastructure including duplication of the rail bridge port entry and widening of Hamilton Road into the City Centre. The City will be supported by an improved pedestrian/cyclist network and a public transport network.

Opportunities for education choice will be available through the provision for new primary schools and high schools in urban expansion areas, and inclusion of additional land adjoining the existing TAFE to facilitate establishment of a wider Tertiary Education Precinct that potentially offers University course material to local students.

More detailed elements of the Growth Plan areas are shown within the 16 Precinct Plans; ultimately these provide a guide for detailed site planning and development.

The Growth Plan and accompanying analysis has identified an estimated supply capacity of some 23,230 new dwellings (28,622 including existing), potentially catering for a permanent residential population of over 54,000 people (including significant stock to allow normalised vacancy rates of around 8%). This is located in the East End of Port Hedland, and in the surrounds of South Hedland where most growth is projected to occur.

5.4.2 Housing Diversity

The Port City Growth Plan provides for both urban expansion and infill regeneration across a range of areas. The ability of the City to respond to demand and affordability while ultimately providing choice will be met particularly through improved housing diversity. An overall increase in density to the relatively lower density housing typical of Port Hedland is provided for in the Growth Plan.

This will be achieved by striking a balance so that higher amenity locations can accommodate increased density, while land and housing supply continues to provide for families and those seeking traditional larger home sites.

Ultimately housing diversity assists in meeting the different needs of residents based on income, cultural background, family type or stages of life. As the population ages, for example, the proportion of older residents will increase and the ability to 'age in place' through appropriate housing, or to accommodate in specialised care will be needed.

Similarly, improvements in technology and increased 'work from home' options will influence the way our future city lives and works. Flexible forms of small accommodation such as shop-top housing, granny flats or studio apartments can also increase the ability to accommodate people and offer affordable options. The following images reflect some of the many housing types and provide an indication of the relationship to density that could be achieved as new areas develop or infill occurs.

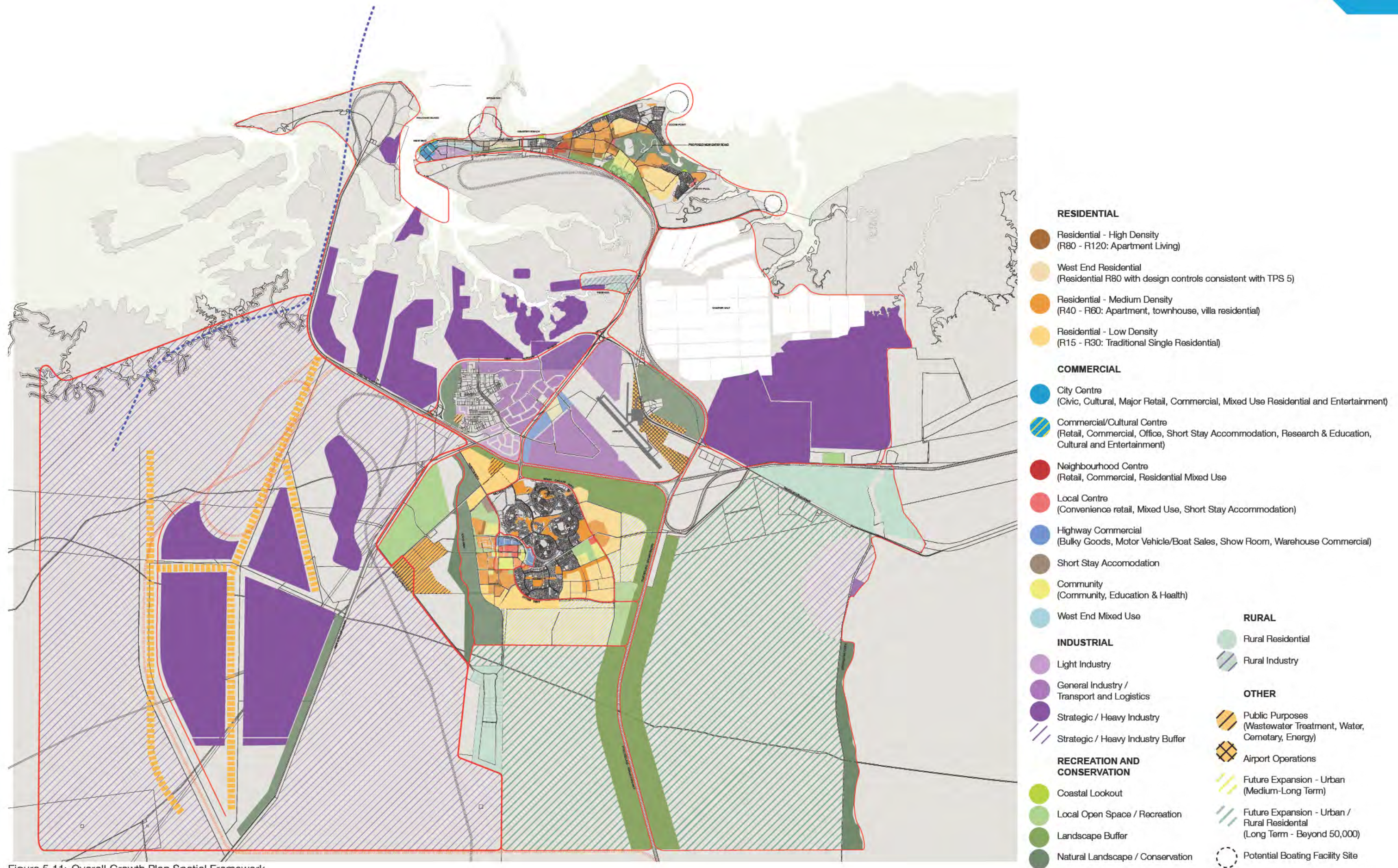


Figure 5.11: Overall Growth Plan Spatial Framework

5.4.3 Architectural Vernacular

The unique sense of place, landscape and culture that is Pilbara's Port City will be particularly visible through its built form. The ability to convey elements of Port Hedland's environment, culture and heritage will progress over time, together with materials usage and construction methods.

The foundations for this must be established now through Pilbara's Port City Growth Plan and its implementation. This will provide a clear message to existing and future residents of what it means to live in Port Hedland and how the unique identity is captured through relationship with the past and vision for the future. New civic buildings and those within activity centres or places of prominence offer a strong basis for leadership in this area.

Pilbara's Port City will need to enshrine an array of values and key principles in an architectural 'Port Hedland Style Guide' for Pilbara's Port City which acts as a springboard for ideas that architects, engineers, urban designers and the general public alike can draw on.

Pilbara landscape colours, roofing and shade, verandahs and the use of local materials are elements that should be captured. Some of the more specific examples of public realm considerations are discussed in relation to the City Centre, within the Precinct Plans section of this document. Ultimately, residents and visitors must feel that the sense of northern Australian lifestyle and relationship to climate and landscape is captured.

Following are some of the many themes that should be captured in a style guide for Pilbara's Port City.

Housing Diversity - High Density

Apartment 4-6 Storey



Shop Top Housing



Housing Diversity - Low Density



Site Sensitive



Studio



Triplex



Townhouse

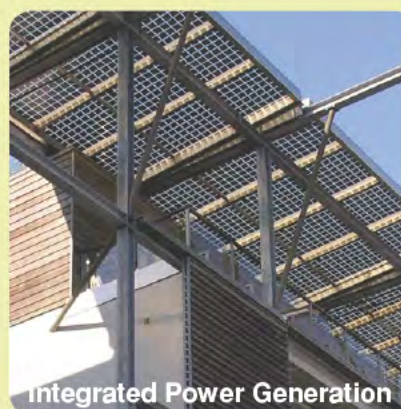


Housing Diversity - Medium Density

Balconies



Shade

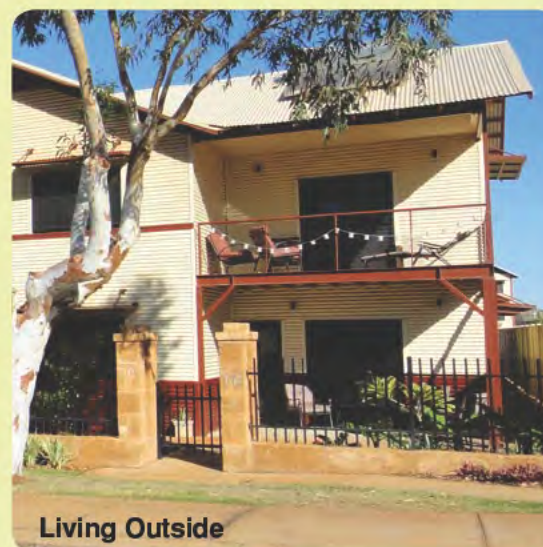


Integrated Power Generation

Architectural Vernacular - Design Features



Passive surveillance



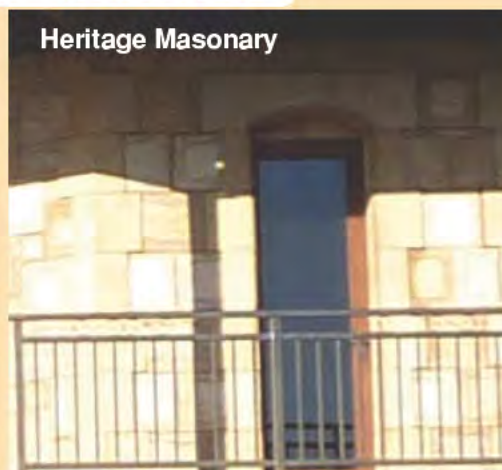
Living Outside



Architectural Vernacular - Materials



Vegetated Walkways



Heritage Masonry



Timber



Pilbara Materials

5.5 ENVIRONMENTAL PROTECTION AND CHANGE ADAPTATION

5.5.1 Conserving Biodiversity and Ecosystems

The coastal lands of Port Hedland consist of natural coastline fringed by white sandy beaches, extents of intertidal mudflats and mangroves and rocky outcrops. These coastal lands support a diverse habitat for a wide variety of terrestrial fauna, including migratory birds. Unique ecological communities such as mangrove and tidal ecosystems are interwoven within the coastal landscape. Additionally, mangroves fringe the estuarine environments of Pretty Pool, Sting Ray and Four Mile Creeks and provide natural diversity and a level of aesthetic amenity characteristic of the Pilbara region to the Port Hedland townscape.

The marine waters and outer reefs adjacent to Port Hedland lie within the North West Shelf Province and support a complex range of habitats for a diverse assemblage of marine fauna species including various species of turtles and whales, dugong and Indo-Pacific humpback dolphins.

The interior lands surrounding Port Hedland primarily consists of areas of large expanses of natural vegetation dominated by savannah grasslands with scattered shrub steppe communities. These lands, which have historically been subject to extensive pastoral leases, provide a range of habitats for terrestrial fauna species.

The Growth Plan aims to conserve and protect the areas of high biodiversity value and regionally significant ecosystems through:

- Conservation of mangrove ecosystems of very high value which occur outside designated industrial and associated port areas.
- Conservation of benthic primary producer habitat through the application of impact avoidance and minimisation principles.
- Protecting important marine turtle nesting sites through avoiding, managing and mitigating light impacts.

5.5.2 Protecting Flora and Fauna

The Growth Plan recommends specific environmental investigations which are required to be undertaken in order to identify and assess the significance of flora and fauna species and vegetation communities prior to any proposed development works being undertaken. These investigations will ensure that appropriate measures are undertaken to make sure that the abundance, diversity and geographic distribution and productivity of significant flora and fauna species and vegetation communities are not diminished by any proposed development works.

The Growth Plan aims to protect and conserve significant species and communities through:

- Undertaking appropriate flora and vegetation surveys and fauna surveys for areas of land where there is a requirement to remove native vegetation to facilitate development in order to assess the environmental values of the land.

5.5.3 Sustainable Natural Resource Management

The Growth Plan aims to foster sustainable natural resource management through undertaking actions designed to protect the landscape, landform and the identified environmental assets of Port Hedland when development opportunities are advocated. These management actions will be addressed as part of land use planning and at the various stages in the land development process. These actions will include:

- Undertaking of appropriate Coastal Process and Foreshore Assessments, should any development proposals be expected to impact upon either the existing coastal processes or foreshore reserves.
- Undertaking of preliminary Acid Sulfate Soils Investigations, where appropriate, to assess the presence or absence of Acid Sulfate Soils and recommend remedial actions to be undertaken, prior to the commencement of development works.
- Undertaking of detailed site investigations to ensure that the quality of surface and ground water resources is not impacted by development proposals.



- Provision of appropriate Water Management Strategies consistent with the WAPC's 'Better Urban Water Management' framework (WAPC, 2008) to accompany scheme amendments and development planning activities which consider any impacts to the total water cycle posed by development proposals and provide outcomes to achieve appropriate water quality objectives. The Water Management Strategies should also address water quantity parameters, incorporate mechanisms to address storm surge and flooding and advocate erosion control mechanisms.

The Growth Plan identifies a number of sites contained within Port Hedland which have been identified as having various levels of site contamination. To ensure that these sites do not pose any further risk to the natural environment or human health specific management actions proposed to address the issue of contamination have been advocated on a site specific basis.

5.5.4 Climatic Change and Environmental Risk Management

Major flooding events in Port Hedland are typically associated with a combination of storm and cyclonic rainfall activity and coastal storm surge. Heavy rainfall in interior locations can lead to localised flooding along the major river systems of the De Grey, Turner and Yule, which has the potential to impact low-lying areas, whilst storm surge events can lead to localised flooding and inundation of coastal areas.



The effects of a changing climate are expected to increase the frequency and intensity of cyclonic activity and rainfall events. This situation is likely to result in an increased risk of localised flooding in coastal localities, low-lying areas and along creek lines. Furthermore, the sustained effect of coastal processes on shorelines over long term planning periods, combined with forecast increases in vertical sea level height, points towards a dynamically changing coastline alignment. This has significant long term implications for land use planning and development in coastal areas and low lying areas prone to flooding in high rainfall events.

As highlighted in Section 3, the Port Hedland Coastal Vulnerability (Cardno, 2011) has modelled the impact of major storm surge and flooding events in Port Hedland, along with potential changes in shoreline condition over a 100 year planning period (consistent with methodology applied under WAPC State Coastal Planning Policy 2.6). The following key findings are of particular relevance to the Pilbara's Port City Growth Plan and for the future planning and development of Port Hedland:

- Areas identified at risk of storm surge inundation and catchment flooding (of varying depths) include the West End (particularly the town centre and light industrial areas), undeveloped areas of the East End, much of the Port Authority lease area, Wedgefield, Dampier Salt, Redbank, Port Hedland International Airport and much of South Hedland and surrounds (particularly that area west of South Creek).
- There is a low lying section of shoreline east of the spoil bank (approximately 6 mAHD) which potentially serves as a break through point for major storm surge flows, directing water into lower lying land behind the coastal ridge line and along Wilson and Anderson Streets.
- The Spoil Bank is inundated in both the 100 year and 500 year ARI event, with only a small portion left unaffected.
- Shoreline recession due to sea level rise and coastal processes potentially affects much of the existing developed area immediately adjacent to the coast in the West and East Ends of Port Hedland.

In light of the Coastal Vulnerability Study findings and the anticipated effects of climate change, the Growth Plan advocates the following responses and planning/development actions:

- Further planning and development investigations in flood and storm-surge affected areas (as identified in the Coastal Vulnerability Study and highlighted in the Precinct specific commentary of the Growth Plan) should demonstrate further detailed consideration of local flooding impacts and necessary mitigation/adaptation responses.
- All finished floor levels for new development shall be

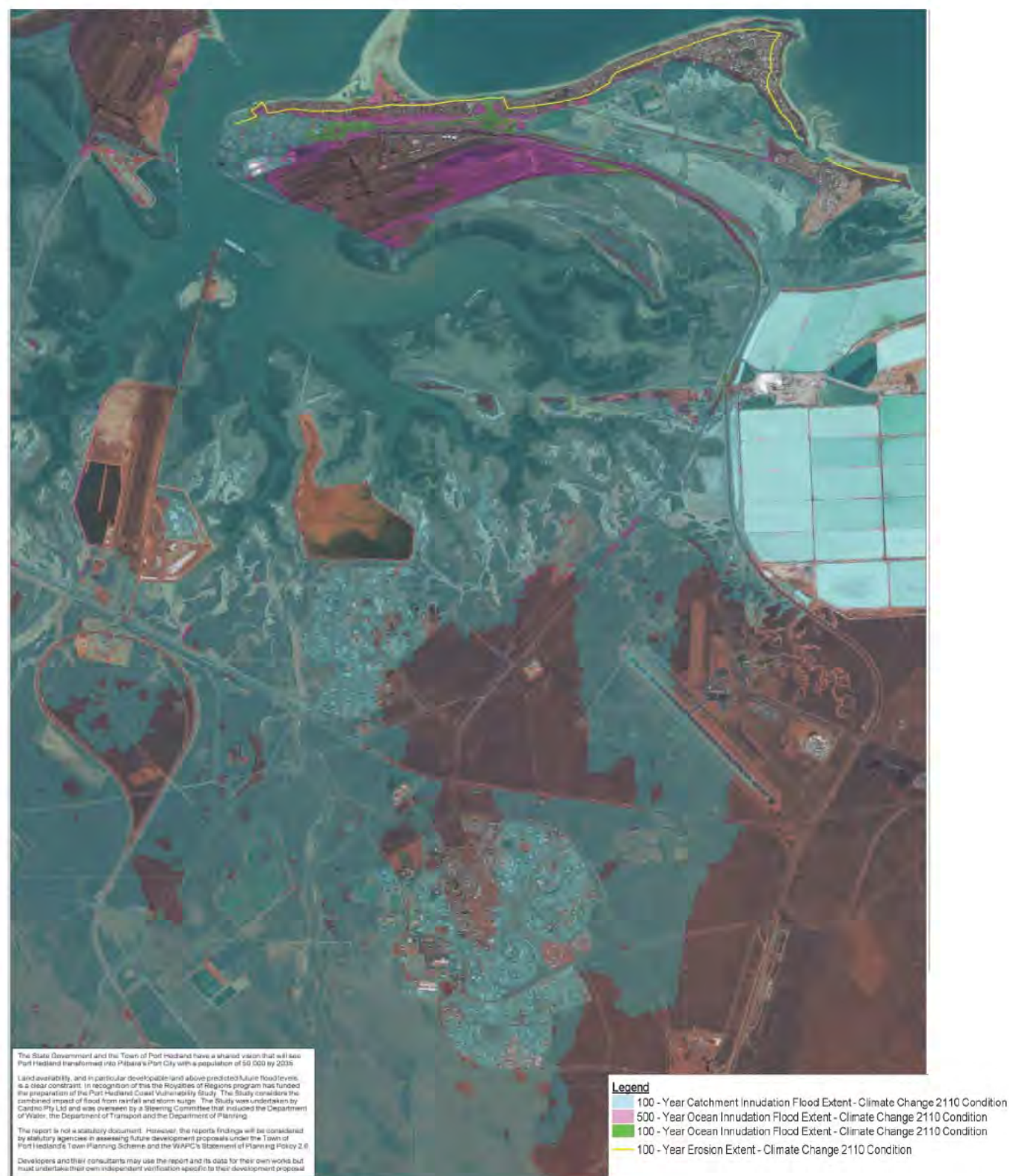


Figure 5.12: Port Hedland Coastal Vulnerability Study Map (Cardno, 2011)

required to be established at least 0.5 metres above the 100 year ARI flood level. In areas potentially at risk from coastal storm surge flooding, this should incorporate allowance for a vertical sea level rise over a 100 year planning period.

- Any further detailed assessment of coastal foreshore setbacks are required to be carried out consistent with the WA Planning Commission's Statement of Planning Policy 2.6: State Coastal Planning Policy (2003, as amended) and associated WAPC position statements. Such analysis should also include assessment of local geotechnical conditions to determine the physical composition of the site and confirm the presence/absence of underlying rock, which may potentially limit the full extent of shoreline recession.
- A risk assessment of climate change impacts and identification of potential mitigation and adaptation strategies is recommended. This could potentially include application of the newly developed Australian Green Infrastructure Council guidelines for climate change adaptation.

5.5.5 Local Environmental Amenity and Pollution Reduction

In addition to the presentation of environmental assets and change adaptation, at a local level there remains a need to ensure that the quality and amenity of existing urban areas and local environmental attractions are maintained to a high standard. Local amenity improvement programs, litter and waste schemes can all significantly help to improve the attractions of the town and increase community pride and ownership.

5.5.6 Additional Management Actions

There are a number of additional management actions acknowledged in the Pilbara's Port City Growth Plan to mitigate the effects of dust, noise and vibration and mosquitoes and midges.

Dust and noise levels in the Port Hedland have historically been above currently accepted recommended levels. The high concentrations of dust that exists with in the West End of Port Hedland presents potential health risks to the local residents. Noise and vibration from the existing and planned road and rail transport network and the airport could affect the amenity of future residents.

Mosquitoes and midges are endemic to the Pilbara, and are particularly prevalent in the wet season. The amenity of future residents could potentially be impacted by these pest species if residential land uses are proposed in locations within close proximity to known breeding areas.

The Growth Plan advocates that the following additional management actions are undertaken to ensure the health and

amenity of the local and future residential population is not adversely impacted:

- Compliance with the recommendations of the Dust Management Task Force with regard to the implementation of Environmental Management Controls and Land Use Planning.
- Undertaking appropriate investigations at the development planning phase to determine appropriate buffer controls and/or separation distances for proposed development in close proximity to existing or planned rail and/or heavy usage road networks or the Port Hedland International Airport.
- Requirement for appropriate management programs to be implemented for any proposed development likely to be adversely impacted by or in close proximity to known mosquitoes and midge breeding areas.

All the management actions, surveys, assessments, investigations or strategies that have been identified as being required to be undertaken to achieve the outcomes of the Growth Plan are to be consistent with the requirements of the state regulatory authorities and the Environmental Protection Authority.

BUILDING AND MAINTAINING INFRASTRUCTURE AND TRANSPORT CAPACITY

5.5.7 Water Supply

As indicated previously, the supply of bulk potable water to the Town of Port Hedland is provided through the Water Corporation which operates the Port and South Hedland Water Supply Scheme. The scheme is reliant on groundwater extraction from the Yule and De Grey rivers which is piped to a central facility near Wallwork Road and North Circular Drive in South Hedland, and currently produces 13.5 gigalitres of potable water a year. The Water Corporation have advised that the 13.5 gigalitres is currently fully allocated.

Key strategies to overcome the water supply constraints are threefold:

- Reduce the reliance on potable water where it can be substituted with a non-potable supply;
- Establish the West Canning Basin;
- Investigate bore supply for potable water in the short term, particularly for short stay (strata) accommodation; and
- Adoption of maximum water efficiency principles for existing development and encouragement of water efficiency outcomes for all new development.

In relation to items 1 and 2 above, the State Government recently announced an additional five gigalitres of potable water per

year is to be allocated from the Yule and De Grey aquifers (an additional 2GL/yr and 3GL/yr respectively) to the Port Hedland Water Supply Scheme. An additional ten gigalitres per year of non-potable 'fit for purpose' water has also been reserved from the West Canning Basin for industrial use. These initiatives will help to address short to medium term water requirements for domestic and industrial purposes, with necessary infrastructure upgrades planned for completion in 2013-14.

In the medium to long term, it would be desirable if water for industry growth was provided by a non-potable scheme, which may include some wastewater recycling, dewatering, and stormwater harvesting.

Critically, however, increased water allocations (potentially up to 50 gigalitres per year) from the West Canning Basin are very much a medium term proposition, and in the short term measures must be taken to reduce the reliance on potable water supplies where it can reasonably be substituted with a non-potable supply. By utilising a Strata Scheme, bore establishment and treatment costs would effectively be subdivided among the many households and the Strata Body would then also assume on-going responsibilities for maintenance.

Equally, a Strata Scheme could manage water re-use systems, such as grey and black water treatment, to reduce the potable water supply and potentially even reduce connection to the deep sewer in the short term.

The Growth Plan also recognises the potential opportunity for a non-potable 'third-pipe' scheme for industry and landscape irrigation use. While this would require further detailed investigation at the development stage, the Town of Port Hedland has expressed an interest in developing a local Water Service Provider capability, which it would own and manage.

Potable Water for Residential and Industrial Use

The short term goal for potable water is to free up water resources from current residential and industry to allow housing expansion. New housing acts as both catalyst for demographic diversification and fulfils strategic industry's need for transit workers accommodation. At a policy level the water industry is starting to explore the concept of providing both a potable and non-potable water supply. The non-potable water supply will be fit-for-purpose, which should provide a cheaper product for industry.

The longer term goal is to have a secure supply of water for economic use. To allow economic diversification to occur, it may be necessary to provide an allocation of water for new business and industry to avoid strategic industry 'locking up' all the water (purchasing power or not allowing access to supply networks). This is not too dissimilar to the state government's 15% allocation of natural gas supply for exclusive use by the domestic gas market.

Energy and water efficiency opportunities exist with incumbent industries in their operations and existing housing stock. Financial investment in energy and water audits and retrofits of industry and housing stock should be considered as a short term solution to free up potable water for housing. This sort of policy was enacted successfully by the NSW Government to provide water while their desalination plant was under construction, which avoided the city of Sydney running out of water.

5.5.8 Wastewater

The Water Corporation received funding in January 2011 (\$106m) to relocate the Port Hedland Wastewater Treatment Plant to a combined upgraded facility in South Hedland by 2014.

The expanded South Hedland plant is expected to provide sufficient capacity to accommodate a future population in Port Hedland of up to 50,000.

There is currently capacity in the wastewater system within Precinct 1, and the Water Corporation is presently upgrading the existing pipe network to accommodate future 'infill' development within the Precinct. Within Precinct 2, where significant expansion of residential development is proposed, the Water Corporation has advised that there is capacity in the wastewater system within this precinct to accommodate the additional development.

Within the key growth precincts of South Hedland existing wastewater infrastructure is limited. Moreover, given the low lying nature of these precincts, any wastewater infrastructure extension will likely need to accommodate pump stations to get the wastewater to the treatment plant to the west.

For future density (Strata) and TWA developments, the short term constraint to the provision of a reticulated wastewater supply could be addressed through on-site treatment methods, such as Aerobic Treatment Units (ATU), to treat wastewater until a reticulated supply can be connected to the upgraded wastewater treatment plant in South Hedland. Treated water from ATUs could reasonably then be used for non-potable purposes such as landscape reticulation.

5.5.9 Stormwater and Earthworks

The Town of Port Hedland is subject to cyclonic activity typically occurring from December through to March. Such activity makes the Town of Port Hedland susceptible to storm surge and flooding. Substantial fill will be required in key growth areas, notably Precinct 2, to ensure future developments are above storm surge and flooding levels or alternatively development sites should be identified where the existing levels are above flood levels.

Due to the intensity of storms, pit and pipe drainage systems are not typically used within the Town of Port Hedland. This is due to the large pipe sizes required for storm events and the high

maintenance costs associated with keeping a pit and pipe system clean and operational.

Co-ordination of a regional / district water management planning (in accordance with Department of Water guidance) would assist in ensuring planned drainage outcomes are applied across the precincts rather than ad-hoc treatments that could result in drainage problems downstream.

As previously noted in response to modelled flooding and storm surge events, all finished floor levels for new development shall be required to be established at least 0.5 metres above the 100 year ARI flood level. Earthworks and fill have typically been used in the past to address minimum floor level requirements, and this will likely remain the case for future development areas in the absence of acceptable/feasible alternatives (e.g. built form solutions). As part of detailed planning investigations for the East End area, LandCorp are currently investigating the feasibility of both fill and built form solutions to meeting these development requirements, the findings of which may also have wider application and relevance to other priority development areas throughout Port and South Hedland.

5.5.10 Power

Power supply within the established areas of the Town of Port Hedland are supplied via a high voltage supply scheme network of 22kV which is made up of a combination of overhead lines and underground power cables fed from by one of the three zone substations located within the Town.

The sub-station in Port Hedland has minimal scope for upgrade, while the substations in Wedgefield and South Hedland still have the ability to be upgraded. To support further population growth, it is estimated a minimum of an additional three zone substations will be required.

Horizon Power has indicated that they have identified strategic locations for zone substation sites and may also undertake a land swap should these sites fall within a proposed development. We are currently waiting on the locations of these sites to within a 25km radius.

It should be noted that Horizon Power has undertaken their own planning forecasts within the region and have determined the ten year growth forecasts to generate between 30 - 45 MVA. The population growth forecasts in the Growth Plan suggests that Horizon Power will need to make provision for a greater than forecasted power supply.

Potential strategies for meeting power supplies in the future include a combination of:

- Investigation of tidal power generation to supplement Horizon Power supply; and

- Installing new high voltage feeders to ease existing heavily loaded feeders.

In Precincts 1 and 2, a tidal power generation plant supplying power to these precincts could alleviate demand on the existing Horizon Power system in the medium to long term. A similar tidal power generation system based in Derby has been estimated to produce in the order of 48 MW which equates approximately to a power supply for 2000 residential lots.

For the key precincts in South Hedland power supply is at or nearing capacity. Existing power infrastructure is at capacity and therefore a new zone sub-station/s will be required in the vicinity. Ideally, this sub-station/s should be located to the south of South Hedland, allowing for the substantial power growth expected in the area, and to support the surrounding areas with their growth.

The programming of any power infrastructure upgrades and new zone substations will be dependent on the load take up areas.

5.5.11 Gas Supply

As previously indicated, despite being located in a region that provides a significant proportion of Western Australia's domestic gas supply, Pilbara towns, including Port Hedland, have no reticulated gas supply network. The WA Gas Networks have indicated that there are no current plans to provide reticulated gas to the Town of Port Hedland.

Provision of gas reticulation is typically only viable when provided to a suitable industry, otherwise using gas bottles remains the most practical and feasible option in the short to medium term. In the long term, however, the provision of a reticulated gas network remains a key ambition for the town as it grows into a sustainable, regional City capable of providing the full range of services expected and demanded by urban residents.



5.5.12 Telecommunications

Initial advice from NBN Co. indicates that in the short term supply of high-speed telecommunications services to existing areas will be via satellite. Whilst necessary pit and pipe infrastructure (able to accommodate new fibre cabling) will be installed as part of the civil works for major new subdivisions, the full rollout of fibre networks in regional centres such as Port Hedland remains a medium to long term proposition as part of the national rollout.

5.5.13 Recycling and Waste Management

At present, waste management and disposal in Port Hedland is handled by the South Hedland's Class 2 Landfill facility, as well as the Wedgefield Industrial Waste Incinerator. There is no municipal recycling scheme in operation within the Town of Port Hedland. There are currently no plans to decommission existing waste disposal facilities in the short to medium term.

As Port Hedland continues to grow and develop as the Pilbara's Port City, waste volumes will continue to grow. Given the location of the existing waste disposal facilities in close proximity to established areas of Wedgefield and South Hedland, as well as urban expansion areas around South Hedland, there will be a need to consider the long term sustainability of retaining these facilities in their current locations. In this regard, opportunities exist to consolidate and significantly improve the capacity, efficiency and sustainability of waste disposal operations, potentially including the establishment of local recycling schemes. Whilst full assessment of all alternative site options would be required, the Growth Plan acknowledges that the area around Newman Turnoff (to the south

west of South Hedland) could potentially accommodate a waste transfer facility and/or other complementary uses in the long term.

5.5.14 Pedestrian and Cycle Networks

The *Port Hedland Cycle Plan (2008)* outlined ways to improve the quality of paths and road networks for walking and cycling, and "to make cycling and walking within the Town safer, more convenient and hence an attractive alternative means of transport and form of recreation".

The Cycle Plan identified some notable gaps in the existing network and facilities including:

- Link connecting the existing coastal path with the Port Hedland Town Centre (West End);
- Extension of the coastal path along Dempster Street and Goode Street to Cooke Point;
- Links between Port Hedland, Pretty Pool and South Hedland;
- Installation of bike lanes;
- Upgrade of existing footpath surfaces; and
- Installation of bicycle parking rails at appropriate locations (U-rails recommended).

The Growth Plan recommends further enhancements to the network. In Port Hedland, this primarily includes an extension of the path network in Pretty Pool.



Figure 5.13: Port Hedland Proposed Path Network.

Although South Hedland currently has a more comprehensive and integrated network of pedestrian and cycle paths and facilities, additional improvements would be desirable, including an extension of existing links to the schools. There are no existing or proposed facilities within Wedgefield. These should be provided, albeit off-road given the amount of heavy vehicle movements within the estate. The verges are considered wide enough to accommodate this.

In addition, there are no pedestrian or cycle facilities in Wedgefield or within the Airport Precinct. Off-road facilities should be provided in these precincts.

To encourage the community's use of the proposed network other initiatives are recommended to complement the physical infrastructure, namely:

- Preparation and implementation of Green Travel Plans (TravelSmart Plans) for new and existing developments;
- Encouragement of walking and cycling to school through providing education programmes and / or walk / cycle to school buses;
- Creating and advertising cycle route plans (including classifying streets into poor, medium and good riding environments);
- Providing cycle hire facilities at key places such as the visitors centre and the Town Centres;
- Providing cycle servicing workshops and / or safe riding courses; and
- Encouraging workplaces to support cycle and walk to work initiatives.

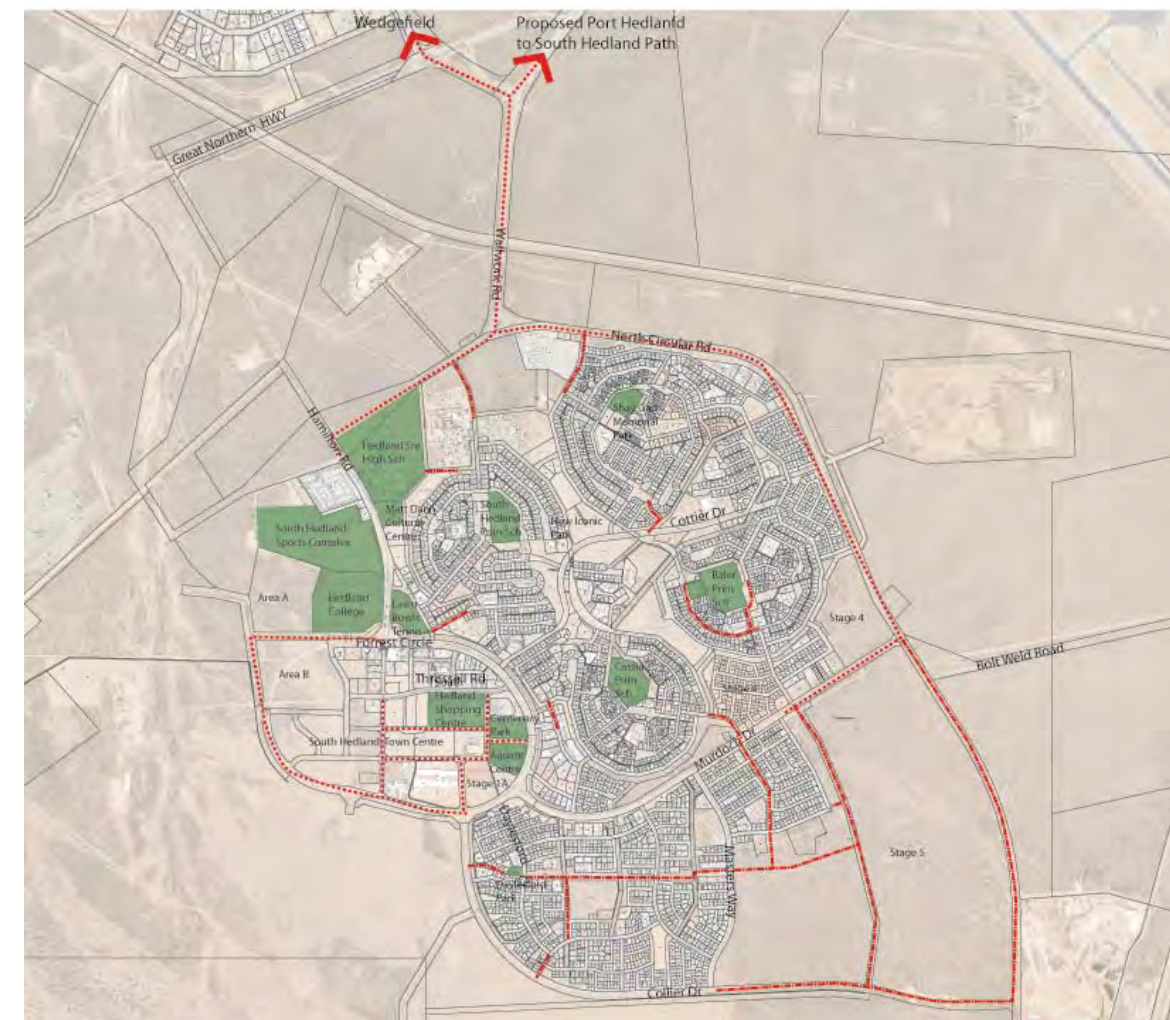


Figure 5.14: South Hedland Proposed Path Network.

5.5.15 Road Networks

The strategic roads servicing the Town are generally good and are highly utilised by heavy vehicles. However, the proposed increase in the Town's population over the next 20 years, coupled with the construction of the outer harbour will have an adverse impact on the Town's road network. In anticipation of the growing population and increased mining activity, the Town of Port Hedland and Main Roads WA have a number of planned and committed upgrades to the existing road network, including:

- Wallwork Road bridge project comprising the design and construction of a four lane bridge over rail tracks;
- Developing a designated truck storage area and transport hub at Wedgefield;
- Upgrading all road bridges into Hedland to allow for increasing truck use in terms of size, weight and frequency; and
- New road connection into South Hedland from Karratha to bring tourism traffic direct into town centre.

As part of the Growth Plan, a high level traffic analysis was undertaken based on the Precinct Plans, using a spreadsheet model, the existing traffic flow data and the proposed future land uses. It should be recognised that traffic forecasting at a strategic level does have limitations, and that forecast traffic volumes should be taken as only indicative of the likely traffic that the road will carry.

Having regard to the proposed Precinct development scenarios, population growth projections and consideration of the traffic analysis in relation to the existing road network, the Growth Plan highlights the following:

- If all local light vehicle traffic is re-directed to Morgan / Anderson Streets, then Anderson Street will require two lanes in each direction (through Precinct 1) by 2021.
- Wilson Street Port Access Road may require upgrading to two lanes in each direction throughout Precinct 1 and 2 by 2016 and 2021 respectively. Detailed investigations and designs for potential upgrades should be carried out in the next two years.
- The extension of Anderson Street in Precinct 2 is forecast to reach its one lane (in each direction) capacity by 2021. However, rather than widen the road, traffic will naturally re-direct itself to use the Athol / McGregor Street corridor.
- The Clarke Street extension (in Precinct 2) is predicted to reach its one lane capacity by 2021. However, traffic will be able to use Cooke Point Drive as an alternative, reducing the need for road widening.

- In Precinct 6, Pinga Road may reach its one lane capacity by 2016. However, the construction of a new parallel road north east of Pinga Road should enable the redirection of some traffic, reducing the need to widen the road.
- In Precinct 7, the two airport access roads may reach their one lane capacity by 2021. To reduce the impact of the proposed 7,000+ bed TWA facility on the surrounding road network and thus the requirement of unnecessary road upgrades to two lanes in each direction, parking at the accommodation should be limited as far as practicable. Alternatively, workers should be conveyed by bus to work sites and the airport; retail and leisure facilities should be integrated on site.

In South Hedland, the traffic analysis has highlighted the following:

- Hamilton Road and Forest Circle may require upgrading to two lanes per direction by 2026.
- Throssell Road may require upgrading to two lanes per direction by 2016.
- Wallwork Road may require two lanes in each direction.
- Murdoch Drive may require two lanes in each direction by 2026.

In addition to various road improvement schemes required, increased provision of driving schools is required (in suitable locations or run as home businesses) to ensure prospective new drivers are able to access training and overcome connectivity barriers to education, employment and key services.

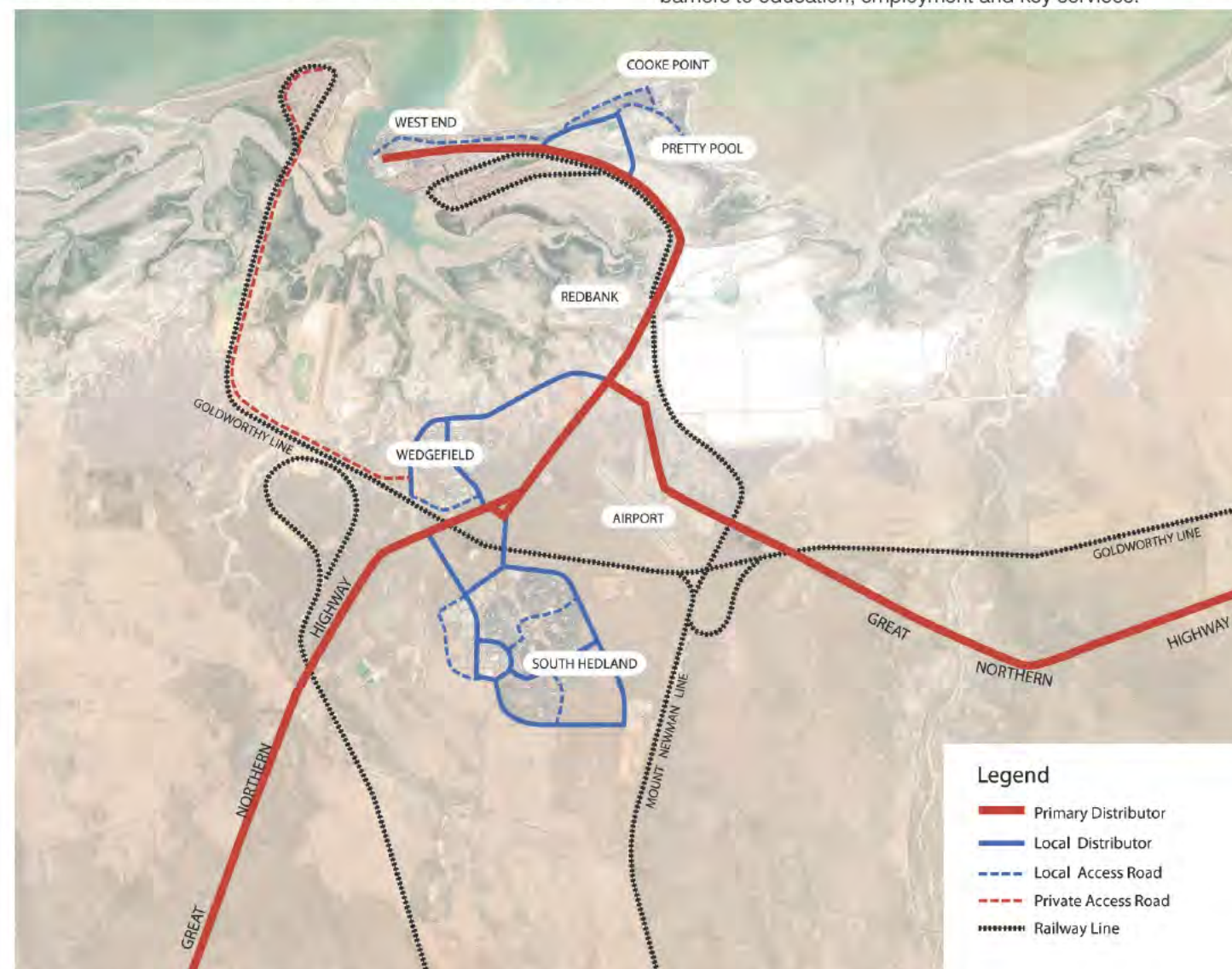


Figure 5.15: Road Upgrades

5.5.16 Public Transport Networks

Within the Town there are three public bus routes operated by Hedland Bus Lines. While these are considered to provide good local coverage of both Port and South Hedland, as well as a connection between the two, services are infrequent.

The Growth Plan advocates the development of a public transport strategy to coordinate and facilitate the expansion of existing services as well as more frequent services to encourage use of public transport over the private vehicle and maintain the capacity and efficiency of local road networks. Importantly, there is little information available about the existing services. To this end, using the Town's and visitor centre's websites to advertise and provide information on bus routes and timetables should be pursued.

Of particular priority and importance is the need to increase service provision and connectivity between key activity centres and centres of population. In this regard, opportunities to provide high frequency services connecting the west end, east end, Wedgefield and South Hedland (city centre and residential areas) should be pursued, as well as services connecting to the Boodarie Strategic Industrial Area and to/between temporary workforce accommodation sites (where there are significant populations of working people requiring reliable transport connections to employment sites) with population centres and key worker accommodation.

Opportunities also exist to introduce alternative transport services, such as Demand Responsive Transport (DRT) which combines traditional bus services with flexible taxi services. One example of DRT is the existing Port Hedland Airport Shuttle Bus, transferring passengers from all incoming flights to their destinations. The provision of DRT services also presents considerable opportunities and for local organisations and community groups to operate their own services, thereby further enhancing local business capacity and employment opportunities.

DRT services have witnessed failure when their demand is too high. Fixed scheduled buses should be run at high demand times such as peak hours, with DRT used on the same route during non-peak hours. As the population grows and more routes become more popular, DRT services could be replaced with fixed schedule buses. Running DRT services on future bus routes will allow for easy transition between the two.

There are currently no public or passenger rail services or facilities. Given the isolation of Port Hedland and notwithstanding the forecast increase in population, a local passenger rail service is not considered to be a financially viable proposition in the foreseeable future. A feasibility study into passenger rail service options should be undertaken in the future to determine the viability of such a service for Port Hedland.



Figure 5.16: South Hedland Proposed Bus Network.

5.5.17 Freight and Logistics

Port Hedland's close proximity to substantial mining activity in the Pilbara and its coastal location make it a regional transport hub. However, isolation and the high reliance on the road network and diesel train system to deliver goods to the area may become costly in the future with rising fuel prices. The region will need more resilient transport links for its long term prosperity.

The projected increase in the Town's population as well as the increase in port activity will increase the efficiency and safety issues. Opportunities to produce goods locally and opportunities to transport more material to the port by rail should be investigated to reduce road movements.

To ensure efficiencies in the freight and logistics network are maintained in the long term, the feasibility of an Intermodal Facility on the outskirts of Port Hedland should be investigated. Such a facility would allow goods and services from trucks to be transferred to rail.

5.5.18 Safeguarding and Enhancing Strategic Assets

The Town of Port Hedland contains a number of strategically significant assets, notably the Port, the Airport and the resource related networks.

In the case of the Port, the Growth Plan implicitly recognises the need to safeguard the Port as a key strategic asset and acknowledges the longer term expansion plans of the Port, as detailed in The Port Hedland Ultimate Development Plan (PHPA, 2007).

Similarly, the Growth Plan acknowledges through the precinct planning process the need to safeguard the Airport as a long term strategic asset, and to ensure that future development adjacent to the airport actively support and complement the current land uses and activities and the future proposals prescribed in the recently adopted Airport Masterplan.

In the case of the rail network, the Growth Plan recognises the need to safeguard current and future rail infrastructure. Importantly, it recognizes the potential adverse impacts of noise and vibration resulting from more intensive operations in the future. The Growth Plan makes provision for wide buffers in those Precincts adjoining existing rail corridors where future residential development is proposed e.g. Precincts 2 and 13.

5.6 GROWTH PRECINCTS FOR PILBARA'S PORT CITY

Pilbara's Port City Growth Plan will be implemented through more detailed work that has been undertaken below the 'Growth Framework' level discussed earlier in this document. Sixteen precincts have been identified across Pilbara's Port City encompassing all established and expansion areas, together with the outer lying areas of the municipality of Port Hedland.

Each precinct has its own place within Pilbara's Port City, its urban or industrial character and therefore the influences that will shape its development. Use of the precincts is intended to provide a guide for future development and has been used as a basis for forecasting the manner in which our City will grow at a local level.

The precincts are a useful tool to communicate growth, plan for infrastructure and facilities and respond to supply versus demand. Ultimately, work will be required to see development in these areas take place, including local level development planning and detailed site planning. Variations to the precinct plans in the way our city grows will occur as new opportunities and challenges are faced, but importantly, the Growth Plan provides this framework for expansion and planning.

Figure 5.17 illustrates the 15 precincts across the municipality of Port Hedland, with Precinct 16 being the outer lying areas.

The aim of this section is to provide the basis for future detailed development planning at the next level below Pilbara's Port City Growth Plan. The Precinct Plans are accompanied by a suite of land use, built form and development related information as follows:

- Key Figures
- Indicative Built Form Typology
- Summary of Development Outcomes
- Land Use Structure (Precinct Plan)
- Implementation Plan lead in material

Growth Precincts:

- Precinct 1 – West End
- Precinct 2 – East End Urban Village
- Precinct 3 – Port Authority & Finucane Island
- Precinct 4 – Redbank
- Precinct 5 – Dampier Salt and Surrounds
- Precinct 6 – Wedgefield Industry & Logistics
- Precinct 7 – Airport & Surrounds
- Precinct 8 – Pippingarra
- Precinct 9 – Western Gateway
- Precinct 10 – South Hedland West
- Precinct 11 – City Centre
- Precinct 12 – South Hedland East
- Precinct 13 – Eastern Gateway
- Precinct 14 – Southern
- Precinct 15 – Boodarie
- Precinct 16 – Port & South Hedland Surrounds

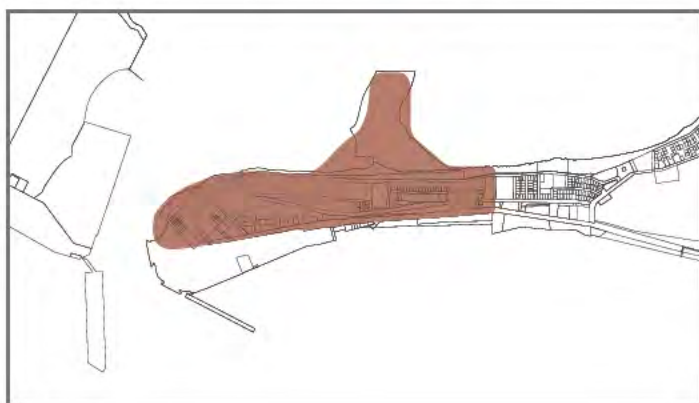


Figure 5.17: Precinct Location Plan

5.6.1 Precinct 1 – West End

Precinct Statement

“The West End is the Port City’s soul – perhaps like Fremantle to Perth, it is a unique and interesting place. It supports the growing port activity, yet remains people friendly and accessible. It is busy with day time workers, many of whom leave their offices to enjoy lunch in outdoor cafes and bars. As evening arrives, the West End transforms into a place popular with tourists observing Australia’s largest tonnage port and the coastline, while travellers and the wider city population enjoy the many cultural, dining and entertainment activities.”



Key Figures (ultimate)

Area:	260 (ha) (indicative based on precinct boundary).
New Dwellings:	Refer Table at Figure 5.18.
New Short Stay (rooms):	982 (1094 total).
New Transient Workforce Accom:	0 (0 total).
New Retail Floorspace (sqm):	9,768 (19,213 total).
New Commercial Office F'space (sqm):	17,999 (23,814 total).
New Light/General Industry (ha):	0 (25 total).
New Strategic Industry (ha):	0 (0 total).

Summary of Influences

Landscape, Heritage & Environment

- Historic land uses linked to early development.
- Coastal foreshore environs and harbour.
- Primacy of the Port and its operations.
- Indigenous Heritage: Two Mile Ridge, a nationally significant site occurs within the area. Various sites of heritage significance.
- Non-indigenous Heritage: A range of historic items occur throughout Precinct.
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.
- Noise and dust emissions particularly in proximity to existing developed urban areas.

Existing Land Use

- Location of Port Hedland Town Centre.
- Commercial/office uses and retail 'main street'.
- Residential development, hotels and other accommodation.
- Boat launching facility, Park, Tourist Centre.
- Operating Port/Industrial uses.

Current or Planned Projects

- Small boating facility/harbour planned for Spoilbank, with associated accommodation facilities.
- Commercial developments along Edgar and Wedge Streets.
- Mixed Use developments.
- Landscape amenity improvement works.



- West End Art Space (combined exhibition, function and meeting venue) and Wedge Street Improvements.
- Permanent outdoor entertainment venue.

Precinct Plan Summary

Activities & Land Use

- Port Hedland cultural/commercial core.
- Short-stay accommodation limited residential development.
- Port small boating facility and associated accommodation facilities.
- Light industrial uses to the south of Anderson Street including potential commercial land uses (particularly along Anderson Street).
- West end mixed use area north of Anderson Street promoting forms of retail development as well as short stay accommodation.

Community Development

- Coastal parklands nodes/lookouts, landmark waterfront development.

- Activation of the West End through continued cultural events, fostering of arts, education, tourism and entertainment uses.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Coastal hazard risk management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- Programs for continued fostering arts & culture events, and permanent facilities.
- Traffic segregation into Port between heavy and light vehicles.
- Ongoing dust & noise monitoring, and management of land use separation (including ongoing monitoring of dust and noise levels east of Acton Street and potential reviews of land use appropriateness).



- Precinct encapsulated in TPS5 as a 'Development Plan' area.
- Preparation of a detailed Development Plan for Precinct 1 including cultural, civic, restricted residential, port uses and short stay accommodation land uses.
- Development and land use staging (including residential restrictions) relative to development timeframes for neighbouring precincts (particularly Precinct 2 - East End Urban Village).
- Detailed design feasibility investigations into widening of Wilson Street Port Access Road (and potentially Anderson Street) to two lanes in each direction.
- Encouragement of high quality development along Anderson Street as primary entry road into West End cultural/commercial core for non-industrial traffic.
- Detailed investigations to identify and protect indigenous and non-indigenous heritage sites.
- Clear way finding and direction of large tourist vehicles to appropriate set down and parking areas in the cultural/commercial core.
- Existing land use rights of residential landowners respected, whilst promoting increased awareness of future land use permissibility and development potential through consultation, development guidelines, local planning frameworks etc.
- Promotion of awareness of potential dust, noise and light impacts in the West End due to proximity of strategic port operations.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

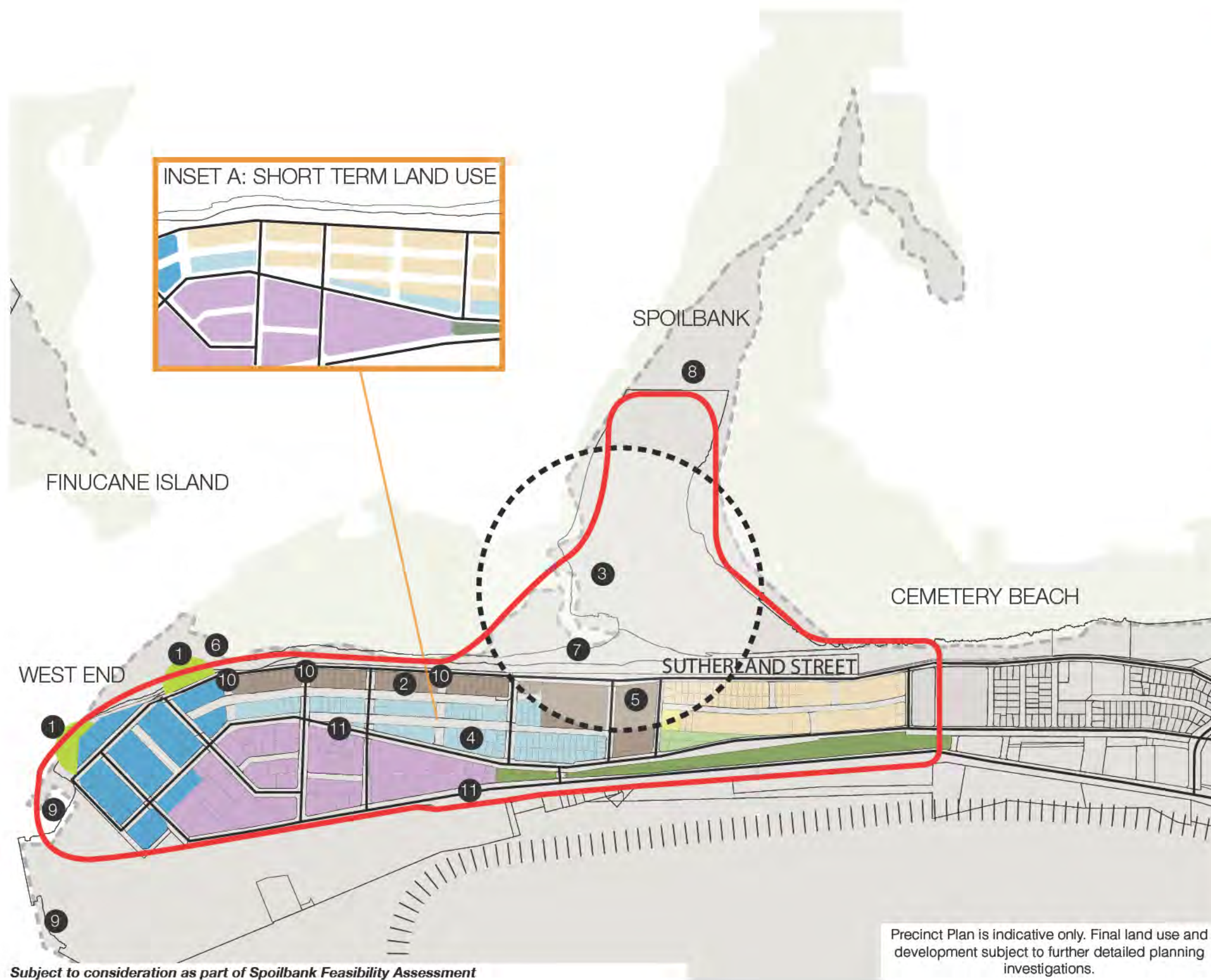
Scenario	Area	Area Dwelling Capacity	Total Precinct 1 maximum dwelling capacity	Notes
Present Day	West of Acton Street	861 (approx. 380 at present)	1510 (approx.450 at present)	At present, permanent residential dwellings are permitted at densities of up to 'R30' east of Acton Street and 'R50' west of Acton Street. There is currently an estimated 450 existing dwellings in the precinct (derived from the Town of Port Hedland Housing Capacity Study, GRA 2010). The recently gazetted 'West End Residential' zone permits limited residential development (non-family style housing) at densities of between R30 and R80. This scenario is acknowledged as a 'Short Stay Accommodation' in the Precinct Plan on Page 87 .
	East of Acton Street	649 (approx. 70 at present)		
Ultimate/Long Term Growth Plan Scenario	West of Acton Street	0	649*	The Growth Plan advocates an ultimate/long term land use scenario retaining a 'West End Residential' land use east of Acton Street, with no permanent residential (short stay accommodation only) west of Acton Street. This results in a maximum dwelling capacity of 649 for Precinct 1, wholly contained in that area east of Acton Street.
	East of Acton Street	649*		
* Note: For land use and infrastructure modeling purposes, the Growth Plan assumes approximately 450 dwellings in Precinct 1 under the ultimate land use scenario (effectively no net increase in total dwelling numbers compared to the present day scenario). This represents a midpoint between R30 (254 dwellings) and R80 (649 dwellings) capacity estimates for the area east of Acton Street, acknowledging servicing constraints, tenure/land ownership fragmentation, redevelopment take-up rates etc.				

Figure 5.18: Precinct 1 Dwelling Capacity Scenarios



Precinct Highlights

1. Iconic building overlooking waterfront/port.
2. Reinstatement of Sutherland Street (long term).
3. Spoilbank development opportunities (coastal access, marina and accommodation).
4. Business incubation opportunity.
5. Hotel site.
6. Richardson Street boat ramp to be closed as alternative options are developed.
7. Yacht Club/RSL facility.
8. Spoilbank - northern portion to be retained for informal recreation purposes.
9. Tugboat/port operations precinct.
10. Coastal access/lookout.
11. Upgraded Wilson Street Port Access Road and Anderson Street and segregation of traffic from light vehicles.



RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.0 CITY GROWTH STRATEGY



5

This section seeks to develop further the pattern of urban and commercial/industrial growth that Pilbara's Port City will require, as it grows to be a regional city, enjoying all the urban services and facilities, cultural activities and lifestyle opportunities enjoyed by cities around Australia.

The strategies for growth comprise a range of recommended initiatives and interventions of both a spatial and non-spatial nature. They will be used by all levels of government, community providers, key stakeholders and service agencies to understand how the growth of the City will be delivered at the local level and across a range of disciplines. Importantly, they are formed in the context of the existing and planned strategic resource assets.

The strategies follow initial discussion on the 'Framework for Growth' and are then articulated in the content of the Growth Plan's core themes aimed at addressing the many challenges and maximising the opportunities for growth.



Figure 5.1: Growth Framework Flowchart.

5.1 FRAMEWORK FOR GROWTH

The basis for Pilbara's Port City being a liveable sustainable city will be reflected in the delivery of the key elements of economic diversity, environmental protection, housing diversity and capacity, strengthening local community and culture as well as infrastructure capacity building. The elements of housing capacity (urban development expansion), economic diversity (activity centres and industrial development) and community (recreation and community facilities) are used here as a simple guide to understanding generally where growth will occur.

5.1.1 Urban Development Areas

Pilbara's Port City will provide an orderly land supply with immediate impact, and an ongoing choice of housing opportunities to ensure

a broad population can be accommodated. At a detailed level this is shown in the Precinct Plans forming part of this document, together with the Implementation Plan comprising a separate document.

Housing diversity and land supply, within the Growth Framework for Pilbara's Port City will be addressed through:

- Urban Expansion: reflected as an urban expansion framework in Figure 5.2. The detailed elements of the East End and South Hedland expansion areas, including indicative layout, yield estimates and other land uses are shown within the relevant Precinct Plans. Further detailed considerations of new development sites, deconstructing

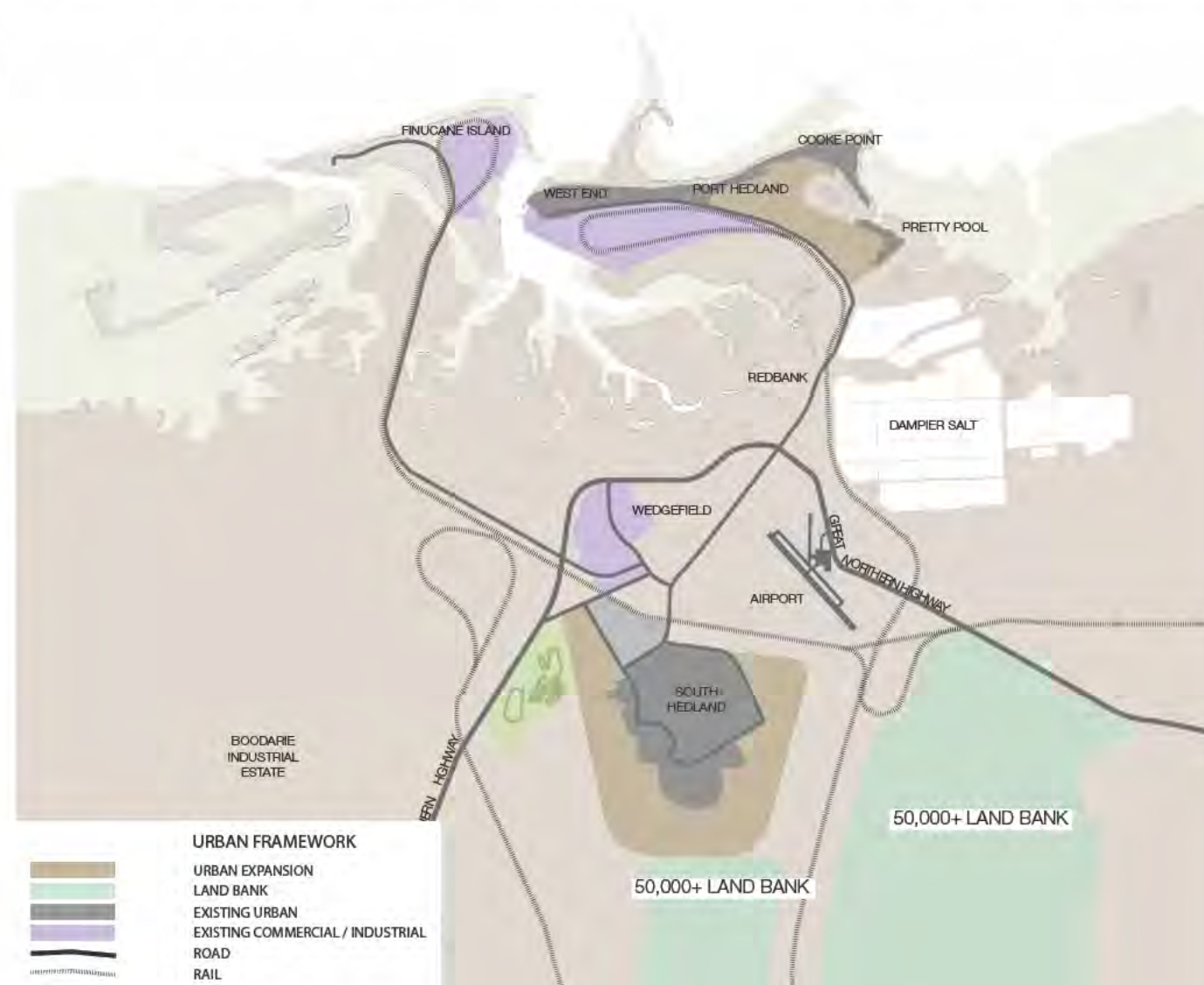


Figure 5.2: Urban Expansion Framework.

actions and delivery responsibilities/time frames is provided in the companion 'Implementation Plan'. Figures 5.3 and 5.4 demonstrate levels of identified new dwelling capacity in Port and South Hedland resulting from both urban expansion and infill development over the next 20 years. Figure 5.4 specifically demonstrates that there is sufficient capacity identified to meet in excess of the 50,000 population target.

- Infill Development: Port Hedland has the opportunity to provide for significant levels of new housing through the redevelopment of existing areas within Port and South Hedland. These areas are already provided with infrastructure services, are accessible by the established road network and encourage the regeneration and improved amenity of older established areas. While infill development occurs incrementally, it can play an important role in responding to demand. Infill development opportunities must be managed to require good built form outcomes and respond to the expectations of the community. They do provide, however, (through a performance based approach to development) for improved streetscapes and surveillance of public spaces, the inclusion of climate responsive design and local architectural vernacular, and the management of access, parking and landscape. Larger infill opportunities should also seek to improve sense of place through landscape and public art.

As infill development occurs gradually, performance based approvals are often a good basis for encouraging early redevelopment while also requiring minimum (high) standards of outcome. This approach can include allowing 'density bonuses' in which additional dwellings are supported subject to the inclusion of communal facilities, public art, or improved access and landscaping. Similarly, the opportunity to grant mixed use opportunities to development can encourage early and better outcomes.

5.1.2 Activity Centres

Diversifying the Port Hedland economy to increase local business, particularly small business, provide opportunities for entrepreneurship and local investment are key platforms to Pilbara's Port City growth. These are discussed further in section 5.2 of this document. The manner in which they are provided for within the spatial framework of the city's growth is detailed below.

An activity centre will support a range of functions that attract people including recreation, lifestyle activity, living, working, shopping and dining, together with community and cultural roles. These centres vary depending on the role and function prescribed, though all have in common:

- An integration with transport that encourages potential for walking, cycling, public transport access and generally reduced car dependency;

	IDENTIFIED NEW DWELLING CAPACITY (CUMULATIVE FROM 2011)			
	2016	2021	2026	2031
PORT HEDLAND	1,510	5,071	5,357	5,643
SOUTH HEDLAND	6,257	9,888	13,469	17,400
TOTAL	7,767	14,959	18,826	23,043

Figure 5.3: New Dwelling Supply Capacity, 2016-2031 (Source: RPS)

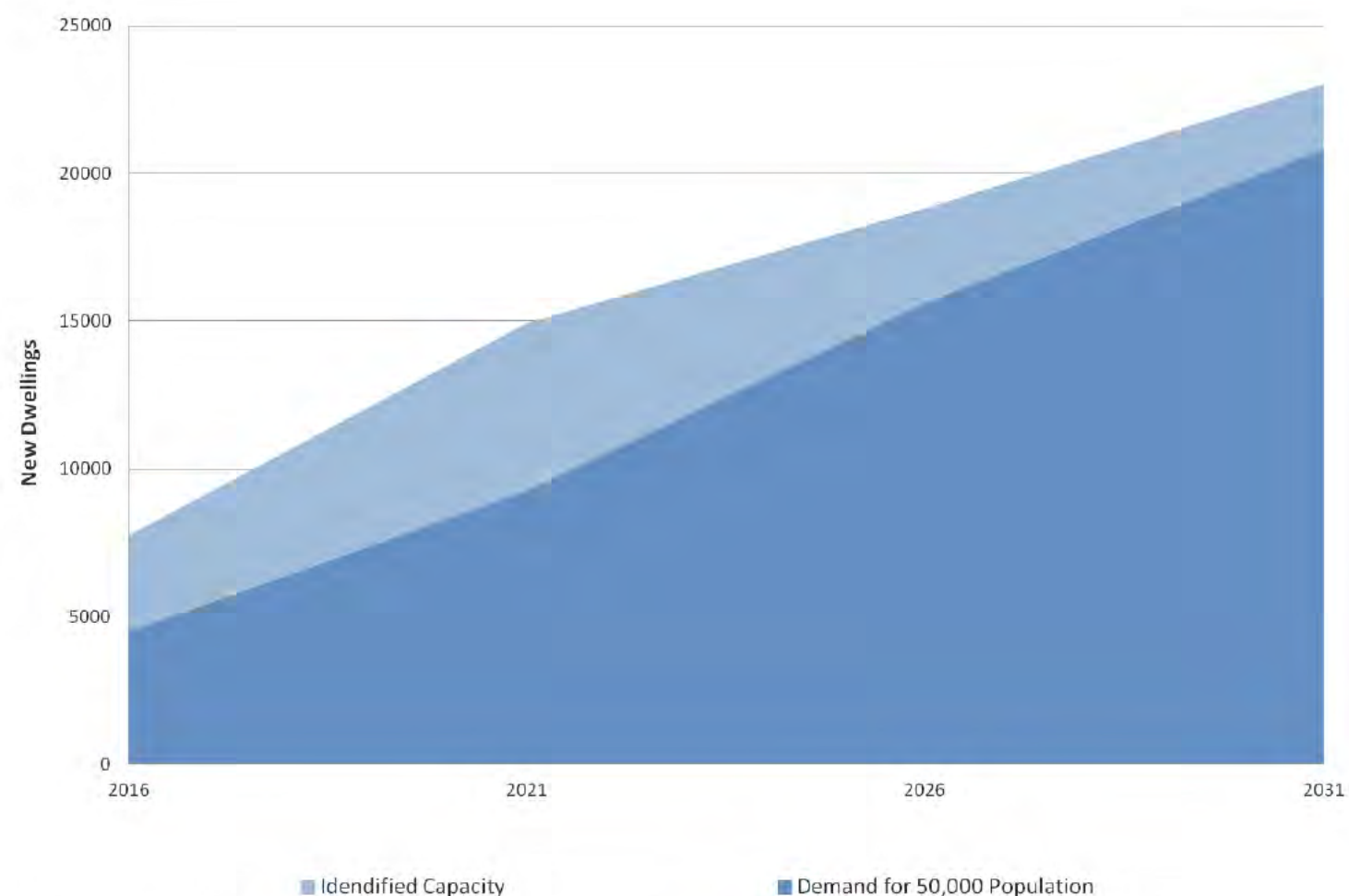


Figure 5.4: New Dwelling Supply and Demand (Source: RPS)

- Opportunities for living through mixed-use higher density housing or 'shop-top' dwellings that encourage an immediate population that supports local business and encourages people to meet and interact;
- Defined centre roles that can pave the way for synergies across common investment and business co-location;
- A role in the delivery of community development through arts, culture, landscape and sense of place through local identity; and
- Offer opportunity for employment and business investment relative to the scale and location of the centre.

Figure 5.5 illustrates the Activity Centre Framework. The role and function of each type of centre aim is outlined in Figure 5.6. This should be considered as a guide only to the role and

nature of each centre. Ultimate land use and development will be prescribed through the Town of Port Hedland Town Planning Scheme.

Ultimately the use of an activity centre framework within Pilbara's Port City will:

- Provide for a range of regional and local employment opportunities to support the city economy;
- Help to improve the existing level of non-resource employment;
- Diversify local economic drivers through a coordinated and understood choice of centres; and
- Ensure the continued long term supply of employment related land.

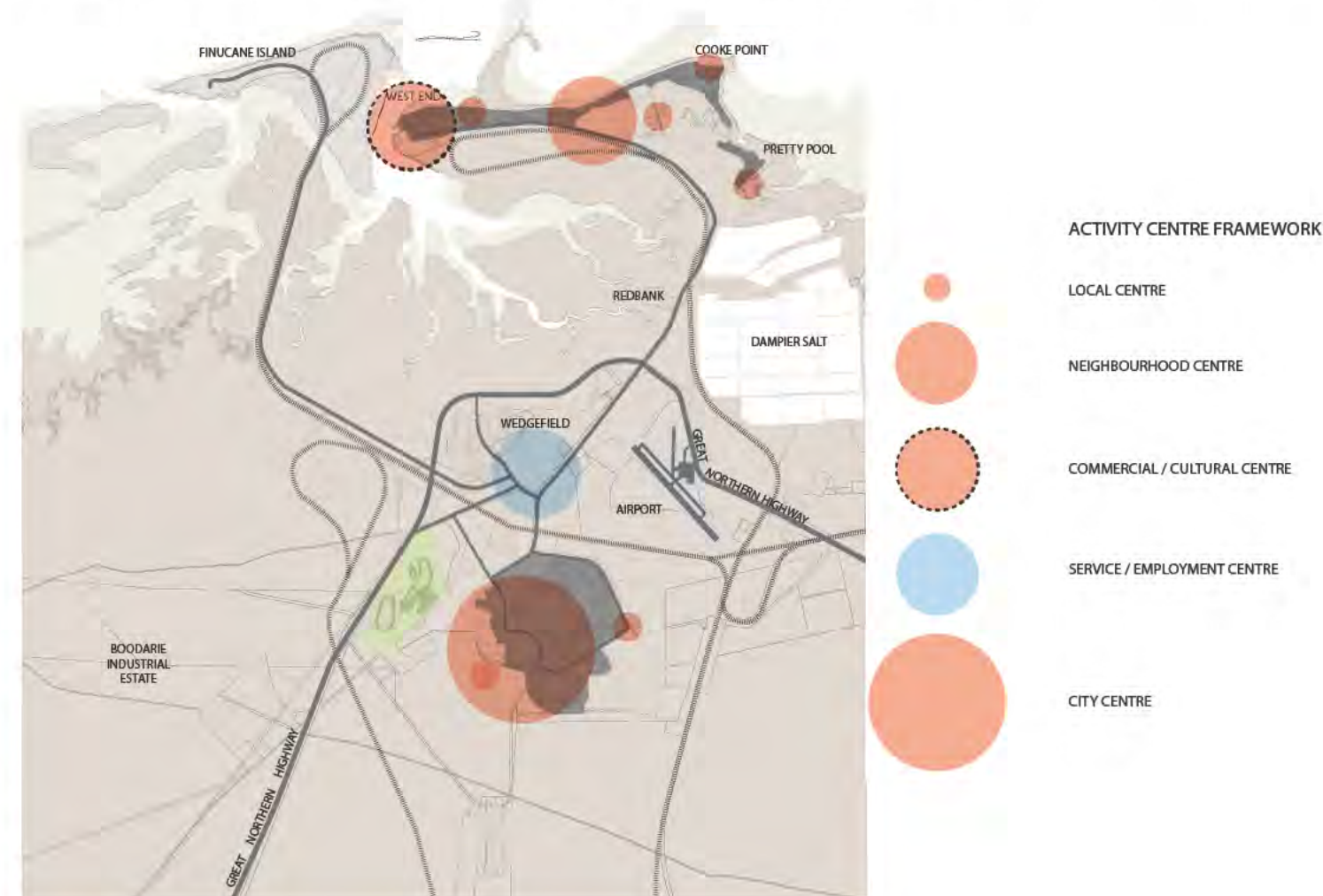


Figure 5.5: Activity Centre Framework.

Pilbara's Port City Growth Plan Activity Centre Role and Function

	Centre Hierarchy	Primary Purpose & Function	Connectivity	Indicative Uses	Indicative Activities
City Centre	1 – South Hedland CBD	Primary (largest) activity centre of the region. It supports the significant concentration of development and investment for Pilbara's Port City.	Focus for major arterial gateway routes, public bus network routes.	Department stores, Discount Department stores, Supermarkets, Specialty retailers. Major offices / Government agency offices, civic and justice premises, local government. Major regional Health facilities, health specialists. Personal services. Not for profit organisations.	Multi-purpose recreation facility, regional sports fields. Restaurants, cafes and cinema. Indigenous arts and culture precinct. Tertiary Education precinct.
Neighbourhood Centre	2 – East End Port Hedland	Supports the daily shopping, service, community and convenience needs for the East End population.	Transfer/connection point for work travel, shopping needs. High levels of accessibility (including public transport).	Supermarkets, personal services, small offices/professional services, convenience retail. Localised community service facilities. Not for profit organisations.	Catchment supports similar level of district facilities – sports fields, local gallery, smaller dining/cafe experiences.
Commercial / Cultural Centre	3 – West End Port Hedland	Specialised centre provides convenience needs to daily workforce, port operations and short-stay visitors. Acts as the alternative to commercial / cultural activity from uses in the CBD.	Significant driver for workforce travel demand. Connection point for tourist, short-stay professionals. High levels of accessibility and walkability.	Major offices, Port/resource related professionals, local professionals, local convenience retail, tourist and community services. Not for profit organisations.	Tourism uses, high end Art Gallery, research facilities, business incubation, waterfront development and entertainment.
Service / Employment Centre	4 – Wedgefield & Airport	Specialised employment precinct encompassing the light, transport and highway service industrial areas where local employment and logistics business synergies can be fostered. Offers opportunity for new/green technology industry to establish.	Connection point for local workforce travel demand and local population use of services. High levels of accessibility with demand responsive alternatives where full time public transport is not viable.	Full range of showroom warehouse, light industrial and airport/road transport/port logistics uses defined in Precinct Plans.	Potential accommodation of private sporting, arts or entertainment business including indoor sports, health club.
Local Centre	5 – Demand led but including: South Hedland - Eastern edge & South West edge; Port Hedland - Spoil bank, Cooke Point, Cooke Point Drive, Pretty Pool.	Local convenience needs only.	Connected by localised pedestrian/cycle network and passing traffic movement. Accessible by local public transport routes.	Local convenience store, cafe newsagents. Limited local professionals.	Dependant on local centre. Coastal centres or those related to area of natural amenity will offer unique environment or cultural experience.

Figure 5.6: Pilbara's Port City Growth Plan Activity Centre Role and Function.

5.1.3 Industrial Development

Industrial land supply and management within the growth framework for Pilbara's Port City will be addressed through:

- Industrial Expansion: the basis for orderly release and development of industrial land is shown in Figure 5.7
- Transitioning of Industrial Areas: Pilbara's Port City will facilitate the transitioning of its two long established industrial areas to more consistent 'lighter' industrial uses through the delivery of improved industrial supply choice
- Opportunities to foster early relocation and performance based new development are encouraged through Implementation Plan recommendations and via review of Town Planning Scheme No.5 provisions. The early progression of the Boodarie Special Industrial Area (SIA) is key to this evolution.

for heavy, noxious, general and logistics industry uses. The established Wedgefield and West End industrial precincts offer significant opportunity for new re-investment in the medium to longer term as existing uses relocate.

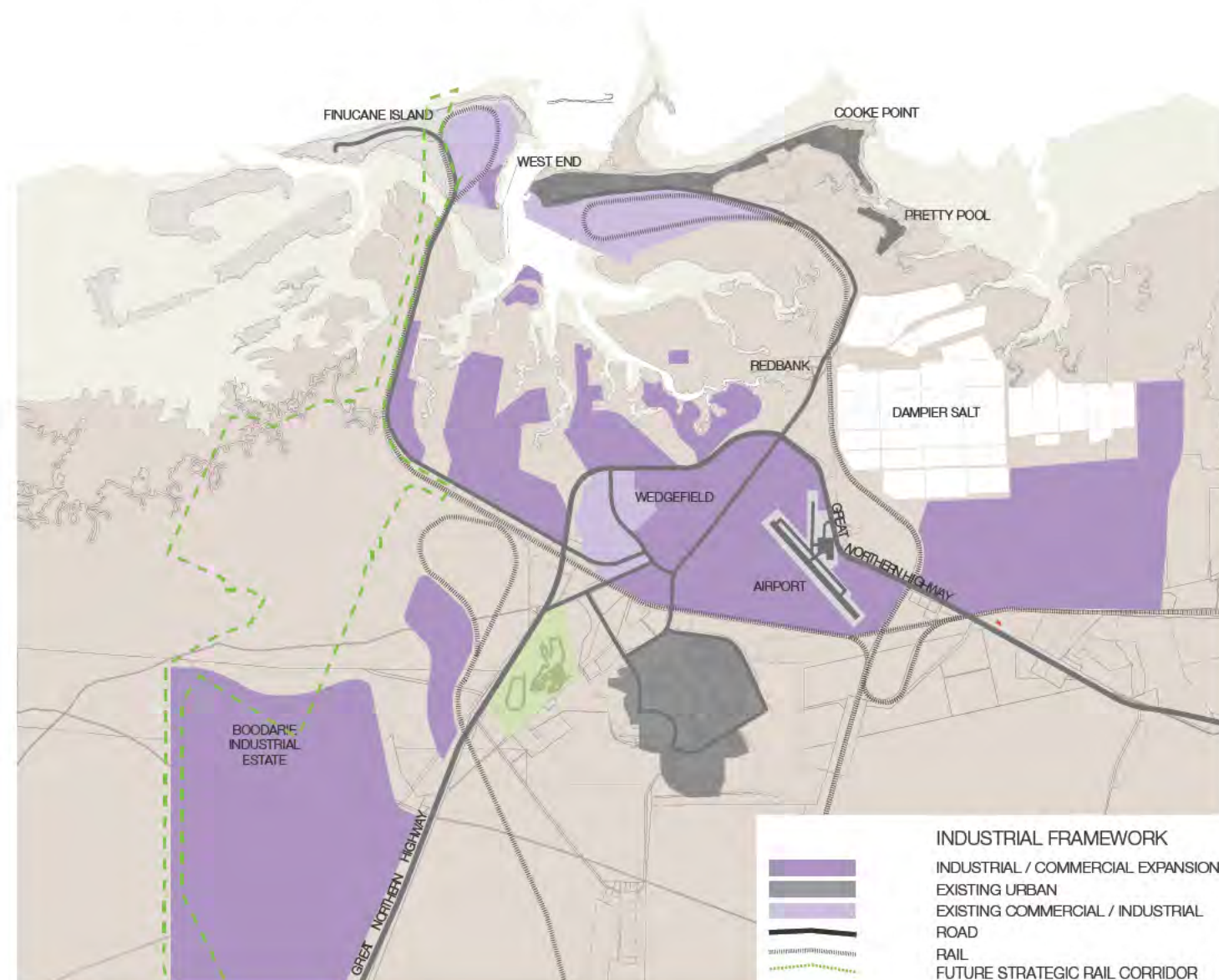


Figure 5.7: Industrial Framework

5.1.4 Recreation, Entertainment and Community Facilities

Pilbara's Port City must manage growth to ensure a sense of place, culture and heritage is retained and reflected, community and sporting facilities are provided and a safe, inclusive community develops. Many of these elements are discussed in detail within the strategy sections of this report. The hierarchy of recreation, entertainment and community facilities, together with cultural facilities, that Pilbara's Port City will support is shown in Figure 5.8.

The Growth Plan has been prepared having regard to the

recommendations provided by CCS Strategic as part of its 'Active Open Space' Strategy, as well as the emerging findings of the Town's Entertainment Facilities Feasibility study. Among other things, these studies identify district level sporting facilities and entertainment facilities to accommodate a population of up to 50,000 persons.

The Growth Plan makes provision for district level sporting facilities within the precinct plans, and provides a sufficient 'footprint' for such facilities, consistent with the requirements of the Active Open Space Strategy. The exact location and ultimate form and type of facility provided, will be further defined by detailed precinct planning and site investigations.

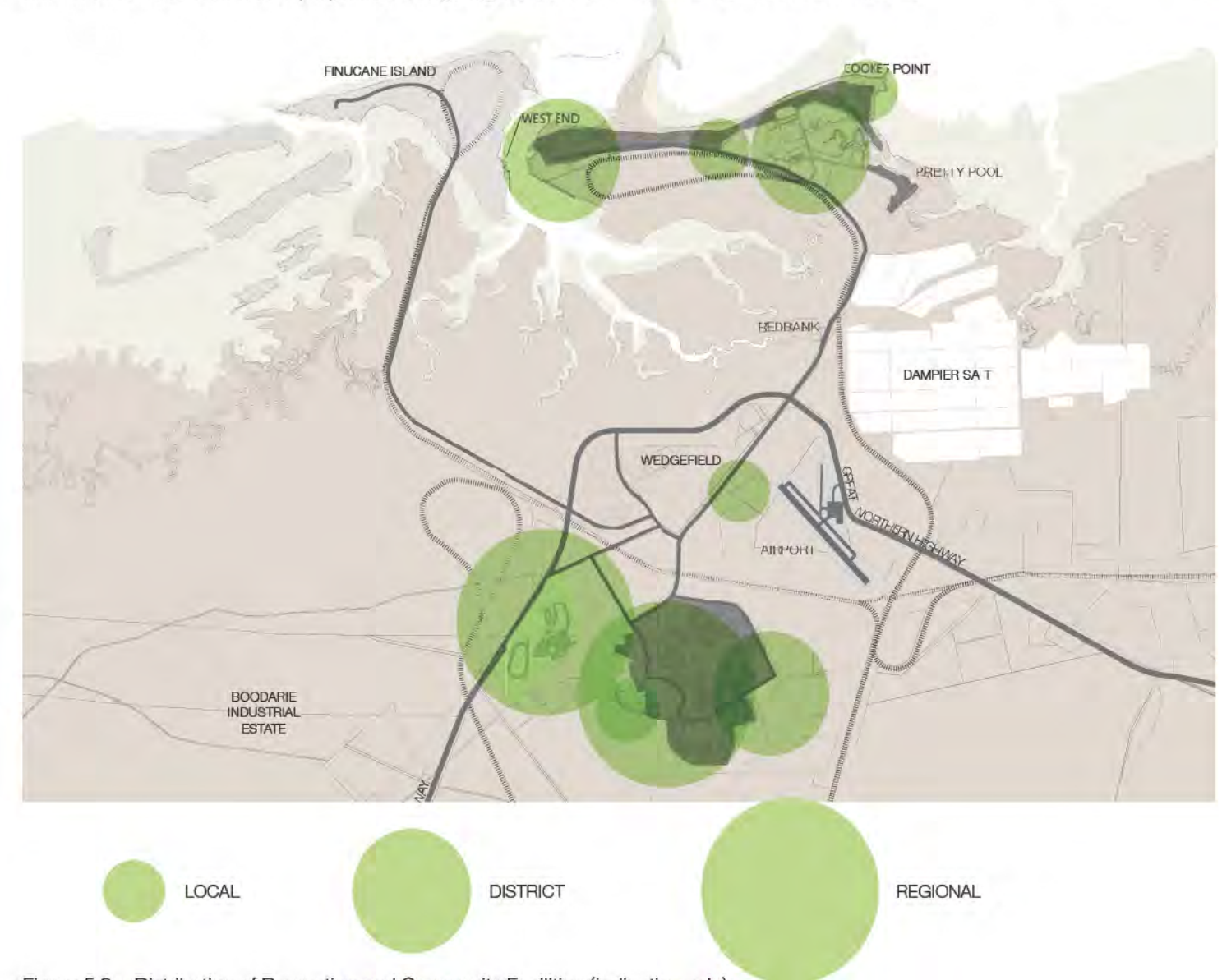


Figure 5.8: Distribution of Recreation and Community Facilities (indicative only)

Figure 5.8 provides a recreation and community framework for the City. This should be considered as a guide only to growth and distribution with additional detail provided within the precinct plans and Section 5.3 of this report with regard to arts, culture, and specific community infrastructure.

In addition to the Growth Plan, a companion document "Port Hedland: Shaping a Cosmopolitan City" (ToPH/Form, 2012) has been prepared to further articulate the community vision and guide the type and form of community and cultural offerings needed in the city.

Figure 5.9 provides an estimate of the core community infrastructure required for Port Hedland to accommodate a population of up to 50,000. Ultimately the planned location and distribution of recreation, entertainment and community facilities within Pilbara's Port City will:

- Form part of a wider 'suite' of community development initiatives including a culture plan encompassing arts and cultural heritage initiatives;
- Be informed by further detailed feasibility studies with regard to facilities capital works and ongoing management regimes;
- Provide for a range of sporting choice to support active and healthy lifestyles;
- Help to improve the existing level of interaction through sport and community meeting places;
- Diversify the offering of sporting and recreation opportunity though coordinated and understood choice of areas; and
- Ensure the continued long term supply of sporting related land.

5.1.5 Summary of Growth Framework

The Growth Framework provides a high level snapshot of how our City will develop, what roles the many activity centres will play, and how established and new areas will support growth.

Net Additional Demand for Community Infrastructure/Facilities, 2011-2031

	2011	2016	2021	2026	2031
Education					
<u>Primary Schools</u>					
Public	0	2	3	6	8
Private	0	1	1	2	3
<u>Secondary Schools</u>					
Public	1	2	2	3	4
Private	0	1	1	2	3
<u>Tertiary Education</u>					
Local Tertiary Facility *	1	1	1	1	2
Healthcare					
<u>Hospitals</u>					
Public Hospital Beds	0	5	22	43	71
Private Hospital Beds	34	42	53	67	85
<u>Community Health Centre</u>					
Local Community Health Centre	6	7	9	12	16
Neighbourhood Community Health Centre	0	0	1	2	3
District Community Health Centre	1	1	1	1	2
Children's Healthcare Centre (0-5)	0	0	0	0	1
<u>Care Facilities</u>					
Aged Person's Facility (Nursing Home) **	0	0	0	0	0
Local Neighbourhood House	3	3	4	5	7
Outside of School Hours Care	3	4	5	7	8
Emergency Services					
Police Station	1	1	2	2	3
Fire Station	1	1	1	2	2
Ambulance Station	1	1	1	2	2
State Emergency Service Unit	0	0	1	1	1
Arts & Performance Spaces					
Neighbourhood Multipurpose Cultural/Performing Arts Centre	1	1	1	1	2
Regional Multipurpose Cultural/Performing Arts Centre	0	0	0	0	0
Museum	0	0	1	1	1
Art Gallery	0	0	1	1	1
Libraries					
Central Library	0	0	0	0	0
Branch Library	1	1	1	2	2
Library Lounge	2	2	3	4	5

Notes

All figures quoted represent additional facilities required, cumulative from 2011 onwards.

* Potentially includes development of specialised/niche tertiary education facilities tailored to local needs and specialist skills requirements.

** There is currently a total of 6 aged care facilities in Port and South Hedland, with a total capacity for 56 persons. Whilst the table indicates no net additional demand for a new facility, the capacity and capability of these existing facilities will require upgrades to cater for sustained population growth over the next 20 years.

Figure 5.9: Net additional demand for community infrastructure/facilities, 2011-2031

5.2 STRATEGIES FOR SUSTAINING AND DIVERSIFYING ECONOMIC GROWTH

Housing has been identified as by far the most critical issue and impediment to future economic growth. The undersupply of housing is causing prices (both rental and sales) to increase beyond the point that residents can afford to pay. The end result (given the strong demand) is that housing is provided by employers. The resource companies are quickly becoming the only employers that can afford to purchase the existing housing stock, pushing residents further out of the market (and some businesses). Currently, the lack of residential housing means that construction workers cannot be accommodated, which puts additional impediments on constructing new residential dwellings.

This issue is pervasive throughout the economy, causing numerous companies to stay out of the region, making it impossible for local small businesses to expand and forcing some existing companies to consider leaving the market (and supplying the area from Perth). **Failure to address the housing issue could impair all future growth.**

Additional issues facing the future development of the economy include:

Reliance on the Mining Sector: The economy of the Town of Port Hedland is almost solely reliant on resources. The future risk is that any disturbance to mining, iron ore export or to one of the resource companies would jeopardise the entire economy of the area;

Shortage of Property: There is currently an undersupply of many types of property including industrial, commercial and retail. An insufficient supply of property across the economy could impair future economic growth;



Lack of Retail Offering: There is currently an undersupply of retail offering in the Town of Port Hedland, which can discourage future residents from moving to the area; and

Lack of Innovation & Knowledge: The economy currently lacks strong innovation and knowledge driven activities, which could assist in diversifying the economy away from its reliance on mining and iron ore export.

An economic development framework has been prepared as part of the Growth Plan identifying the core economic development activities that need to take place over the long-term in order to grow the economy in a more diversified and sustainable manner.

The focus for future economic development activities over the long term, together with a number of key initiatives is contingent upon achievement of the following core themes:

5.2.1 Being Prepared for Growth

Before economic development can be achieved, the Town of Port Hedland must ensure that the area is ready for this growth. Currently, the Town of Port Hedland has significant issues regarding the availability and affordability of housing. Additionally, existing shortages of industrial land and facilities, retail and commercial space as well as short-term accommodation are providing significant impediments to future growth. In particular, the housing issue must be sorted immediately before significant economic impairment occurs.

To this end, the Town of Port Hedland must ensure that sufficient land stocks are available for future residential, industrial, retail, commercial and accommodation provision. The use of government owned land as well as necessary incentives must be considered to resolve some of these issues. Council should consider utilising some of its land stocks to assist in this process.

To assist the Town of Port Hedland to be prepared for future growth, the following strategies are recommended:

- Immediately address housing shortage through using Council held land, providing high quality modular construction, providing incentives and other forms of inducement to deliver housing in the next six to twelve months;
- Ensure future land bank available for future residential development through a detailed property strategy, which identifies the sufficient amount and location of future residential lands (precincts 8, 13 and 14 provide these land bank opportunities);
- Ensure future provision of retail, commercial and industrial lands through a progressive property strategy and efficient facilitation of development approvals; and

- Establish proactive incentives schemes to facilitate development and create revenues, which will encourage development and provide potential future revenue.

5.2.2 Affordability and Accessibility

Two key themes have been identified that are critical to the housing affordability equation – certainty of supply and enhancing affordability and Market Accessibility.

Access to affordable housing has been identified as the primary constraint to current and future economic development, growth and diversification in the Town of Port Hedland. Current difficulty in securing affordable accommodation is creating skills and labour shortages and increasing labour costs for local businesses and employers.

The key consideration to improving the land supply equation and therefore the local economy is to address the housing issue and provide certainty with regard to the property supply pipeline.

By providing clear signals to the market of the existence of a large, responsive, targeted and flexible pipeline of property, volatility and speculation that characterise the current market will decrease. It will also provide a buffer to absorb short-term spikes in property demand, associated with the resource sector investment cycle and changes in global economic drivers.

To ensure sufficient supply of land and housing for future growth, the Growth Plan recommends the following range of initiatives and strategies:

- Immediately address critical housing shortage through using Council held land, utilising high quality modular construction methods and providing incentives and other forms of inducement to deliver housing in the next six to twelve months;
- Identification of priority land release sites to facilitate significant immediate and short term housing development in a variety of locations;
- Increase residential density in appropriate locations, with greater variety in housing types to achieve greater market segmentation;
- Ensure future land bank available for residential development, including 15 years of zoned land and 10 years of zoned and serviced land;
- Establish a defined retail network that provides direction for retail floorspace investment for all centre and format types;
- Establish a defined commercial and cultural precinct with planning and approvals frameworks that encourage commercial office development;

- Enhance supply of suitably located and supported industrial land, particularly collocated with key pieces of enabling infrastructure including the Port and Airport.
- Recognise the need for segmented industrial land supply, diversity of lot sizes and a strong forward pipeline.

The Precinct Plans go a long way to setting the foundations and 'goal posts' to facilitate achievement of the above, and further detailed information is provided in the Implementation Plan.

In addition to land supply initiatives and strategies, the following key initiatives to assist the Town of Port Hedland enhance affordability and market accessibility are also recommended:

- Investigate alternate tenure and purchase schemes involving Employer/Employee arrangements.
- Joint Tenure housing arrangements, rent-to-buy schemes, and deferred purchase/equity arrangements. The resulting shift to increased ownership (albeit part ownership) will promote greater "buy-in" to Port Hedland by workers and encourage long-term settlement;
- Investigate establishment of dedicated housing organisations including community housing associations and real estate investment trust funded through affordable housing bonds;
- Continue promotion of home-based business solutions. This will encourage increased local business establishment, providing a strong source of local demand for commercial office developments when home-based business grow. Allow flexibility in business location through provision of quality telecommunications infrastructure, while promoting clustering of business, personal and industrial servicing businesses.
- Permit on-site accommodation of construction workers for small and medium developments, to improve construction feasibility;
- Provide commercial/housing property packages to the market, providing business owners the opportunity to acquire both residential and commercial space to provide certainty on employee/owner access to accommodation;
- Promote uptake of modular or manufactured housing solutions to provide new housing stock in a manner that enhances the timeliness and cost of traditional construction methods;
- Promote decentralised, design-based approaches to addressing major environment and infrastructure constraints. This could potentially decrease the infrastructure funding burden on government and developers and decrease the cost impost on housing through developer contributions;



- Review Town of Port Hedland Town Planning Scheme and policy requirements to enable greater flexibility in dwelling types and densities; and
- Facilitate a more stream-lined and coordinated approach to the housing approvals process.

Another key initiative identified for the short term to address the affordability issue is to review the legislation governing the sale of crown land to government entities, LandCorp in particular (in this regard, consideration could be given to amending the legislation to enable government land suitable for development to be transferred at no cost to the social housing and not-for-profit sectors, even if it was limited to the Pilbara Region).

5.2.3 Transient Workforce Accommodation

As noted in Section 3, there is a short to medium term imperative to provide adequate levels of transient workforce accommodation

in order to cater for the necessary operational and construction FIFO workers and help relieve immediate housing supply issues.

In planning for and providing the necessary TWA facilities, there must be an appreciation that different design and location responses will be required depending on the type of FIFO workforce being catered for. Where possible, operational TWA facilities should be provided in locations close to or integrated within existing urban areas, encouraging enhanced integration between temporary and permanent residents and shared/common use of local facilities, activity centres and key services. TWA facilities for construction FIFO workers on the other hand may not be able to be located in (and integrated into) existing urban areas, with more self contained services and facilities being required.

Regardless of FIFO type, the Growth Plan advocates a balanced and dispersed approach to the siting and location of TWA facilities, and the imposition of clear time limits on the operation of TWA sites to encourage a shift to a more permanent and integrated

skilled workforce in Port Hedland.

Whilst certain locations are clearly more appropriate for TWA developments than others, the creation of very large, self contained TWA complexes (including all associated facilities and key services) in locations removed from existing or future planned urban development areas is contrary to the overarching aims of the Growth Plan to create a liveable, sustainable regional city. Development proposals for TWA sites should therefore demonstrate their ability to leave a tangible legacy for the City, along with a commitment to longer term 'City Building' in their own right. These requirements should be reflected and clearly articulated through the Town of Port Hedland's statutory planning and policy frameworks to assist prospective TWA developers in site selection and facility design.

5.2.4 Developing Unique Capabilities

The global competition for jobs and investment is fierce, particularly given the extended recession and slow economic growth in the United States and Europe over the last five years. In order to achieve the desired vision, the Town of Port Hedland must improve its competitiveness. Through the development of unique capabilities, the Town of Port Hedland can leverage existing advantages and generate nationally and globally unique competitive capabilities that will drive future economic growth and diversity.

Western Australia has an emerging 'clean technology' sector that is one of the fastest growing in Australia. The opportunity presents itself to take advantage of the significant solar resource in the Pilbara to become a leader in this sector and help diversify the local economy. An example of this includes the clean tech sector and associated research and development that is emerging in Newcastle, NSW, primarily with CSIRO. Other clean tech opportunities include water treatment technology (for potable water and wastewater) for remote mining operations and Aboriginal communities. Local food production or agriculture is something that could be used to diversify the economy and also have a social health benefit (which also includes reduced dependency on oil based food transport).

Key strategies to assist the Town of Port Hedland develop unique capabilities include:

- Encourage entrepreneurship (by mentoring, recruitment and retention advice) through local programs, including business incubation, business advisory, local investment funds and other programs geared toward generating new products, services and businesses;
- Support local clusters to grow and diversify by providing a platform, together with partners, for interaction, innovation and the transfer of ideas as well as opportunities to connect businesses;



supply and recycled waste water.

- Engage and work with employers and local indigenous groups/organisations to identify key opportunities for indigenous business and employment programs and ways to overcome existing barriers (e.g. transport, training).

5.2.5 Assisting Local Businesses

In most developed economies, existing businesses provide between 60%-80% of new investment and jobs. Given the unique nature of the Town of Port Hedland, local businesses (small, medium and large) would likely contribute at the top of this range. Focusing on ways to assist local businesses, particularly small and medium sized businesses would allow these companies to grow locally, employ more people and contribute successfully to the diversification of the economy. Supporting local businesses is a key function of local government.

To assist local businesses to grow and prosper, the following strategies are recommended:

- Engage regularly with existing businesses of all sizes in order to stay abreast of key issues, industry trends, opportunities and needs. This interaction is a critical element to deliver economic development and provides a strong basis on which to understand the needs of business to facilitate and support their growth;
- Work with partners to provide services to small businesses, such as business mentoring, business advisory (i.e. business planning, marketing and strategy development), networking and workforce development;
- Hold regular economic development forums to assist in identifying issues, sharing information and provide a platform for exchanging ideas relating to the future economic development of the area; and
- Provide regular economic updates (including labour force, unemployment, housing prices, building approvals, GRP, employment, etc.) to local business community in order to keep businesses informed about the health of the economy and key trends.

5.2.6 Marketing and Attracting Investment

The over-whelming dominance of the mining and resources sector in the local economy presents a significant challenge in trying to foster other businesses. Marketing and attracting investment to the Town of Port Hedland will assist in decreasing the reliance on the mining sector and assist in changing the perception of the area. Marketing the area as a sound business investment destination (instead of a resource boom town) will assist in changing existing perceptions and increase the marketability of financial lending to businesses in the area.

Key strategies to market and attract investment to the Town of Port Hedland include:

- Clearly define and market growth opportunities by preparing business cases, marketing information and other material to promote investment and growth opportunities;
- Conduct market research into identified industry opportunities in order to identify prospective investors, market trends and future requirements of these industries as well as develop specific marketing channels for distribution and promotion of marketing materials; and
- Identify prospective investors (e.g.: Defence Force, Freight and Logistics) through market research, marketing and business development efforts and engage directly with them regarding investment and growth opportunities in the Town of Port Hedland.

The Implementation Plan prescribes the manner in which initiatives identified can best be addressed in a practical sense.



- Develop innovation and R&D capabilities including exploring options to develop a local research centre of excellence together with major universities and resource companies as well as specific education and training programs leveraging the unique assets of the Town of Port Hedland (i.e. Port, access to mines and major facilities/infrastructure);
- Develop unique logistics capabilities including roll on/roll off facilities and a potential pre-assembled modules (PAMS) fabrication facility;
- Develop a strategic investment business case to attract 'clean technology' industrial development, for instance solar technologies;
- Develop a strategic higher education and research business case to support 'clean technology' industries, for instance a Centre of Excellence in solar technologies; and
- Investigate local/regional food production options to diversify the economy and provide fresh produce – particularly fresh fruit and vegetables – which can use fit-for-purpose water

5.3 STRATEGIES FOR STRENGTHENING LOCAL COMMUNITIES & CULTURE

5.3.1 Framework for Community Development and Place-Making

The Growth Plan is not intended to formally incorporate a Community Development Strategy, however, the principles of safe, attractive and livable neighbourhoods; fostering inclusiveness and diversity; setting the foundations for the provision of community infrastructure; and celebrating cultural assets are overarching considerations in the setting of strategies for the City's growth.

Figure 5.10 provides an indicative framework for Community Development and Placemaking Strategies. Further information and detail on the full range of Community Development and Placemaking strategies and action areas is provided in the companion document to the Growth Plan titled "Port Hedland: Shaping a Cosmopolitan City" (ToPH/Form, 2012).

Elements	Strategic Goals	Objective	Community Engagement Strategies and Initiatives
A city of art and creativity that preserves and encourages the diversity of language and culture.	<ul style="list-style-type: none"> Increased participation in creative industries. Encourage a shift from spectating to creating. 	<ul style="list-style-type: none"> Create places to allow creativity to flourish while investing in the quality of events and capacity of organisers. 	<ul style="list-style-type: none"> Progressive development of a comprehensive programme of community and cultural facilities upgrades e.g. multipurpose recreation centre; art galleries and exhibition spaces; Three-tiered cultural facilities development strategy addressing Regional, Local and Specialist facilities ; Investigate development of a Community Events Strategy, as part of the Cultural Strategy, including hierarchy of events, community presentation and consolidation across the calendar year; Conduct community/cultural group audit, including research into current capacity of community groups, as well as a gaps and needs analysis (as part of the Cultural Strategy); Programs to preserve languages and preserve links to unique Western Desert cultures; Program networking of 'creatives' with entrepreneurs to develop innovation projects and encourage seed funding to be made available to support initiatives that result;
A city of education choice and opportunity that promotes excellence.	<ul style="list-style-type: none"> Hone knowledge leadership; leveraging strengths in the industrial sector, through developing tertiary education that can lead nationally in specialist sectors. Provide greater educational choice for existing residents and retain more families. 	<ul style="list-style-type: none"> Provide educational facilities to allow outstanding teaching and research but also recognise and address the cultural, behavioural and public health issues affecting current educational outcomes. 	<ul style="list-style-type: none"> Conceive detailed concept for advanced technology economic development / tertiary education and develop investment case with industry partners, with this ultimately being marketed to educational institutions; Upgrade TAFE to provide more creative arts as well as applied vocational learning opportunities; Confirm target timing, location and strategy for a second high school considering junior/senior split, Catholic/other religious and private school options; Conduct cost-benefit analysis (including consideration of funding models - e.g. public, private, partnership models etc.) for weekday boarding facility aimed at improving educational outcomes of young Aboriginal people; Provision of high quality public resources centre / library services; Build on strengths in schools such as art specialisation and leverage these competitive advantages; Enhance attractiveness of learning environments and built forms;
A connected city of human engagement where people share skills and experience and where the gaps in employment outcomes are closed.	<ul style="list-style-type: none"> Strengthen the collective understanding of community priorities and an appreciation of the support available to social and business entrepreneurs. 	<ul style="list-style-type: none"> Cooperation to develop 'strategic capital'. Engagement of all people in the mainstream economy. Development of the economy to include high-value creative outputs. 	<ul style="list-style-type: none"> Map missions, authorities and current programs of agencies/actors in economic development, community development and Indigenous services sectors to identify opportunities for greater collaboration and effectiveness; Explore models for supporting these actors and removing barriers to progress; Program of partnerships between resources industry, training providers and local employers to increase work ready Indigenous workforce and provide appropriate employment opportunities; expand employment and training opportunities beyond industry focus; Program of strategic re-skilling to meet opportunities identified by the economic development strategies of 'import substitution' and small business support package (including identification of external economies of scale through 'clustering'); Program of artisan and craft entrepreneur projects including markets and new venture supports (e.g. media organizations, small or micro-business); Program of community service recognition and leadership development and community engagement; Events and programs that foster interaction and exchange;

Figure 5.10: Framework for Community Development and Place Making Strategies.

Elements	Strategic Goals	Objective	Community Engagement Strategies and Initiatives
An accessible city where public transport is readily available and places of interest are available to all.	<ul style="list-style-type: none"> Equity of access to public services. Promotion of participation in community life. 	<ul style="list-style-type: none"> Increase community participation and sense of belonging. 	<ul style="list-style-type: none"> Investigate barriers to youth transport and opportunities to sustainably address safe and equitable youth transport across the city; Implement a public transport strategy aimed at linking key activity centres and residential areas, particularly to locations of high cultural and civic activity such as the West End and South Hedland City Centre; Implement a public transport strategy including a youth 'call out' bus and separate bike paths/end of trip facilities with strong Port-South connectivity; Clustering of cultural land uses in a walkable West End precinct; Clustering of youth facilities around JD Hardie YouthZone; combine with diverse uses to enhance intergenerational interaction and passive surveillance; Co-location of government agencies in South Hedland City Centre; Provide reasons to travel between precincts, reasons to get out of the car and walk, bike, engage with public spaces through improved urban design and public art initiatives;
A place with its own sense of architecture and built form that reflects Port Hedland's cultural heritage and vibrant future.	<ul style="list-style-type: none"> Retain more families through enhanced amenity and attractive, aspirational environments. Distinctive housing that is affordable to purchase and to occupy. 	<ul style="list-style-type: none"> Enhance civic pride and amenity through distinctiveness. 	<ul style="list-style-type: none"> Precinct identity and character provisions in town planning scheme supported by covenants on land releases and demonstration housing partnerships; Confirm iconic sites for outstanding public buildings and investigate the feasibility for an international design competition; Further develop 'sense of place' and cultural vernacular elements to guide built form design considerations;
A place of tourism opportunity with links to landscape, indigenous languages and culture, and history.	<ul style="list-style-type: none"> A distinctive, vibrant local environment. Tourism products and development of additional experiences that make promotion credible. 	<ul style="list-style-type: none"> Enhance sense of place during growth to a regional city and develop the economy consistent with community values. 	<ul style="list-style-type: none"> Build on local strengths and distinctive attributes; Celebrate cultural, natural, historical or community features; Develop a Tourism Strategy for Port Hedland, building on distinctiveness with authentic and varied experiences; building on the new State indigenous tourism strategy and work in-progress on Pilbara tourism strategy; Develop a program of story capturing and story-telling including place making / public art initiatives; Preserve and celebrate cultural (indigenous and non-indigenous) heritage assets; Develop opportunities for cultural expression in contemporary forms; Develop the airport as a gateway experience for Port Hedland and marker of ambition and identity; Develop a place identity and communication strategy;
A city of healthy housing, lifestyle and sporting opportunity.	<ul style="list-style-type: none"> Preserve 'outdoors' culture and appreciation of Pilbara landscape. Infrastructure and services that underpin public health and well-being. 	<ul style="list-style-type: none"> Promote well-being by addressing current infrastructure deficiencies. 	<ul style="list-style-type: none"> Implement active open space strategy (currently in draft form) and a placemaking strategy to improve access to active and passive recreation opportunities, e.g. coastal walk in Port Hedland; Encourage partnerships between State and Local Government to mandate and promote renewable energy sources and integrated water cycle management; Pursue the timely expansion of the health campus, medical specialist visits and primary healthcare services expansion;
A rich and cosmopolitan city: a confident and outward-looking place that is inclusive and supportive.	<ul style="list-style-type: none"> Preservation of distinguishing character during growth. Normalise community demographics by addressing major distortions. 	<ul style="list-style-type: none"> Increase community cohesion and resilience to growth 'shocks'. 	<ul style="list-style-type: none"> Development of ToPH Reconciliation Action Plan ; Development of Placemaking Strategy; Build on resources sector relationships to program networking with 'facing' cities (eg. Jakarta, Kuala Lumpur, Singapore, Manila, Chennai, and Shanghai) and former (potentially future) residents (Pilbara alumni); Consult with Aboriginal people including transient groups to determine culturally appropriate forms of housing and appropriate locations in Port and South Hedland; Identify strategic landbank opportunities and a program of staged land releases; Adapt affordability strategies to Hedland context; Actively seek to resolve Native Title Agreements as a priority;

5.3.2 Attachment to Place and Livability

The Pilbara region has a highly transient and unstable population base. The region's index of residence instability is currently very high (66%) when compared to the average population 'churn' for WA (46%) and the Perth metropolitan area (45%). Within the region, this is more evident in some towns than others. Port Hedland experiences 65% instability slightly less than Karratha's 69%. (*Pilbara Framework Regional Profile, 2011*).

There remains a real opportunity to influence the decision of the population which is yet to decide on how long they will stay. The imperative is now to retain these people and attract newcomers, building these places into sustainable communities. Fostering greater attachment to place is extremely important.

The three main factors that attach people to place are social and cultural amenity, openness and beauty. Social and cultural amenity will be addressed in the sections below. Beauty will need to be a key design requirement and principle for development across all aspects of the Growth Plan, and this is also considered as part of the open space and connective strategies.

Openness (or how welcoming a place is) is the third critical element of attachment to place, making welcoming, inclusive and diverse communities fundamental to the success of Port Hedland's growth, and a critical condition to cultivate.

Fostering openness, inclusiveness and diversity will be essential for Port Hedland to grow into a more holistic, sustainable community and home to diverse residents.

As outlined earlier in the demographic profiles, although Port Hedland has average income levels well above Perth and Regional WA averages, it also has high levels of disadvantage. The wealth and employment divides within the community are significant. This is combined with a significant educational divide. Port Hedland has a highly educated and qualified population combined with illiteracy in other parts of the community.

Given the highly transient working population, and an indigenous population that can fluctuate enormously with a high proportion of temporary residents or visitors, accommodating these populations and ensuring opportunities to engage with the community are a challenge.

5.3.3 Enabling community infrastructure

Creative and cultural opportunities to participate will be important to the vitality of Port Hedland.

The challenge for Port Hedland will be finding ways to put in place the enabling infrastructure that can aid in the development of a more vibrant, healthy community. This is in the context of lack

of available spaces for amenities, prohibitive costs of housing and of doing business. These restrict both entrepreneurial small business and non-governmental organisations' abilities to provide enabling services.

5.3.4 Celebrating Cultural Assets

Another common theme cited by the community is the desire for greater celebration of their cultural assets in their built environment. One of the challenges of a fast growing town is that the demands for infrastructure and development can be so great that delivery ends up focusing on the essentials in their most basic form.

The intangible needs of a community are just as vital. Reflecting the cultural assets, identity and distinctive sources of pride for the community in the built environment and cityscapes have significant benefits for developing community spirit, pride in place and a sense of belonging.

The community has identified the rich history, indigenous culture, the landscape, and the community itself as resources to be celebrated and showcased through a place vernacular or design guidelines, programming, interpretive signage, trails or maps, events, storytelling, visual displays or other means. The community has also emphasised through consultations as well as the Growth Plan focus groups a desire to see community life celebrated through greater programming and activities in key city nodes such as the West End and South Hedland City Centre, thereby building a sense of vibrancy.

Celebrating and showcasing cultural assets are instrumental in a number of dimensions that have been identified through the Growth Plan process as necessary to the future of Port Hedland:

- **Distinctiveness:** Distinctiveness is about the competitive advantage that can be gained from strengths that are particular to a place and the character of the community.
- **Identity Development:** Cultural assets are pivotal to shaping the identity and character of a place.
- **Inclusiveness:** Cultivating the conditions for an inclusive and open place is a challenge faced by many places. However, fostering opportunities for meeting, mixing, interaction and exchange between diverse people is one means of building understanding and respect, enabling a foundation for greater community building.
- **Attraction and tourism:** The ability to attract a residential population and create additional tourism opportunities is critical to Port Hedland's future.
- **Community building:** Opportunities for exchange and relationship building are a central part of community building.
- **Signalling:** Cultural assets are also an important vehicle for

signalling intent and progress. As the Growth Plan is rolled out, the strategies for cultural and community engagement will be one of the most accessible means of conveying progress through quick wins.

These dimensions will be factored into the strategies highlighted above for strengthening local community and culture, as well as initiatives identified through the Implementation Plan.

5.4 HOUSING DIVERSITY AND LAND SUPPLY

5.4.1 Land Supply Capacity

The Overall Growth Plan Spatial Framework (Figure 5.11) recognises the primacy and significant expansion of the Port, while creating significant new areas of urban expansion for immediate and long term growth.

The Strategic Industrial Area (SIA) of Boodarie is recognised as playing a major long term role of offering downstream processing and resource industry associated business investment and employment.

The Port operations and significant expansion of the Port Outer Harbour are recognised, together with key infrastructure corridors to Boodarie and the various Port Authority development areas. Land is allocated for the much needed 'Common User Facility' within the Port at Lumsden Point. Logistics opportunities between Port, Road and Airport will be provided for through expansion at Wedgefield and the airport which link these areas.

The South Hedland City Centre is recognised as the major regional centre within Pilbara's Port City, supported by the uniquely located West End commercial/cultural centre with Australia's largest tonnage Port as its backdrop. The West End is planned to accommodate commercial investment, foster culture and the arts and promote tourism. It will provide significant opportunity for Mixed Use and Short-Stay development. An 'Urban Village' Neighbourhood Centre within the East End of Port Hedland will provide a central location for local residents to meet, shop, and recreate.

Land supply, affordability and choice will be met through diversity of product, location and strategies to respond to cost and timeliness of delivery. Greater density will be provided in the East End and around the City Centre. Opportunities for traditional lower density housing will be provided in the East End, but predominantly within the expansion areas of South Hedland. Short-term demand to accommodate short-stay accommodation workforce needs is considered in a range of locations that offer the potential for longer term legacy of infrastructure provision to the City through this form of immediate development (with a finite life).

Pilbara's Port City will be a connected city with provision for upgraded road infrastructure including duplication of the rail bridge port entry and widening of Hamilton Road into the City Centre. The City will be supported by an improved pedestrian/cyclist network and a public transport network.

Opportunities for education choice will be available through the provision for new primary schools and high schools in urban expansion areas, and inclusion of additional land adjoining the existing TAFE to facilitate establishment of a wider Tertiary Education Precinct that potentially offers University course material to local students.

More detailed elements of the Growth Plan areas are shown within the 16 Precinct Plans; ultimately these provide a guide for detailed site planning and development.

The Growth Plan and accompanying analysis has identified an estimated supply capacity of some 23,230 new dwellings (28,622 including existing), potentially catering for a permanent residential population of over 54,000 people (including significant stock to allow normalised vacancy rates of around 8%). This is located in the East End of Port Hedland, and in the surrounds of South Hedland where most growth is projected to occur.

5.4.2 Housing Diversity

The Port City Growth Plan provides for both urban expansion and infill regeneration across a range of areas. The ability of the City to respond to demand and affordability while ultimately providing choice will be met particularly through improved housing diversity. An overall increase in density to the relatively lower density housing typical of Port Hedland is provided for in the Growth Plan.

This will be achieved by striking a balance so that higher amenity locations can accommodate increased density, while land and housing supply continues to provide for families and those seeking traditional larger home sites.

Ultimately housing diversity assists in meeting the different needs of residents based on income, cultural background, family type or stages of life. As the population ages, for example, the proportion of older residents will increase and the ability to 'age in place' through appropriate housing, or to accommodate in specialised care will be needed.

Similarly, improvements in technology and increased 'work from home' options will influence the way our future city lives and works. Flexible forms of small accommodation such as shop-top housing, granny flats or studio apartments can also increase the ability to accommodate people and offer affordable options. The following images reflect some of the many housing types and provide an indication of the relationship to density that could be achieved as new areas develop or infill occurs.

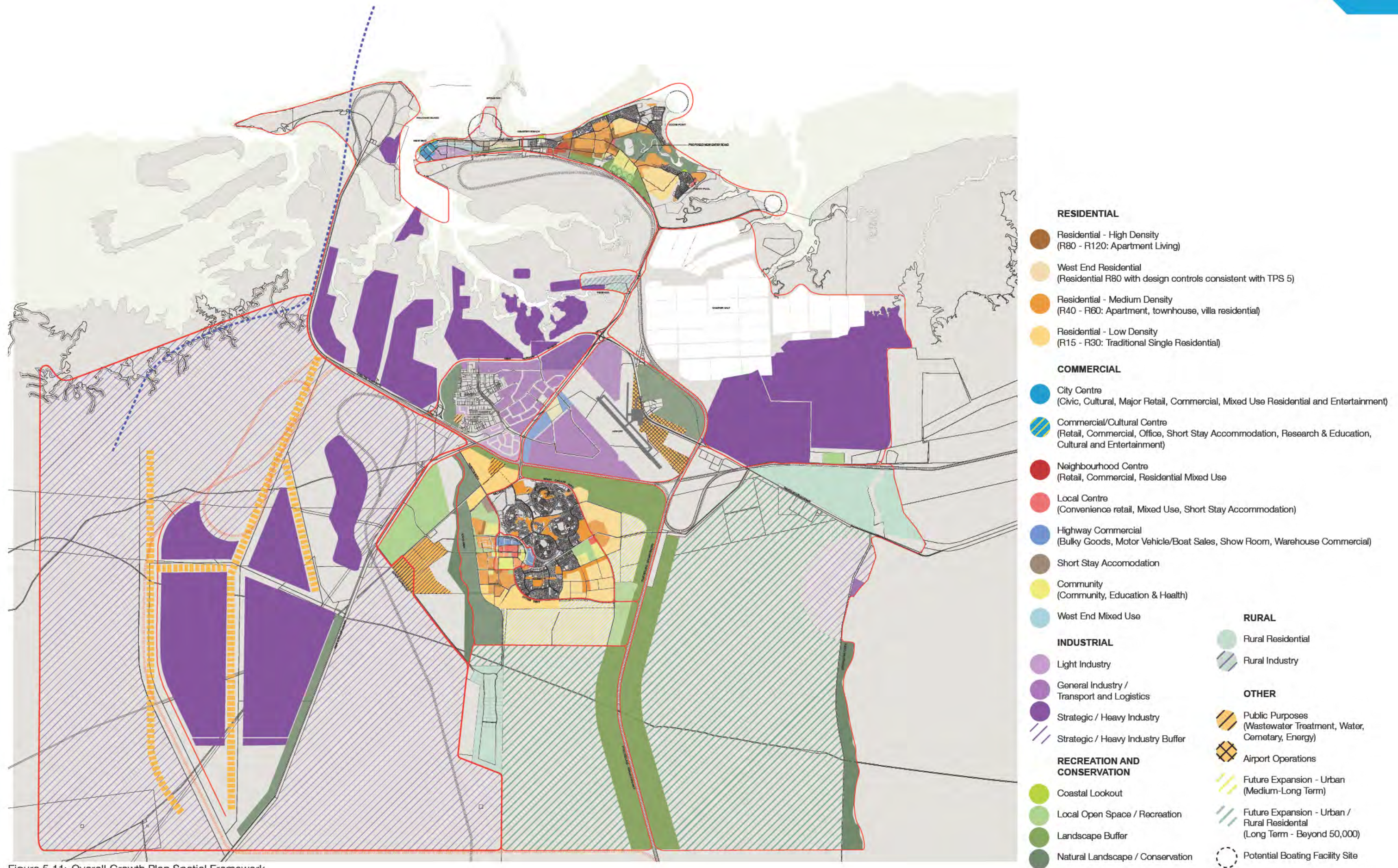


Figure 5.11: Overall Growth Plan Spatial Framework

5.4.3 Architectural Vernacular

The unique sense of place, landscape and culture that is Pilbara's Port City will be particularly visible through its built form. The ability to convey elements of Port Hedland's environment, culture and heritage will progress over time, together with materials usage and construction methods.

The foundations for this must be established now through Pilbara's Port City Growth Plan and its implementation. This will provide a clear message to existing and future residents of what it means to live in Port Hedland and how the unique identity is captured through relationship with the past and vision for the future. New civic buildings and those within activity centres or places of prominence offer a strong basis for leadership in this area.

Pilbara's Port City will need to enshrine an array of values and key principles in an architectural 'Port Hedland Style Guide' for Pilbara's Port City which acts as a springboard for ideas that architects, engineers, urban designers and the general public alike can draw on.

Pilbara landscape colours, roofing and shade, verandahs and the use of local materials are elements that should be captured. Some of the more specific examples of public realm considerations are discussed in relation to the City Centre, within the Precinct Plans section of this document. Ultimately, residents and visitors must feel that the sense of northern Australian lifestyle and relationship to climate and landscape is captured.

Following are some of the many themes that should be captured in a style guide for Pilbara's Port City.

Housing Diversity - High Density

Apartment 4-6 Storey



Shop Top Housing



Housing Diversity - Low Density



Site Sensitive



Studio



Triplex



Townhouse

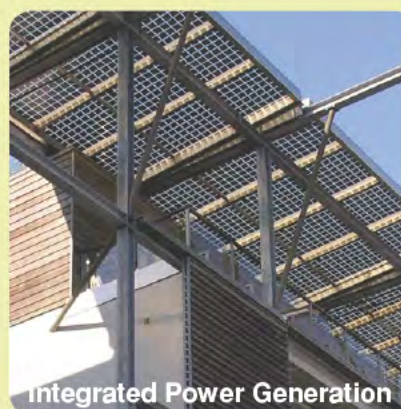


Housing Diversity - Medium Density

Balconies



Shade

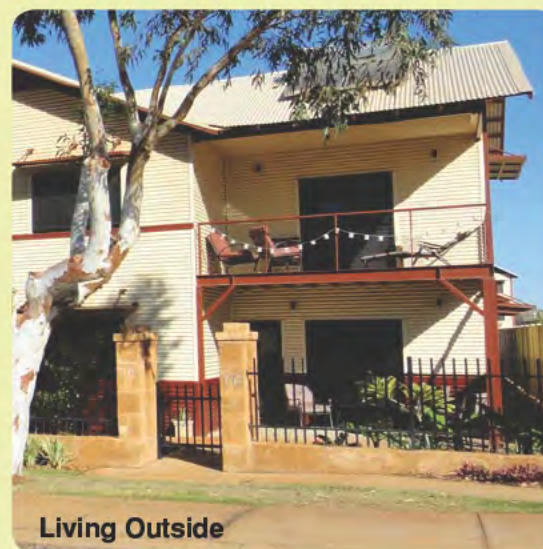


Integrated Power Generation

Architectural Vernacular - Design Features



Passive surveillance



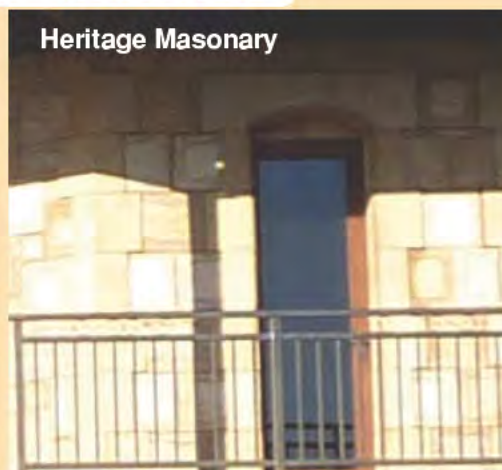
Living Outside



Architectural Vernacular - Materials



Vegetated Walkways



Heritage Masonry



Timber



Pilbara Materials

5.5 ENVIRONMENTAL PROTECTION AND CHANGE ADAPTATION

5.5.1 Conserving Biodiversity and Ecosystems

The coastal lands of Port Hedland consist of natural coastline fringed by white sandy beaches, extents of intertidal mudflats and mangroves and rocky outcrops. These coastal lands support a diverse habitat for a wide variety of terrestrial fauna, including migratory birds. Unique ecological communities such as mangrove and tidal ecosystems are interwoven within the coastal landscape. Additionally, mangroves fringe the estuarine environments of Pretty Pool, Sting Ray and Four Mile Creeks and provide natural diversity and a level of aesthetic amenity characteristic of the Pilbara region to the Port Hedland townscape.

The marine waters and outer reefs adjacent to Port Hedland lie within the North West Shelf Province and support a complex range of habitats for a diverse assemblage of marine fauna species including various species of turtles and whales, dugong and Indo-Pacific humpback dolphins.

The interior lands surrounding Port Hedland primarily consists of areas of large expanses of natural vegetation dominated by savannah grasslands with scattered shrub steppe communities. These lands, which have historically been subject to extensive pastoral leases, provide a range of habitats for terrestrial fauna species.

The Growth Plan aims to conserve and protect the areas of high biodiversity value and regionally significant ecosystems through:

- Conservation of mangrove ecosystems of very high value which occur outside designated industrial and associated port areas.
- Conservation of benthic primary producer habitat through the application of impact avoidance and minimisation principles.
- Protecting important marine turtle nesting sites through avoiding, managing and mitigating light impacts.

5.5.2 Protecting Flora and Fauna

The Growth Plan recommends specific environmental investigations which are required to be undertaken in order to identify and assess the significance of flora and fauna species and vegetation communities prior to any proposed development works being undertaken. These investigations will ensure that appropriate measures are undertaken to make sure that the abundance, diversity and geographic distribution and productivity of significant flora and fauna species and vegetation communities are not diminished by any proposed development works.

The Growth Plan aims to protect and conserve significant species and communities through:

- Undertaking appropriate flora and vegetation surveys and fauna surveys for areas of land where there is a requirement to remove native vegetation to facilitate development in order to assess the environmental values of the land.

5.5.3 Sustainable Natural Resource Management

The Growth Plan aims to foster sustainable natural resource management through undertaking actions designed to protect the landscape, landform and the identified environmental assets of Port Hedland when development opportunities are advocated. These management actions will be addressed as part of land use planning and at the various stages in the land development process. These actions will include:

- Undertaking of appropriate Coastal Process and Foreshore Assessments, should any development proposals be expected to impact upon either the existing coastal processes or foreshore reserves.
- Undertaking of preliminary Acid Sulfate Soils Investigations, where appropriate, to assess the presence or absence of Acid Sulfate Soils and recommend remedial actions to be undertaken, prior to the commencement of development works.
- Undertaking of detailed site investigations to ensure that the quality of surface and ground water resources is not impacted by development proposals.



- Provision of appropriate Water Management Strategies consistent with the WAPC's 'Better Urban Water Management' framework (WAPC, 2008) to accompany scheme amendments and development planning activities which consider any impacts to the total water cycle posed by development proposals and provide outcomes to achieve appropriate water quality objectives. The Water Management Strategies should also address water quantity parameters, incorporate mechanisms to address storm surge and flooding and advocate erosion control mechanisms.

The Growth Plan identifies a number of sites contained within Port Hedland which have been identified as having various levels of site contamination. To ensure that these sites do not pose any further risk to the natural environment or human health specific management actions proposed to address the issue of contamination have been advocated on a site specific basis.

5.5.4 Climatic Change and Environmental Risk Management

Major flooding events in Port Hedland are typically associated with a combination of storm and cyclonic rainfall activity and coastal storm surge. Heavy rainfall in interior locations can lead to localised flooding along the major river systems of the De Grey, Turner and Yule, which has the potential to impact low-lying areas, whilst storm surge events can lead to localised flooding and inundation of coastal areas.



The effects of a changing climate are expected to increase the frequency and intensity of cyclonic activity and rainfall events. This situation is likely to result in an increased risk of localised flooding in coastal localities, low-lying areas and along creek lines. Furthermore, the sustained effect of coastal processes on shorelines over long term planning periods, combined with forecast increases in vertical sea level height, points towards a dynamically changing coastline alignment. This has significant long term implications for land use planning and development in coastal areas and low lying areas prone to flooding in high rainfall events.

As highlighted in Section 3, the Port Hedland Coastal Vulnerability (Cardno, 2011) has modelled the impact of major storm surge and flooding events in Port Hedland, along with potential changes in shoreline condition over a 100 year planning period (consistent with methodology applied under WAPC State Coastal Planning Policy 2.6). The following key findings are of particular relevance to the Pilbara's Port City Growth Plan and for the future planning and development of Port Hedland:

- Areas identified at risk of storm surge inundation and catchment flooding (of varying depths) include the West End (particularly the town centre and light industrial areas), undeveloped areas of the East End, much of the Port Authority lease area, Wedgefield, Dampier Salt, Redbank, Port Hedland International Airport and much of South Hedland and surrounds (particularly that area west of South Creek).
- There is a low lying section of shoreline east of the spoil bank (approximately 6 mAHD) which potentially serves as a break through point for major storm surge flows, directing water into lower lying land behind the coastal ridge line and along Wilson and Anderson Streets.
- The Spoil Bank is inundated in both the 100 year and 500 year ARI event, with only a small portion left unaffected.
- Shoreline recession due to sea level rise and coastal processes potentially affects much of the existing developed area immediately adjacent to the coast in the West and East Ends of Port Hedland.

In light of the Coastal Vulnerability Study findings and the anticipated effects of climate change, the Growth Plan advocates the following responses and planning/development actions:

- Further planning and development investigations in flood and storm-surge affected areas (as identified in the Coastal Vulnerability Study and highlighted in the Precinct specific commentary of the Growth Plan) should demonstrate further detailed consideration of local flooding impacts and necessary mitigation/adaptation responses.
- All finished floor levels for new development shall be

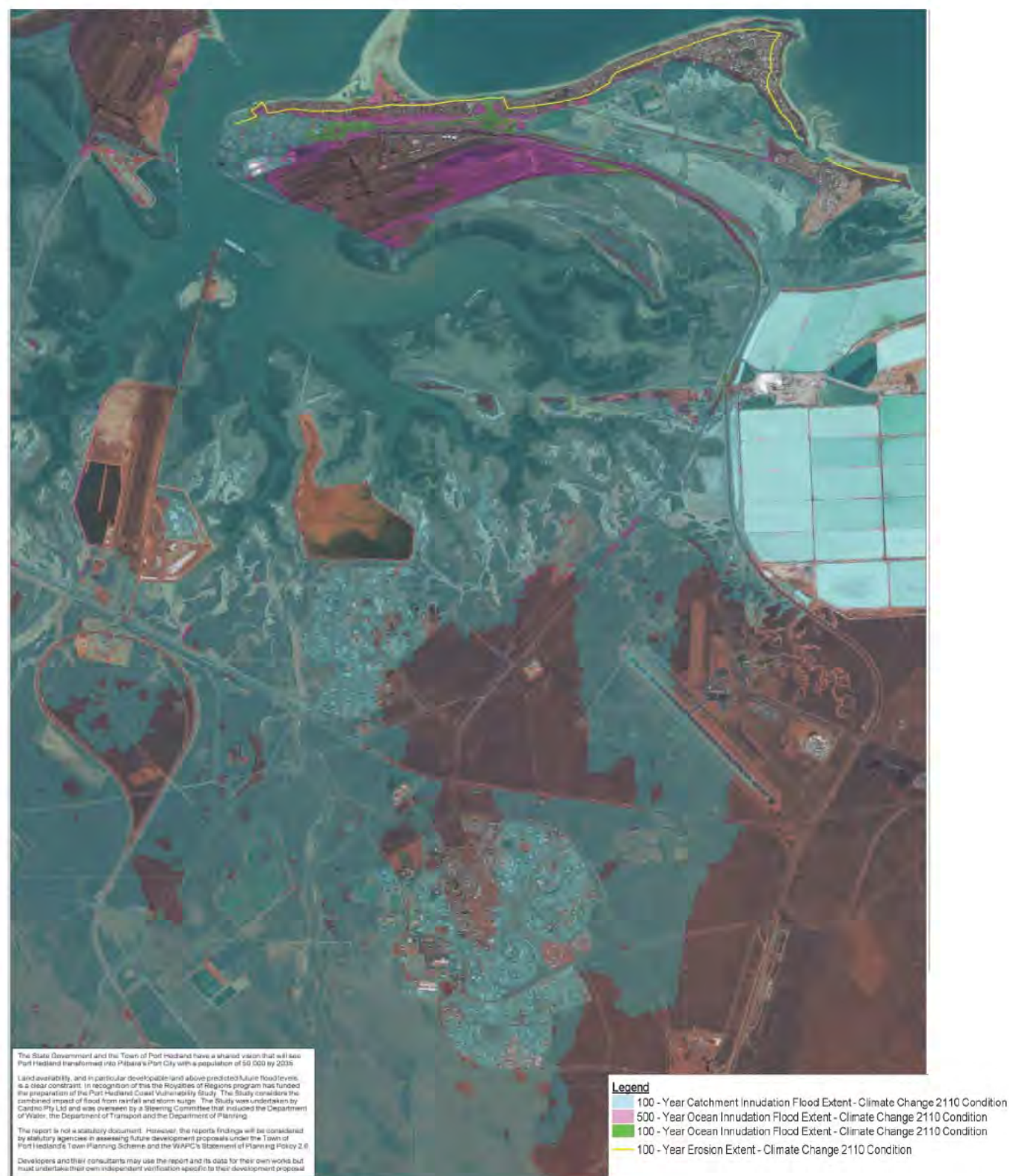


Figure 5.12: Port Hedland Coastal Vulnerability Study Map (Cardno, 2011)

required to be established at least 0.5 metres above the 100 year ARI flood level. In areas potentially at risk from coastal storm surge flooding, this should incorporate allowance for a vertical sea level rise over a 100 year planning period.

- Any further detailed assessment of coastal foreshore setbacks are required to be carried out consistent with the WA Planning Commission's Statement of Planning Policy 2.6: State Coastal Planning Policy (2003, as amended) and associated WAPC position statements. Such analysis should also include assessment of local geotechnical conditions to determine the physical composition of the site and confirm the presence/absence of underlying rock, which may potentially limit the full extent of shoreline recession.
- A risk assessment of climate change impacts and identification of potential mitigation and adaptation strategies is recommended. This could potentially include application of the newly developed Australian Green Infrastructure Council guidelines for climate change adaptation.

5.5.5 Local Environmental Amenity and Pollution Reduction

In addition to the presentation of environmental assets and change adaptation, at a local level there remains a need to ensure that the quality and amenity of existing urban areas and local environmental attractions are maintained to a high standard. Local amenity improvement programs, litter and waste schemes can all significantly help to improve the attractions of the town and increase community pride and ownership.

5.5.6 Additional Management Actions

There are a number of additional management actions acknowledged in the Pilbara's Port City Growth Plan to mitigate the effects of dust, noise and vibration and mosquitoes and midges.

Dust and noise levels in the Port Hedland have historically been above currently accepted recommended levels. The high concentrations of dust that exists with in the West End of Port Hedland presents potential health risks to the local residents. Noise and vibration from the existing and planned road and rail transport network and the airport could affect the amenity of future residents.

Mosquitoes and midges are endemic to the Pilbara, and are particularly prevalent in the wet season. The amenity of future residents could potentially be impacted by these pest species if residential land uses are proposed in locations within close proximity to known breeding areas.

The Growth Plan advocates that the following additional management actions are undertaken to ensure the health and

amenity of the local and future residential population is not adversely impacted:

- Compliance with the recommendations of the Dust Management Task Force with regard to the implementation of Environmental Management Controls and Land Use Planning.
- Undertaking appropriate investigations at the development planning phase to determine appropriate buffer controls and/or separation distances for proposed development in close proximity to existing or planned rail and/or heavy usage road networks or the Port Hedland International Airport.
- Requirement for appropriate management programs to be implemented for any proposed development likely to be adversely impacted by or in close proximity to known mosquitoes and midge breeding areas.

All the management actions, surveys, assessments, investigations or strategies that have been identified as being required to be undertaken to achieve the outcomes of the Growth Plan are to be consistent with the requirements of the state regulatory authorities and the Environmental Protection Authority.

BUILDING AND MAINTAINING INFRASTRUCTURE AND TRANSPORT CAPACITY

5.5.7 Water Supply

As indicated previously, the supply of bulk potable water to the Town of Port Hedland is provided through the Water Corporation which operates the Port and South Hedland Water Supply Scheme. The scheme is reliant on groundwater extraction from the Yule and De Grey rivers which is piped to a central facility near Wallwork Road and North Circular Drive in South Hedland, and currently produces 13.5 gigalitres of potable water a year. The Water Corporation have advised that the 13.5 gigalitres is currently fully allocated.

Key strategies to overcome the water supply constraints are threefold:

- Reduce the reliance on potable water where it can be substituted with a non-potable supply;
- Establish the West Canning Basin;
- Investigate bore supply for potable water in the short term, particularly for short stay (strata) accommodation; and
- Adoption of maximum water efficiency principles for existing development and encouragement of water efficiency outcomes for all new development.

In relation to items 1 and 2 above, the State Government recently announced an additional five gigalitres of potable water per

year is to be allocated from the Yule and De Grey aquifers (an additional 2GL/yr and 3GL/yr respectively) to the Port Hedland Water Supply Scheme. An additional ten gigalitres per year of non-potable 'fit for purpose' water has also been reserved from the West Canning Basin for industrial use. These initiatives will help to address short to medium term water requirements for domestic and industrial purposes, with necessary infrastructure upgrades planned for completion in 2013-14.

In the medium to long term, it would be desirable if water for industry growth was provided by a non-potable scheme, which may include some wastewater recycling, dewatering, and stormwater harvesting.

Critically, however, increased water allocations (potentially up to 50 gigalitres per year) from the West Canning Basin are very much a medium term proposition, and in the short term measures must be taken to reduce the reliance on potable water supplies where it can reasonably be substituted with a non-potable supply. By utilising a Strata Scheme, bore establishment and treatment costs would effectively be subdivided among the many households and the Strata Body would then also assume on-going responsibilities for maintenance.

Equally, a Strata Scheme could manage water re-use systems, such as grey and black water treatment, to reduce the potable water supply and potentially even reduce connection to the deep sewer in the short term.

The Growth Plan also recognises the potential opportunity for a non-potable 'third-pipe' scheme for industry and landscape irrigation use. While this would require further detailed investigation at the development stage, the Town of Port Hedland has expressed an interest in developing a local Water Service Provider capability, which it would own and manage.

Potable Water for Residential and Industrial Use

The short term goal for potable water is to free up water resources from current residential and industry to allow housing expansion. New housing acts as both catalyst for demographic diversification and fulfils strategic industry's need for transit workers accommodation. At a policy level the water industry is starting to explore the concept of providing both a potable and non-potable water supply. The non-potable water supply will be fit-for-purpose, which should provide a cheaper product for industry.

The longer term goal is to have a secure supply of water for economic use. To allow economic diversification to occur, it may be necessary to provide an allocation of water for new business and industry to avoid strategic industry 'locking up' all the water (purchasing power or not allowing access to supply networks). This is not too dissimilar to the state government's 15% allocation of natural gas supply for exclusive use by the domestic gas market.

Energy and water efficiency opportunities exist with incumbent industries in their operations and existing housing stock. Financial investment in energy and water audits and retrofits of industry and housing stock should be considered as a short term solution to free up potable water for housing. This sort of policy was enacted successfully by the NSW Government to provide water while their desalination plant was under construction, which avoided the city of Sydney running out of water.

5.5.8 Wastewater

The Water Corporation received funding in January 2011 (\$106m) to relocate the Port Hedland Wastewater Treatment Plant to a combined upgraded facility in South Hedland by 2014.

The expanded South Hedland plant is expected to provide sufficient capacity to accommodate a future population in Port Hedland of up to 50,000.

There is currently capacity in the wastewater system within Precinct 1, and the Water Corporation is presently upgrading the existing pipe network to accommodate future 'infill' development within the Precinct. Within Precinct 2, where significant expansion of residential development is proposed, the Water Corporation has advised that there is capacity in the wastewater system within this precinct to accommodate the additional development.

Within the key growth precincts of South Hedland existing wastewater infrastructure is limited. Moreover, given the low lying nature of these precincts, any wastewater infrastructure extension will likely need to accommodate pump stations to get the wastewater to the treatment plant to the west.

For future density (Strata) and TWA developments, the short term constraint to the provision of a reticulated wastewater supply could be addressed through on-site treatment methods, such as Aerobic Treatment Units (ATU), to treat wastewater until a reticulated supply can be connected to the upgraded wastewater treatment plant in South Hedland. Treated water from ATUs could reasonably then be used for non-potable purposes such as landscape reticulation.

5.5.9 Stormwater and Earthworks

The Town of Port Hedland is subject to cyclonic activity typically occurring from December through to March. Such activity makes the Town of Port Hedland susceptible to storm surge and flooding. Substantial fill will be required in key growth areas, notably Precinct 2, to ensure future developments are above storm surge and flooding levels or alternatively development sites should be identified where the existing levels are above flood levels.

Due to the intensity of storms, pit and pipe drainage systems are not typically used within the Town of Port Hedland. This is due to the large pipe sizes required for storm events and the high

maintenance costs associated with keeping a pit and pipe system clean and operational.

Co-ordination of a regional / district water management planning (in accordance with Department of Water guidance) would assist in ensuring planned drainage outcomes are applied across the precincts rather than ad-hoc treatments that could result in drainage problems downstream.

As previously noted in response to modelled flooding and storm surge events, all finished floor levels for new development shall be required to be established at least 0.5 metres above the 100 year ARI flood level. Earthworks and fill have typically been used in the past to address minimum floor level requirements, and this will likely remain the case for future development areas in the absence of acceptable/feasible alternatives (e.g. built form solutions). As part of detailed planning investigations for the East End area, LandCorp are currently investigating the feasibility of both fill and built form solutions to meeting these development requirements, the findings of which may also have wider application and relevance to other priority development areas throughout Port and South Hedland.

5.5.10 Power

Power supply within the established areas of the Town of Port Hedland are supplied via a high voltage supply scheme network of 22kV which is made up of a combination of overhead lines and underground power cables fed from by one of the three zone substations located within the Town.

The sub-station in Port Hedland has minimal scope for upgrade, while the substations in Wedgefield and South Hedland still have the ability to be upgraded. To support further population growth, it is estimated a minimum of an additional three zone substations will be required.

Horizon Power has indicated that they have identified strategic locations for zone substation sites and may also undertake a land swap should these sites fall within a proposed development. We are currently waiting on the locations of these sites to within a 25km radius.

It should be noted that Horizon Power has undertaken their own planning forecasts within the region and have determined the ten year growth forecasts to generate between 30 - 45 MVA. The population growth forecasts in the Growth Plan suggests that Horizon Power will need to make provision for a greater than forecasted power supply.

Potential strategies for meeting power supplies in the future include a combination of:

- Investigation of tidal power generation to supplement Horizon Power supply; and

- Installing new high voltage feeders to ease existing heavily loaded feeders.

In Precincts 1 and 2, a tidal power generation plant supplying power to these precincts could alleviate demand on the existing Horizon Power system in the medium to long term. A similar tidal power generation system based in Derby has been estimated to produce in the order of 48 MW which equates approximately to a power supply for 2000 residential lots.

For the key precincts in South Hedland power supply is at or nearing capacity. Existing power infrastructure is at capacity and therefore a new zone sub-station/s will be required in the vicinity. Ideally, this sub-station/s should be located to the south of South Hedland, allowing for the substantial power growth expected in the area, and to support the surrounding areas with their growth.

The programming of any power infrastructure upgrades and new zone substations will be dependent on the load take up areas.

5.5.11 Gas Supply

As previously indicated, despite being located in a region that provides a significant proportion of Western Australia's domestic gas supply, Pilbara towns, including Port Hedland, have no reticulated gas supply network. The WA Gas Networks have indicated that there are no current plans to provide reticulated gas to the Town of Port Hedland.

Provision of gas reticulation is typically only viable when provided to a suitable industry, otherwise using gas bottles remains the most practical and feasible option in the short to medium term. In the long term, however, the provision of a reticulated gas network remains a key ambition for the town as it grows into a sustainable, regional City capable of providing the full range of services expected and demanded by urban residents.



5.5.12 Telecommunications

Initial advice from NBN Co. indicates that in the short term supply of high-speed telecommunications services to existing areas will be via satellite. Whilst necessary pit and pipe infrastructure (able to accommodate new fibre cabling) will be installed as part of the civil works for major new subdivisions, the full rollout of fibre networks in regional centres such as Port Hedland remains a medium to long term proposition as part of the national rollout.

5.5.13 Recycling and Waste Management

At present, waste management and disposal in Port Hedland is handled by the South Hedland's Class 2 Landfill facility, as well as the Wedgefield Industrial Waste Incinerator. There is no municipal recycling scheme in operation within the Town of Port Hedland. There are currently no plans to decommission existing waste disposal facilities in the short to medium term.

As Port Hedland continues to grow and develop as the Pilbara's Port City, waste volumes will continue to grow. Given the location of the existing waste disposal facilities in close proximity to established areas of Wedgefield and South Hedland, as well as urban expansion areas around South Hedland, there will be a need to consider the long term sustainability of retaining these facilities in their current locations. In this regard, opportunities exist to consolidate and significantly improve the capacity, efficiency and sustainability of waste disposal operations, potentially including the establishment of local recycling schemes. Whilst full assessment of all alternative site options would be required, the Growth Plan acknowledges that the area around Newman Turnoff (to the south

west of South Hedland) could potentially accommodate a waste transfer facility and/or other complementary uses in the long term.

5.5.14 Pedestrian and Cycle Networks

The *Port Hedland Cycle Plan (2008)* outlined ways to improve the quality of paths and road networks for walking and cycling, and "to make cycling and walking within the Town safer, more convenient and hence an attractive alternative means of transport and form of recreation".

The Cycle Plan identified some notable gaps in the existing network and facilities including:

- Link connecting the existing coastal path with the Port Hedland Town Centre (West End);
- Extension of the coastal path along Dempster Street and Goode Street to Cooke Point;
- Links between Port Hedland, Pretty Pool and South Hedland;
- Installation of bike lanes;
- Upgrade of existing footpath surfaces; and
- Installation of bicycle parking rails at appropriate locations (U-rails recommended).

The Growth Plan recommends further enhancements to the network. In Port Hedland, this primarily includes an extension of the path network in Pretty Pool.



Figure 5.13: Port Hedland Proposed Path Network.

Although South Hedland currently has a more comprehensive and integrated network of pedestrian and cycle paths and facilities, additional improvements would be desirable, including an extension of existing links to the schools. There are no existing or proposed facilities within Wedgefield. These should be provided, albeit off-road given the amount of heavy vehicle movements within the estate. The verges are considered wide enough to accommodate this.

In addition, there are no pedestrian or cycle facilities in Wedgefield or within the Airport Precinct. Off-road facilities should be provided in these precincts.

To encourage the community's use of the proposed network other initiatives are recommended to complement the physical infrastructure, namely:

- Preparation and implementation of Green Travel Plans (TravelSmart Plans) for new and existing developments;
- Encouragement of walking and cycling to school through providing education programmes and / or walk / cycle to school buses;
- Creating and advertising cycle route plans (including classifying streets into poor, medium and good riding environments);
- Providing cycle hire facilities at key places such as the visitors centre and the Town Centres;
- Providing cycle servicing workshops and / or safe riding courses; and
- Encouraging workplaces to support cycle and walk to work initiatives.

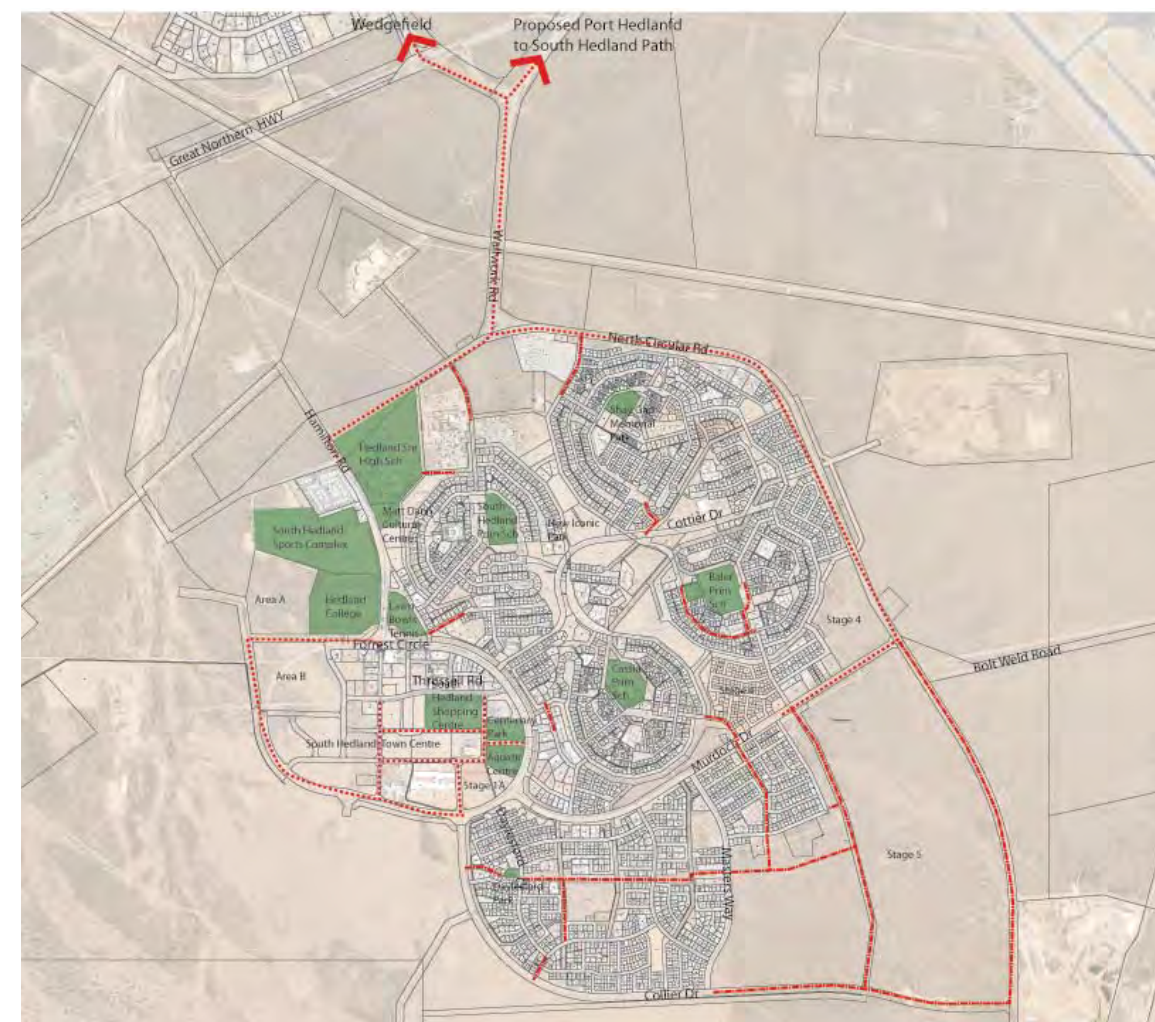


Figure 5.14: South Hedland Proposed Path Network.

5.5.15 Road Networks

The strategic roads servicing the Town are generally good and are highly utilised by heavy vehicles. However, the proposed increase in the Town's population over the next 20 years, coupled with the construction of the outer harbour will have an adverse impact on the Town's road network. In anticipation of the growing population and increased mining activity, the Town of Port Hedland and Main Roads WA have a number of planned and committed upgrades to the existing road network, including:

- Wallwork Road bridge project comprising the design and construction of a four lane bridge over rail tracks;
- Developing a designated truck storage area and transport hub at Wedgefield;
- Upgrading all road bridges into Hedland to allow for increasing truck use in terms of size, weight and frequency; and
- New road connection into South Hedland from Karratha to bring tourism traffic direct into town centre.

As part of the Growth Plan, a high level traffic analysis was undertaken based on the Precinct Plans, using a spreadsheet model, the existing traffic flow data and the proposed future land uses. It should be recognised that traffic forecasting at a strategic level does have limitations, and that forecast traffic volumes should be taken as only indicative of the likely traffic that the road will carry.

Having regard to the proposed Precinct development scenarios, population growth projections and consideration of the traffic analysis in relation to the existing road network, the Growth Plan highlights the following:

- If all local light vehicle traffic is re-directed to Morgan / Anderson Streets, then Anderson Street will require two lanes in each direction (through Precinct 1) by 2021.
- Wilson Street Port Access Road may require upgrading to two lanes in each direction throughout Precinct 1 and 2 by 2016 and 2021 respectively. Detailed investigations and designs for potential upgrades should be carried out in the next two years.
- The extension of Anderson Street in Precinct 2 is forecast to reach its one lane (in each direction) capacity by 2021. However, rather than widen the road, traffic will naturally re-direct itself to use the Athol / McGregor Street corridor.
- The Clarke Street extension (in Precinct 2) is predicted to reach its one lane capacity by 2021. However, traffic will be able to use Cooke Point Drive as an alternative, reducing the need for road widening.

- In Precinct 6, Pinga Road may reach its one lane capacity by 2016. However, the construction of a new parallel road north east of Pinga Road should enable the redirection of some traffic, reducing the need to widen the road.
- In Precinct 7, the two airport access roads may reach their one lane capacity by 2021. To reduce the impact of the proposed 7,000+ bed TWA facility on the surrounding road network and thus the requirement of unnecessary road upgrades to two lanes in each direction, parking at the accommodation should be limited as far as practicable. Alternatively, workers should be conveyed by bus to work sites and the airport; retail and leisure facilities should be integrated on site.

In South Hedland, the traffic analysis has highlighted the following:

- Hamilton Road and Forest Circle may require upgrading to two lanes per direction by 2026.
- Throssell Road may require upgrading to two lanes per direction by 2016.
- Wallwork Road may require two lanes in each direction.
- Murdoch Drive may require two lanes in each direction by 2026.

In addition to various road improvement schemes required, increased provision of driving schools is required (in suitable locations or run as home businesses) to ensure prospective new drivers are able to access training and overcome connectivity barriers to education, employment and key services.

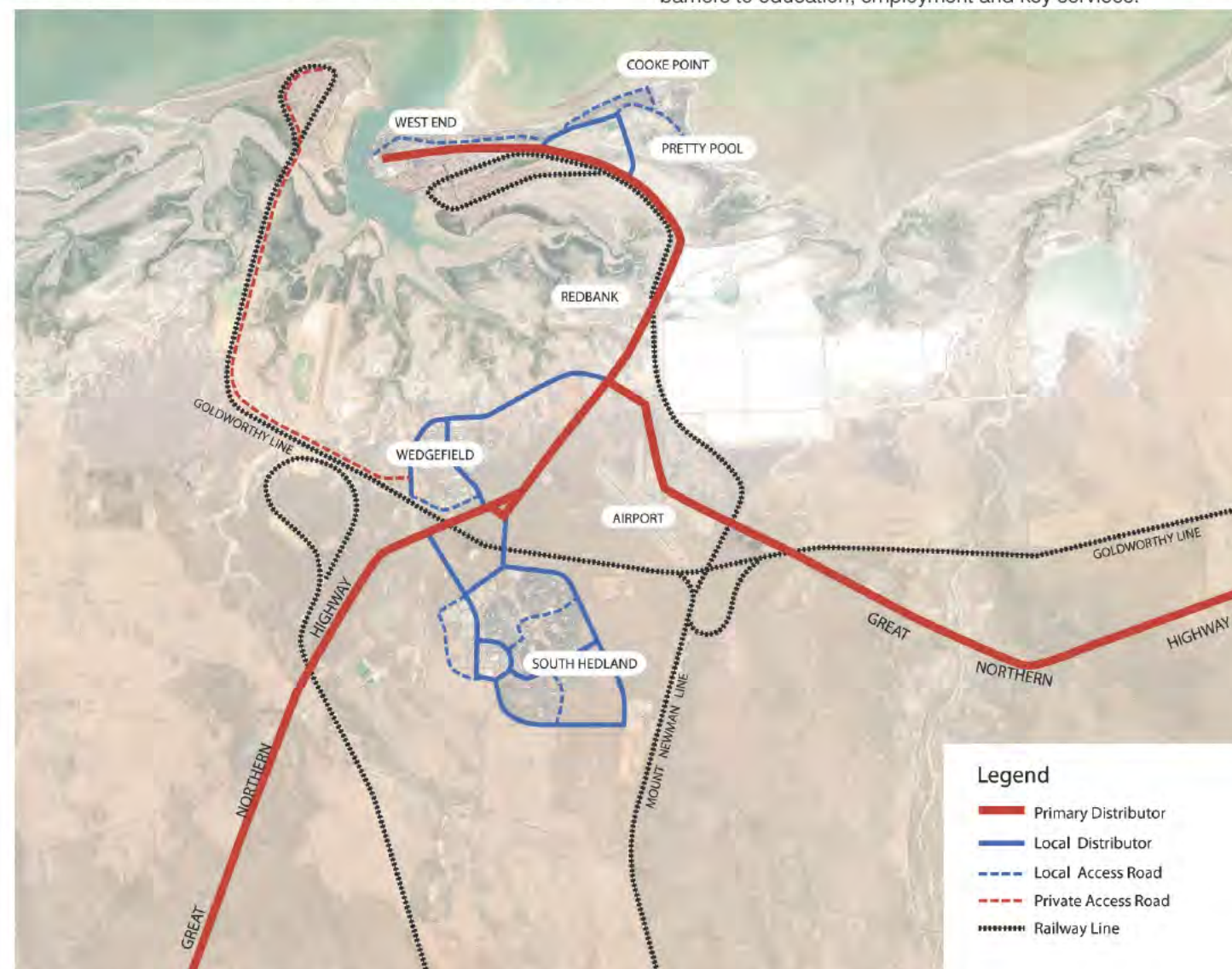


Figure 5.15: Road Upgrades

5.5.16 Public Transport Networks

Within the Town there are three public bus routes operated by Hedland Bus Lines. While these are considered to provide good local coverage of both Port and South Hedland, as well as a connection between the two, services are infrequent.

The Growth Plan advocates the development of a public transport strategy to coordinate and facilitate the expansion of existing services as well as more frequent services to encourage use of public transport over the private vehicle and maintain the capacity and efficiency of local road networks. Importantly, there is little information available about the existing services. To this end, using the Town's and visitor centre's websites to advertise and provide information on bus routes and timetables should be pursued.

Of particular priority and importance is the need to increase service provision and connectivity between key activity centres and centres of population. In this regard, opportunities to provide high frequency services connecting the west end, east end, Wedgefield and South Hedland (city centre and residential areas) should be pursued, as well as services connecting to the Boodarie Strategic Industrial Area and to/between temporary workforce accommodation sites (where there are significant populations of working people requiring reliable transport connections to employment sites) with population centres and key worker accommodation.

Opportunities also exist to introduce alternative transport services, such as Demand Responsive Transport (DRT) which combines traditional bus services with flexible taxi services. One example of DRT is the existing Port Hedland Airport Shuttle Bus, transferring passengers from all incoming flights to their destinations. The provision of DRT services also presents considerable opportunities and for local organisations and community groups to operate their own services, thereby further enhancing local business capacity and employment opportunities.

DRT services have witnessed failure when their demand is too high. Fixed scheduled buses should be run at high demand times such as peak hours, with DRT used on the same route during non-peak hours. As the population grows and more routes become more popular, DRT services could be replaced with fixed schedule buses. Running DRT services on future bus routes will allow for easy transition between the two.

There are currently no public or passenger rail services or facilities. Given the isolation of Port Hedland and notwithstanding the forecast increase in population, a local passenger rail service is not considered to be a financially viable proposition in the foreseeable future. A feasibility study into passenger rail service options should be undertaken in the future to determine the viability of such a service for Port Hedland.



Figure 5.16: South Hedland Proposed Bus Network.

5.5.17 Freight and Logistics

Port Hedland's close proximity to substantial mining activity in the Pilbara and its coastal location make it a regional transport hub. However, isolation and the high reliance on the road network and diesel train system to deliver goods to the area may become costly in the future with rising fuel prices. The region will need more resilient transport links for its long term prosperity.

The projected increase in the Town's population as well as the increase in port activity will increase the efficiency and safety issues. Opportunities to produce goods locally and opportunities to transport more material to the port by rail should be investigated to reduce road movements.

To ensure efficiencies in the freight and logistics network are maintained in the long term, the feasibility of an Intermodal Facility on the outskirts of Port Hedland should be investigated. Such a facility would allow goods and services from trucks to be transferred to rail.

5.5.18 Safeguarding and Enhancing Strategic Assets

The Town of Port Hedland contains a number of strategically significant assets, notably the Port, the Airport and the resource related networks.

In the case of the Port, the Growth Plan implicitly recognises the need to safeguard the Port as a key strategic asset and acknowledges the longer term expansion plans of the Port, as detailed in The Port Hedland Ultimate Development Plan (PHPA, 2007).

Similarly, the Growth Plan acknowledges through the precinct planning process the need to safeguard the Airport as a long term strategic asset, and to ensure that future development adjacent to the airport actively support and complement the current land uses and activities and the future proposals prescribed in the recently adopted Airport Masterplan.

In the case of the rail network, the Growth Plan recognises the need to safeguard current and future rail infrastructure. Importantly, it recognizes the potential adverse impacts of noise and vibration resulting from more intensive operations in the future. The Growth Plan makes provision for wide buffers in those Precincts adjoining existing rail corridors where future residential development is proposed e.g. Precincts 2 and 13.

5.6 GROWTH PRECINCTS FOR PILBARA'S PORT CITY

Pilbara's Port City Growth Plan will be implemented through more detailed work that has been undertaken below the 'Growth Framework' level discussed earlier in this document. Sixteen precincts have been identified across Pilbara's Port City encompassing all established and expansion areas, together with the outer lying areas of the municipality of Port Hedland.

Each precinct has its own place within Pilbara's Port City, its urban or industrial character and therefore the influences that will shape its development. Use of the precincts is intended to provide a guide for future development and has been used as a basis for forecasting the manner in which our City will grow at a local level.

The precincts are a useful tool to communicate growth, plan for infrastructure and facilities and respond to supply versus demand. Ultimately, work will be required to see development in these areas take place, including local level development planning and detailed site planning. Variations to the precinct plans in the way our city grows will occur as new opportunities and challenges are faced, but importantly, the Growth Plan provides this framework for expansion and planning.

Figure 5.17 illustrates the 15 precincts across the municipality of Port Hedland, with Precinct 16 being the outer lying areas.

The aim of this section is to provide the basis for future detailed development planning at the next level below Pilbara's Port City Growth Plan. The Precinct Plans are accompanied by a suite of land use, built form and development related information as follows:

- Key Figures
- Indicative Built Form Typology
- Summary of Development Outcomes
- Land Use Structure (Precinct Plan)
- Implementation Plan lead in material

Growth Precincts:

- Precinct 1 – West End
- Precinct 2 – East End Urban Village
- Precinct 3 – Port Authority & Finucane Island
- Precinct 4 – Redbank
- Precinct 5 – Dampier Salt and Surrounds
- Precinct 6 – Wedgefield Industry & Logistics
- Precinct 7 – Airport & Surrounds
- Precinct 8 – Pippingarra
- Precinct 9 – Western Gateway
- Precinct 10 – South Hedland West
- Precinct 11 – City Centre
- Precinct 12 – South Hedland East
- Precinct 13 – Eastern Gateway
- Precinct 14 – Southern
- Precinct 15 – Boodarie
- Precinct 16 – Port & South Hedland Surrounds

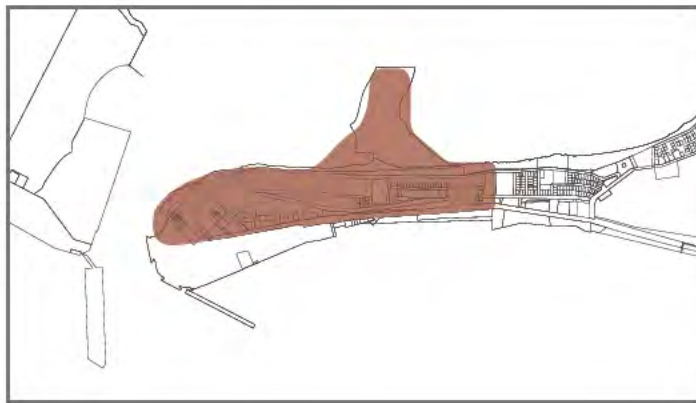


Figure 5.17: Precinct Location Plan

5.6.1 Precinct 1 – West End

Precinct Statement

“The West End is the Port City’s soul – perhaps like Fremantle to Perth, it is a unique and interesting place. It supports the growing port activity, yet remains people friendly and accessible. It is busy with day time workers, many of whom leave their offices to enjoy lunch in outdoor cafes and bars. As evening arrives, the West End transforms into a place popular with tourists observing Australia’s largest tonnage port and the coastline, while travellers and the wider city population enjoy the many cultural, dining and entertainment activities.”



Key Figures (ultimate)

Area:	260 (ha) (indicative based on precinct boundary).
New Dwellings:	Refer Table at Figure 5.18.
New Short Stay (rooms):	982 (1094 total).
New Transient Workforce Accom:	0 (0 total).
New Retail Floorspace (sqm):	9,768 (19,213 total).
New Commercial Office F'space (sqm):	17,999 (23,814 total).
New Light/General Industry (ha):	0 (25 total).
New Strategic Industry (ha):	0 (0 total).

Summary of Influences

Landscape, Heritage & Environment

- Historic land uses linked to early development.
- Coastal foreshore environs and harbour.
- Primacy of the Port and its operations.
- Indigenous Heritage: Two Mile Ridge, a nationally significant site occurs within the area. Various sites of heritage significance.
- Non-indigenous Heritage: A range of historic items occur throughout Precinct.
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.
- Noise and dust emissions particularly in proximity to existing developed urban areas.

Existing Land Use

- Location of Port Hedland Town Centre.
- Commercial/office uses and retail 'main street'.
- Residential development, hotels and other accommodation.
- Boat launching facility, Park, Tourist Centre.
- Operating Port/Industrial uses.

Current or Planned Projects

- Small boating facility/harbour planned for Spoilbank, with associated accommodation facilities.
- Commercial developments along Edgar and Wedge Streets.
- Mixed Use developments.
- Landscape amenity improvement works.



- West End Art Space (combined exhibition, function and meeting venue) and Wedge Street Improvements.
- Permanent outdoor entertainment venue.

Precinct Plan Summary

Activities & Land Use

- Port Hedland cultural/commercial core.
- Short-stay accommodation limited residential development.
- Port small boating facility and associated accommodation facilities.
- Light industrial uses to the south of Anderson Street including potential commercial land uses (particularly along Anderson Street).
- West end mixed use area north of Anderson Street promoting forms of retail development as well as short stay accommodation.

Community Development

- Coastal parklands nodes/lookouts, landmark waterfront development.

- Activation of the West End through continued cultural events, fostering of arts, education, tourism and entertainment uses.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Coastal hazard risk management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- Programs for continued fostering arts & culture events, and permanent facilities.
- Traffic segregation into Port between heavy and light vehicles.
- Ongoing dust & noise monitoring, and management of land use separation (including ongoing monitoring of dust and noise levels east of Acton Street and potential reviews of land use appropriateness).



- Precinct encapsulated in TPS5 as a 'Development Plan' area.
- Preparation of a detailed Development Plan for Precinct 1 including cultural, civic, restricted residential, port uses and short stay accommodation land uses.
- Development and land use staging (including residential restrictions) relative to development timeframes for neighbouring precincts (particularly Precinct 2 - East End Urban Village).
- Detailed design feasibility investigations into widening of Wilson Street Port Access Road (and potentially Anderson Street) to two lanes in each direction.
- Encouragement of high quality development along Anderson Street as primary entry road into West End cultural/commercial core for non-industrial traffic.
- Detailed investigations to identify and protect indigenous and non-indigenous heritage sites.
- Clear way finding and direction of large tourist vehicles to appropriate set down and parking areas in the cultural/commercial core.
- Existing land use rights of residential landowners respected, whilst promoting increased awareness of future land use permissibility and development potential through consultation, development guidelines, local planning frameworks etc.
- Promotion of awareness of potential dust, noise and light impacts in the West End due to proximity of strategic port operations.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

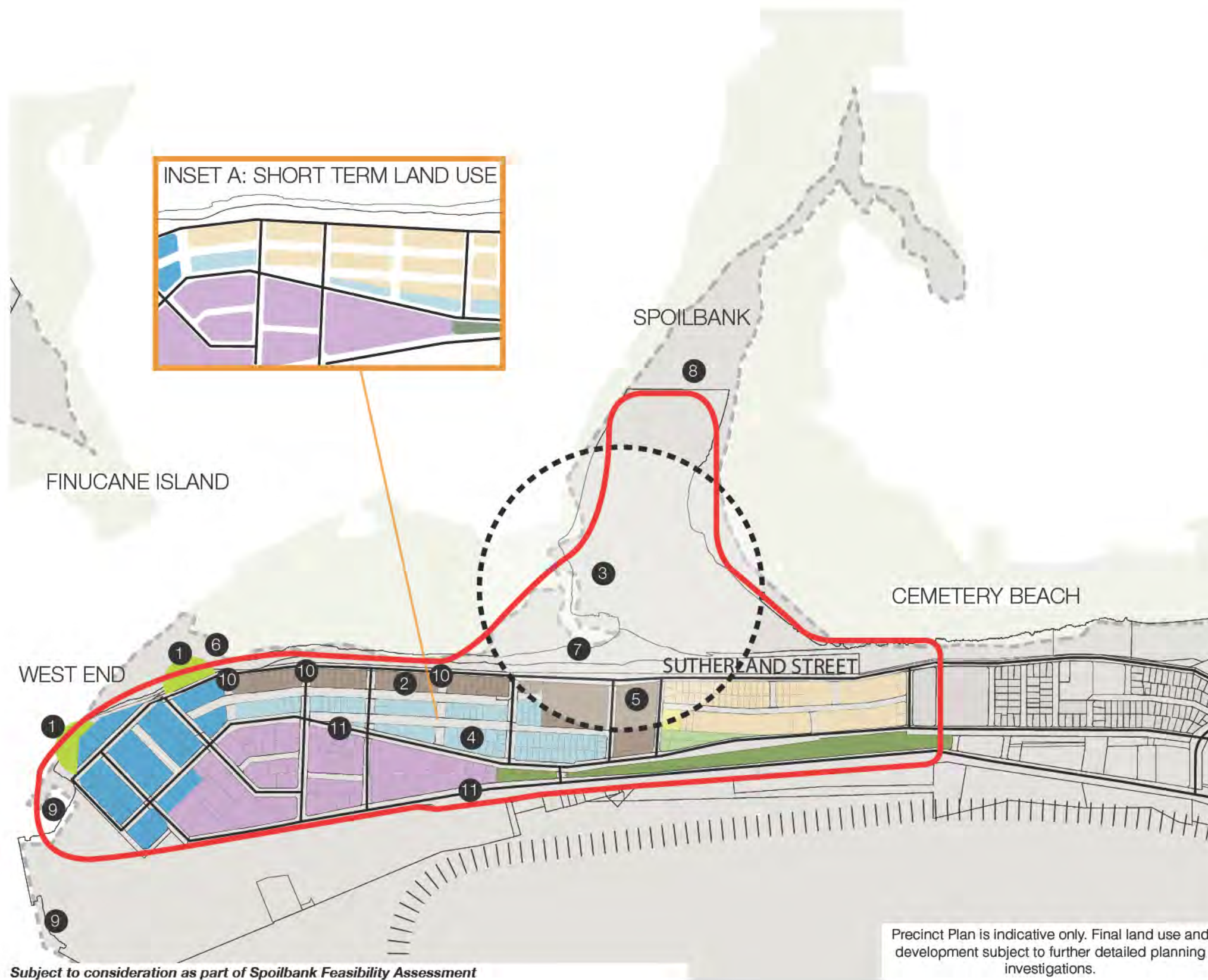
Scenario	Area	Area Dwelling Capacity	Total Precinct 1 maximum dwelling capacity	Notes
Present Day	West of Acton Street	861 (approx. 380 at present)	1510 (approx.450 at present)	At present, permanent residential dwellings are permitted at densities of up to 'R30' east of Acton Street and 'R50' west of Acton Street. There is currently an estimated 450 existing dwellings in the precinct (derived from the Town of Port Hedland Housing Capacity Study, GRA 2010). The recently gazetted 'West End Residential' zone permits limited residential development (non-family style housing) at densities of between R30 and R80. This scenario is acknowledged as a 'Short Stay Accommodation' in the Precinct Plan on Page 87 .
	East of Acton Street	649 (approx. 70 at present)		
Ultimate/Long Term Growth Plan Scenario	West of Acton Street	0	649*	The Growth Plan advocates an ultimate/long term land use scenario retaining a 'West End Residential' land use east of Acton Street, with no permanent residential (short stay accommodation only) west of Acton Street. This results in a maximum dwelling capacity of 649 for Precinct 1, wholly contained in that area east of Acton Street.
	East of Acton Street	649*		
* Note: For land use and infrastructure modeling purposes, the Growth Plan assumes approximately 450 dwellings in Precinct 1 under the ultimate land use scenario (effectively no net increase in total dwelling numbers compared to the present day scenario). This represents a midpoint between R30 (254 dwellings) and R80 (649 dwellings) capacity estimates for the area east of Acton Street, acknowledging servicing constraints, tenure/land ownership fragmentation, redevelopment take-up rates etc.				

Figure 5.18: Precinct 1 Dwelling Capacity Scenarios



Precinct Highlights

1. Iconic building overlooking waterfront/port.
2. Reinstatement of Sutherland Street (long term).
3. Spoilbank development opportunities (coastal access, marina and accommodation).
4. Business incubation opportunity.
5. Hotel site.
6. Richardson Street boat ramp to be closed as alternative options are developed.
7. Yacht Club/RSL facility.
8. Spoilbank - northern portion to be retained for informal recreation purposes.
9. Tugboat/port operations precinct.
10. Coastal access/lookout.
11. Upgraded Wilson Street Port Access Road and Anderson Street and segregation of traffic from light vehicles.



RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

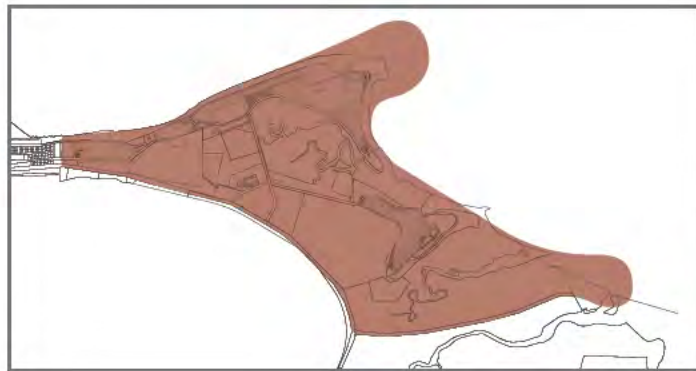
OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.2 Precinct 2 – East End Urban Village

Precinct Statement

“The East End Urban Village is Port Hedland’s primary residential area. The area, encompassing Cooke Point and Pretty Pool, offers significant housing density and diversity together with sport and recreation opportunities, and school and community facilities. At its core is a retail and mixed use village offering a range of local convenience as well as dining and entertainment choices. Strong links to the coast and mangrove environs have been established offering residents and visitors alike a closer connection with the landscape.”



Key Figures (ultimate)

Area:	400 (ha) (indicative based on precinct boundary).
New Dwellings:	up to 5,643 (6,828 total).
New Short Stay (rooms):	491 (802 total).
New Transient Workforce Accommodation:	364 (814 total).
New Retail Floorspace (sqm):	22,344 (28,292 total).
New Commercial Office F'space (sqm):	4,500 (4,811 total).
New Light/General Industry (ha):	0 (0 total).
New Strategic Industry (ha):	0 (0 total).
New Schools:	1 PS (4ha), 1 HS (12ha).
New Sport Facilities:	1 District Recreation (23ha).

Summary of Influences

Landscape, Heritage & Environment

- Mangrove environs.
- Turtle Nesting at Cemetery beach and Pretty Pool beach.
- Pretty Pool and coastal foreshore environs.
- Original airfield on racetrack land, and racetrack history also recognised.
- Indigenous: Significant sites such as: Lock Hospital; Pretty Pool; Two Mile Ridge; Point Cook midden.
- Non-Indigenous: Including Racecourse; Old Port Hedland Cemetery; Railway Station; Don Rhodes Museum; Pretty Pool.
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.



Existing Land Use

- East End local Centre (Boulevard) and second centre in Cooke Point.
- Primary residential areas of Port Hedland including Cooke Point, Pretty Pool.
- Tialka Boorda community.
- Other Key Land Uses including:
 - Port Hedland Turf Club, Sport Facilities & Pony Club.
 - Waste Water Treatment Plan (WWTP)/ Telstra Site.
 - Hospitality/Tourism sites.
 - Local Primary schools, Council offices.
 - Coastal dual-use path/ parks / public art/ foreshore.

Current or Planned Projects

- WWTP relocation.
- Telstra Site and adjoining land redevelopment planned.
- Medium Density / Mixed use sites (two) at Pretty Pool.
- Landscape amenity improvement works.
- Old Port Hedland Cemetery upgrade project.

Precinct Plan Summary

Activities & Land Use

- Neighbourhood centre serving Port Hedland .
- Mixture of high, medium density residential.
- Protected mangrove environs – reflecting landscape character.

- District Sporting Fields.
- Landscape Buffer / Traffic separation to industrial uses/rail.
- Recognition/protection/education of flatback turtle nesting areas.

Community Development

- Coastal parklands nodes/lookouts, relationship to landscape through mangrove environs & public facilities.
- Activation of neighbourhood and local centre through art, events and dining uses.
- Coastal access improvements.
- Passive recreation and landscape protection.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

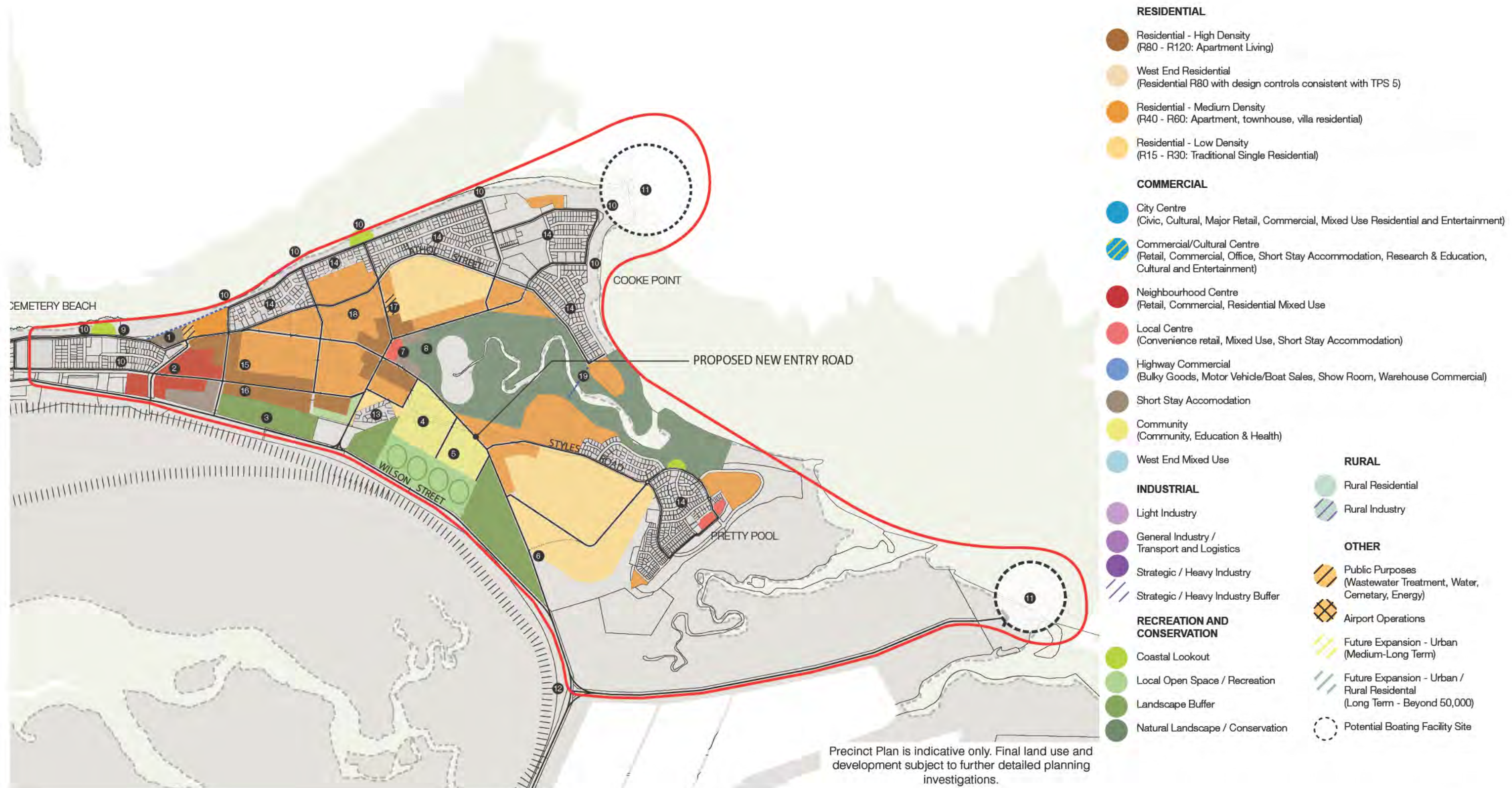
- Development will be subject to light spill compliance and related conditions for flatback turtle nesting sites.
- Coastal hazard management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Hazard risk management, assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- Facilitate higher density within close proximity to a new local centre once the Waste Water Treatment Plant (WWTP) decommissioned.
- Precinct encapsulated in TPS5 as a 'Development Plan' area.
- Development Plan to be prepared.
- Design Guidelines or Detailed Area Plans to address site, architectural style, climate and built form recommendations.
- Detailed design and feasibility investigations into widening of Wilson Street Port Access Road into two lanes in each direction.
- Discussions with MRWA/ToPH to establish early segregation of Port and residential traffic.
- Iconic development sites subject to relocation of existing use.
- No residential occupation to occur within existing 500m WWTP odour buffer until such time as the WWTP has been decommissioned.
- Progression of community layout plans for Tialka Boorda Aboriginal settlement.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.





Precinct Highlights

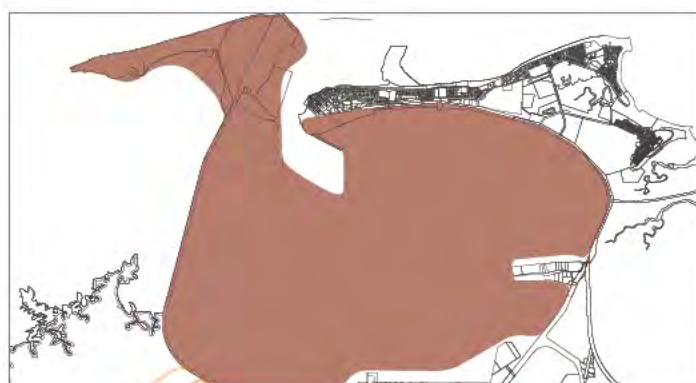
1. Mixed use/short stay iconic development site.
2. Neighbourhood centre providing primary Port Hedland mixed use/retail opportunities.
3. Setback to rail corridor subject to detail investigation, incorporating district recreation.
4. High School.
5. Primary School.
6. New entry road with direct connection to coastal drive.
7. Local convenience shopping/cafe/restaurant with 'mangrove experience'.
8. Short-stay accommodation next to mangrove environs.
9. Coastal drive (slow speed environment).
10. Coastal park/lookout.
11. East End coastal access opportunities (subject to detailed investigations of public safety and impacts on coastal environment, in consultation with industry, environmental agencies and local stakeholders).
12. Upgraded access to/from Wilson Street.
13. Existing community retained and integrated with surrounding residential development.
14. Opportunities for density increases.
15. Development to recognise historic past through links to racecourse and former airfield.
16. Future relocation of racecourse to facilitate development.
17. Future waste water pumping station site.
18. Existing Waste Water Treatment (WWTP) site to be decommissioned (no residential occupation within 500m until decommissioned).
19. Potential pedestrian/cycle link



5.6.3 Precinct 3 – Port Authority & Finucane Island

Precinct Statement

“The largest tonnage Port in Australia defines the Port Authority & Finucane Island precinct. It is a place where the primacy of the Port continues to service the growing resource operations and common user facilities. Opportunities for development through resource company projects and Port Authority growth plans continue, and strong connectivity to Boodarie and Wedgefield are provided for. Finucane Island’s western end is a popular recreation area for many seeking to take in the coastal mangrove environs or do a spot of fishing.”



Key Figures (ultimate)

Area:	5300 (ha) (indicative based on precinct boundary).
New Dwellings:	0 (0 total).
New Light/General Industry (ha):	0 (0 total).
New Strategic Industry (ha):	1071 (1553 total).

Summary of Influences

Landscape, Heritage & Environment

- Port Hedland Port Authority operations and wider lease area.
- BHPBIO lease area and operations.
- Resource Company port access corridors and operations.
- PHPA sub-leases for storage/industry adjoining Wedgefield.
- Finucane Island boat ramp / fishing location.
- Indigenous: Numerous Registered Aboriginal sites within and adjacent to the Precinct.
- Non-indigenous: Finucane Island - original townsite.
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.

Current or Planned Projects

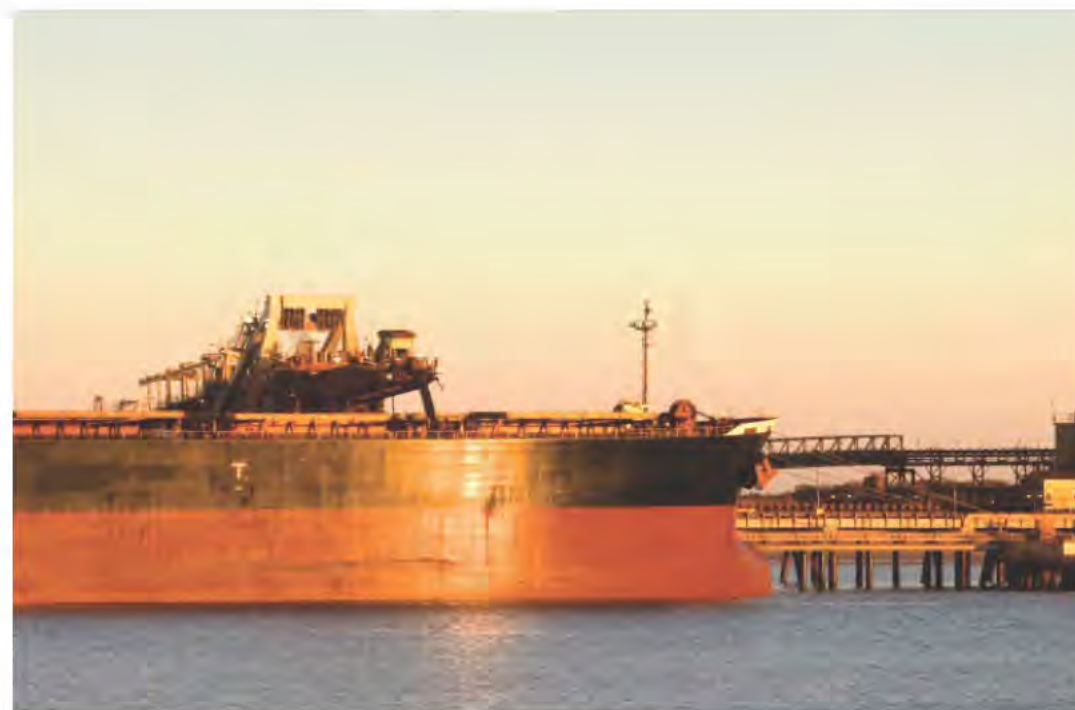
- Growth Programs underway for western side port expansion.
- BHPBIO Stockpile expansion planning (Quantum project).
- Outer Harbour Port Expansion planned.

- Assessment of infrastructure and logistics capacity available to support Australian Defence Force operations in the region.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Port expansion and development of land expansion will continue to be under the management of the Port Hedland Port Authority.
- Implementation of surrounding areas – including Boodarie and Wedgefield will be undertaken reflecting the extent and timing of anticipated growth in this precinct.
- No loss of public recreation access to Finucane Island.
- Ongoing management and monitoring of dust and noise levels and impacts on existing urban areas (particularly Precincts 1 and 2).
- Coastal hazard risk management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.



Precinct Highlights

1. Port outer harbour access and expansion.
2. Coastal access (fishing/tourist node).
3. Port inner harbour expansion.
4. Port facilities expansion.
5. Lumsden Point marine Common User Facility.
6. Established strategic industry.



Precinct Plan is indicative only. Final land use and development subject to further detailed planning investigations.

RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

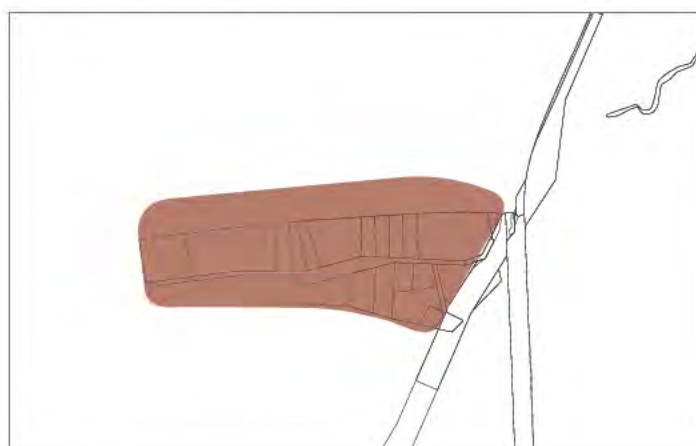
OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.4 Precinct 4 – Redbank

Precinct Statement

“Redbank is one of the many ‘fingers’ of land extending into the inlets that make up Port Hedland’s harbour. Its location suits some of our City’s rural industry uses, though in the long term the opportunity for it to form part of the wider port area is recognised”.



Key Figures (ultimate)

Area:	46 (ha) (indicative based on precinct boundary).
New Development:	limited to consolidation of existing rural uses in the medium term.
Strategic Industry (ha):	7.5ha short term, 42.0ha long term (49.5ha total).

Summary of Influences

Landscape, Heritage & Environment

- Significant areas of mangrove environs.
- Public health issues associated with nearby mangrove environment, including but not limited to mosquitoes and sandflies.
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.

Existing Land Use

- Storage / rural industrial uses.
- Rural-residential.
- Indigenous accommodation/facilities.

Precinct Plan Summary

Activities Land Use

- Rural industry (interim land use scenario) - restriction of any

further residential development due to public health concerns and local traffic/access issues. Further development limited to small scale rural industrial uses as defined by ToPH Town Planning Scheme.

- Strategic industrial (ultimate land use scenario) - consolidation of land use consistent with wider PHPA area (Precinct 3).

Implementation Indicators

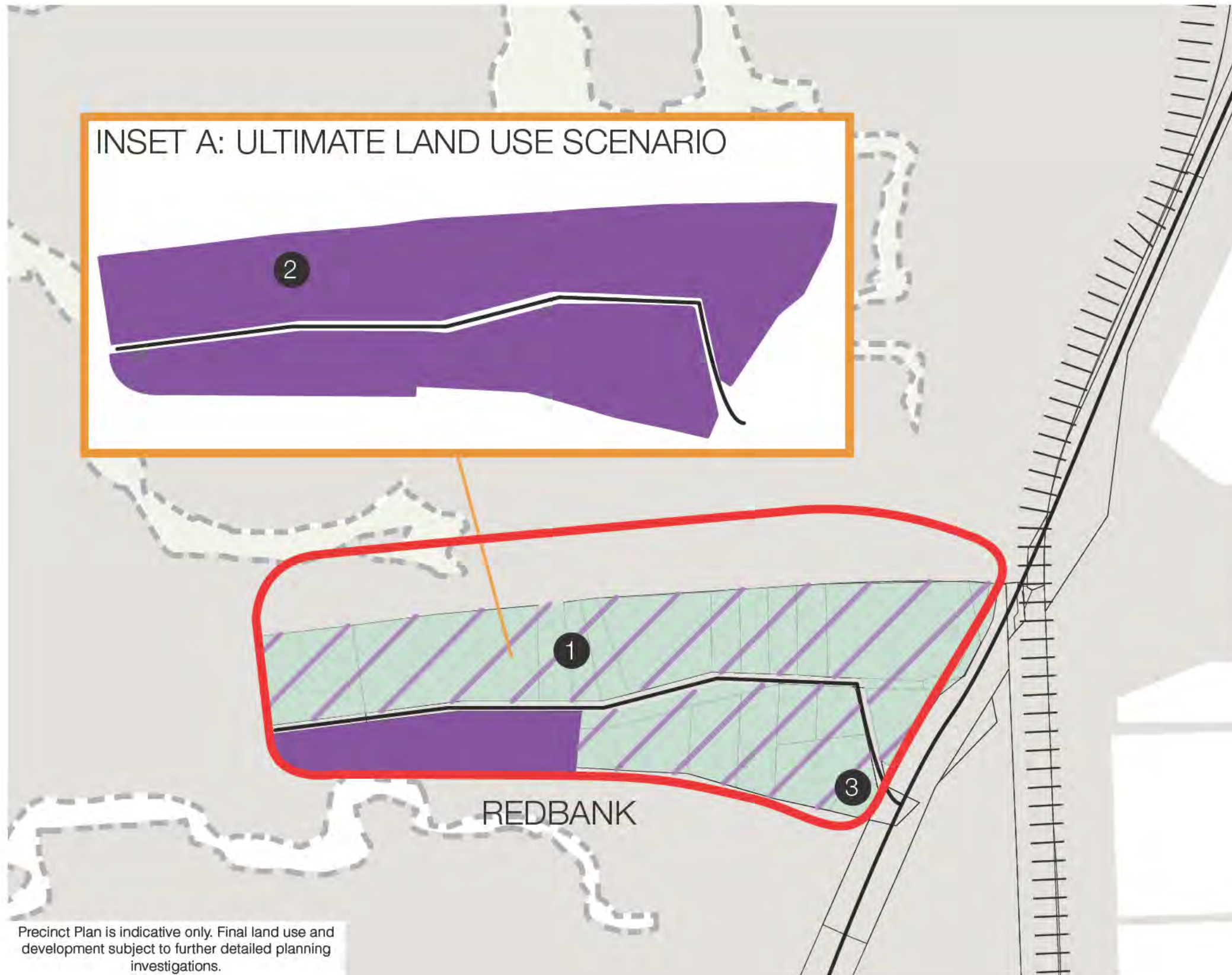
The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan’s objectives:

- Precinct encapsulated in TPS5 as a ‘Development Plan’ area.
- Development Plan to be prepared.
- The timing of any ultimate land use change to the precinct would need to be undertaken at the local level, in consultation with landowners and business operators.
- Discussion with MRWA/ToPH to establish future planning for improved access into precinct.
- Ultimate land use scenario of strategic industry having regard to environmental and port related strategic considerations.
- Review and clarification of Town Planning Scheme definition for ‘Industry-Rural’.
- Coastal hazard risk management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.

Precinct Highlights

1. Rural industrial uses recognised in short to medium term.
2. Ultimate long term use linked to wider port authority precincts.
3. Upgraded access into/from Redbank precinct.





Precinct Plan is indicative only. Final land use and development subject to further detailed planning investigations.

RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

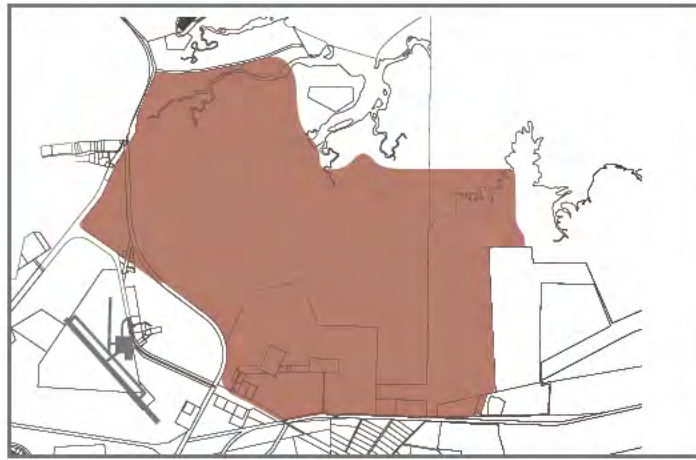
OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetary, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.5 Precinct 5 – Dampier Salt & Surrounds

Precinct Statement

“The Dampier Salt & Surrounds precinct will continue to service the growth of Dampier Salt operations. It is an area widely recognised with the salt ponds clearly visible by locals and visitors alike from across the landscape.”



Key Figures (ultimate)

Area:	3530 (ha) (indicative based on precinct boundary).
Motorsports (Kart Club) (ha):	17.5ha.
Dampier Salt Expansion Area (ha):	950ha total.
Explosives Reserve (and buffer) (ha):	540ha.

Summary of Influences

Landscape, Heritage & Environment

- Rural landscape to east.
- Indigenous: Registered Indigenous heritage sites within Precinct
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.

Existing Land Use

- Dampier Salt Operations.
- Hedland Kart Club.
- Explosives Reserve.

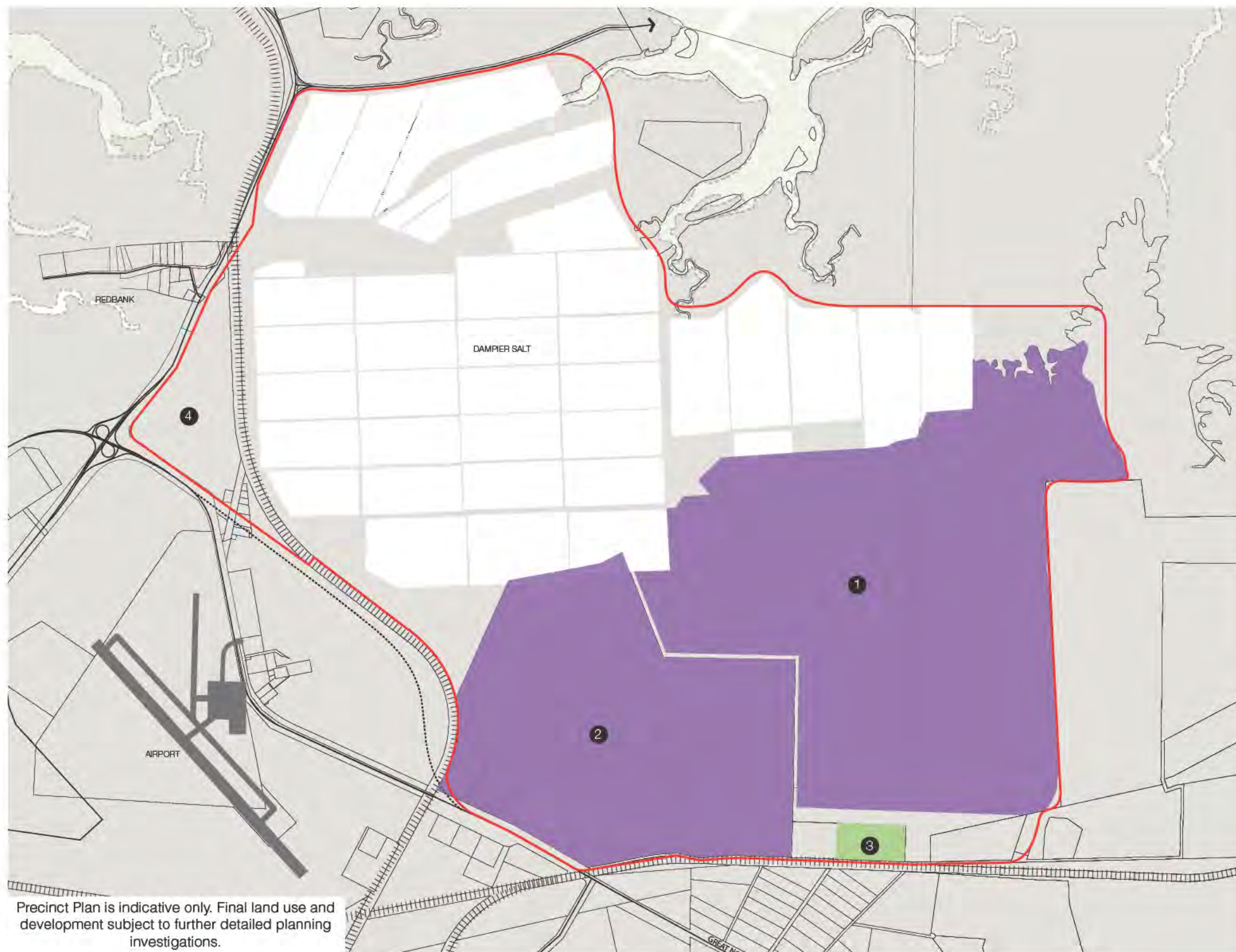
Implementation Indicators

Nil



Precinct Highlights

1. Dampier Salt expansion area.
2. Existing explosives reserve.
3. Motorsports Complex including Hedland Kart Club (subject to future regional motorsports facility master planning).
4. Potential tourist information centre location (subject to detailed investigation of transport and access arrangements).



RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetary, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.6 Precinct 6 – Wedgefield Industry & Logistics

Precinct Statement

“The Wedgefield Industry & Logistics Precinct supports our City’s primary Light Industrial and Transport Industry businesses. Expansion of the precinct will continue to provide greater diversity of industrial land choice and act as the catalyst for improved amenity within established Wedgefield.”



Key Figures (ultimate)

Area:	700 (ha) (indicative based on precinct boundary).
New Dwellings:	0 (192 total).
New Short Stay (rooms):	0 (0 total).
New Transient Workforce Accommodation:	0 (0 total).
New Light/General Industry (ha):	220 (378 total) – includes transport.
New Strategic Industry (ha):	0 (0 total).



Summary of Influences

Landscape, Heritage & Environment

- Areas of mangrove environs to immediate north.
- Rural landscape to east.
- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Existing Wedgefield mix of light and heavier industrial uses, as well as care taker residential and transient workers accommodation.
- Surrounding undeveloped vacant land.
- Truck stop / service facility off Great Northern Highway .
- Consideration of air traffic obstacle height limitation surfaces given proximity to Port Hedland International Airport.

Current or Planned Projects

- Wedgefield Transport & Logistics Precinct land release.
- Light Industrial 'Area 5' (LIA5) land release LandCorp.
- Great Northern Highway by Main Roads WA expected to be completed by mid 2014.

Precinct Plan Summary

- Dedicated Transport & Logistics Area reflecting planned release of some 100 new lots ranging in size from 4500sqm to 5.0ha.
- Light Industrial – reflecting planned release of some 135 new lots ranging in size from 2000sqm to 7000sqm.
- Retention of existing Wedgefield with gradual relocation of heavier uses to other Growth Precincts more appropriately designated.

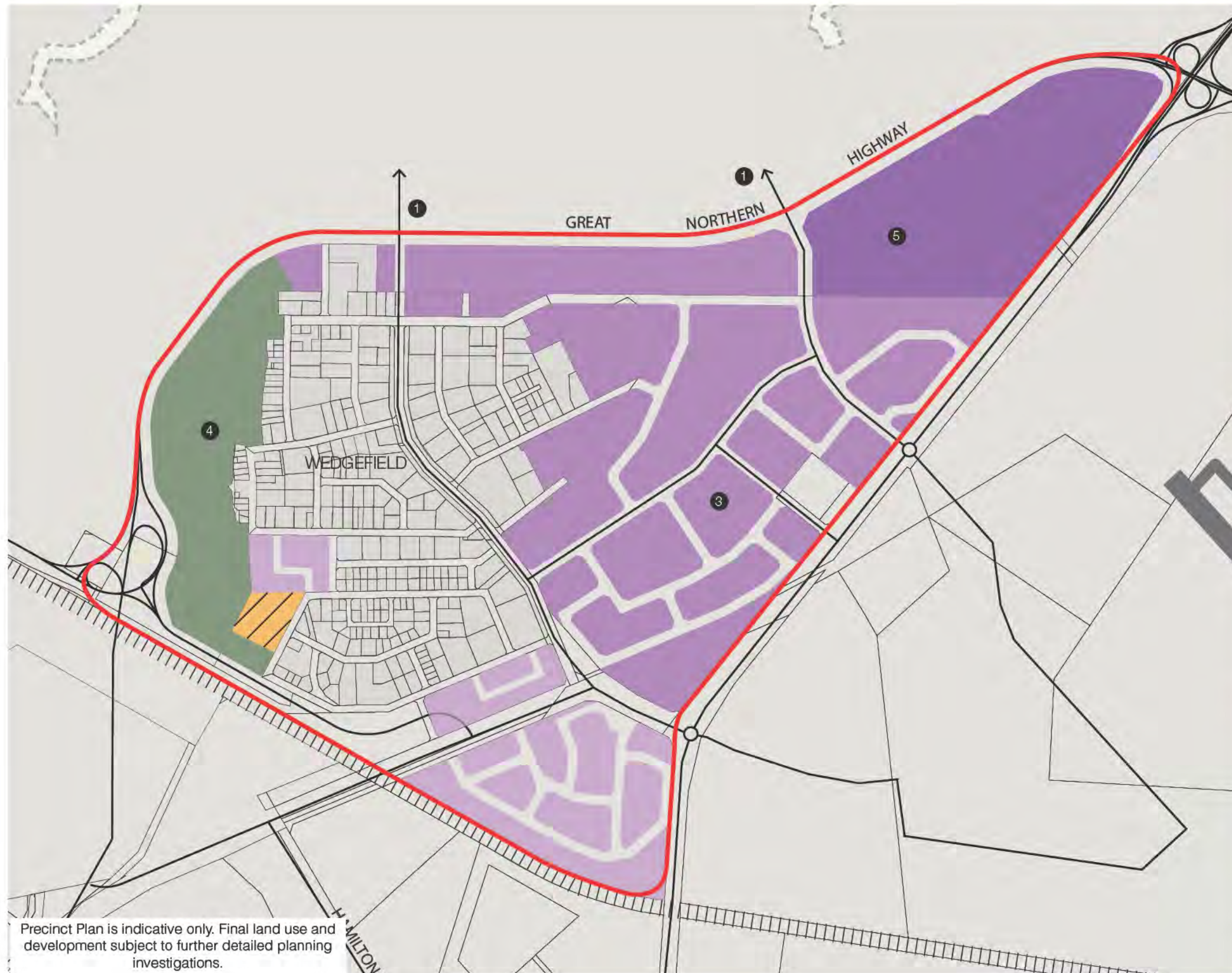
Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Wedgefield Industrial Expansion Development Plan (WIEDP) already adopted under TPS5 and delivery underway.
- Review of existing Wedgefield land use recommended following relocation of heavier uses in short to medium term. Review to determine opportunities for formal 'composite industrial' residential/light industrial use in limited western edge area.
- Consideration of air traffic obstacle height limitation surfaces given proximity to Port Hedland International Airport.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

Precinct Highlights

1. Access to port authority land.
2. Port authority expansion.
3. 'Hedland Junction' transport/logistics area.
4. South Creek environments.
5. Building height limitations associated with air traffic movements.



RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

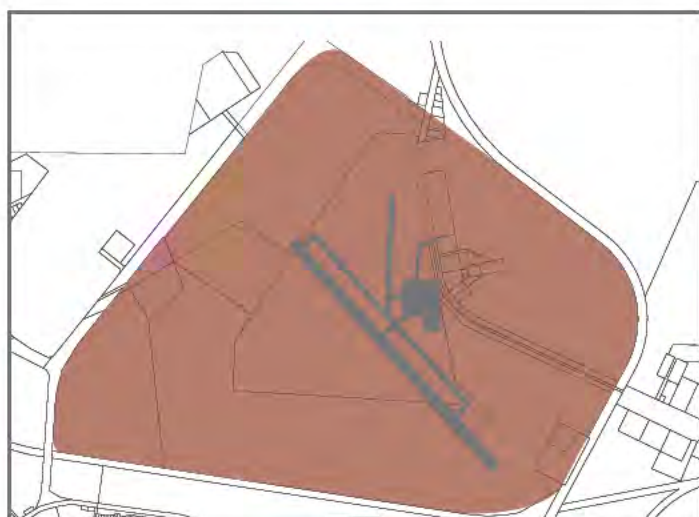
OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetary, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.7 Precinct 7 – Airport & Surrounds

Precinct Statement

“Pilbara’s Port City International Airport is a major gateway to the North West of Australia. The upgraded airport welcomes visitors at a standard reflective of any of Australia’s major regional cities. The surrounding area supports a range of logistics and related uses.”



Key Figures (ultimate)

Area:	1250 (ha) (indicative based on precinct boundary).
New Short Stay (rooms):	0 (164 total, excluding hotel opportunity).
New Transient Workforce Accommodation (temporary):	Up to 8,000 (9,394 total, ultimately replaced by permanent uses).
New Retail Floorspace (sqm):	9,401 (9,401 total).
New Commercial Office Floorspace (sqm):	46ha total highway commercial (0 total).
New Light/General Industry (ha):	250ha airport land industrial (some of which to be provided post 2021).

Summary of Influences

Landscape, Heritage & Environment

- Rural landscape to east.
- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Airport operations, including consideration of wider obstacle height limitations.
- Construction FIFO accommodation including Port Haven.
- Port Hedland Caravan Park.
- Bureau of Meteorology Station.
- Cemetery.

Current or Planned Projects

- 4000 man temporary workforce accommodation site (Airport Precinct 3, southwest of runway).
- Port Hedland International Airport Masterplan endorsed by Council as a guiding document for land use and development.
- Development investigations for International Freight Depot.

Precinct Plan Summary

The airport precinct has been identified as a major source of local employment in the medium term. Growth Plan calculations suggest that light industrial land south of the runway will be required from 2021 (planning will therefore be required earlier). The benefits of developing a highway commercial and light industrial precinct directly connected to the airport (and close to port operations) will be significant for the town in the medium term.

In the interim through to 2021 and the first stages of demand for light industrial land, the Growth Plan recognises the opportunity to consider short term workforce accommodation. While such a concept can be considered it will need to be of a scale, and timeframe that does not negatively impact wider growth objectives. Individual accommodation proposals will be required

to demonstrate legacy benefits to the city, be on timeframe terms that adhere to Growth Plan forecasts for use of the land, and be compatible with accommodation initiatives elsewhere within Pilbara’s Port City.

- Highway Commercial / Light Industrial.
- Facilitate limited short term development of construction workforce accommodation, and in responding to demand:
 - consolidate existing area on Great Northern Highway and deliver legacy of infrastructure; and
 - facilitate development progression within a defined area of Light Industry precinct, having regard to identified industrial demand timing.

Implementation Indicators

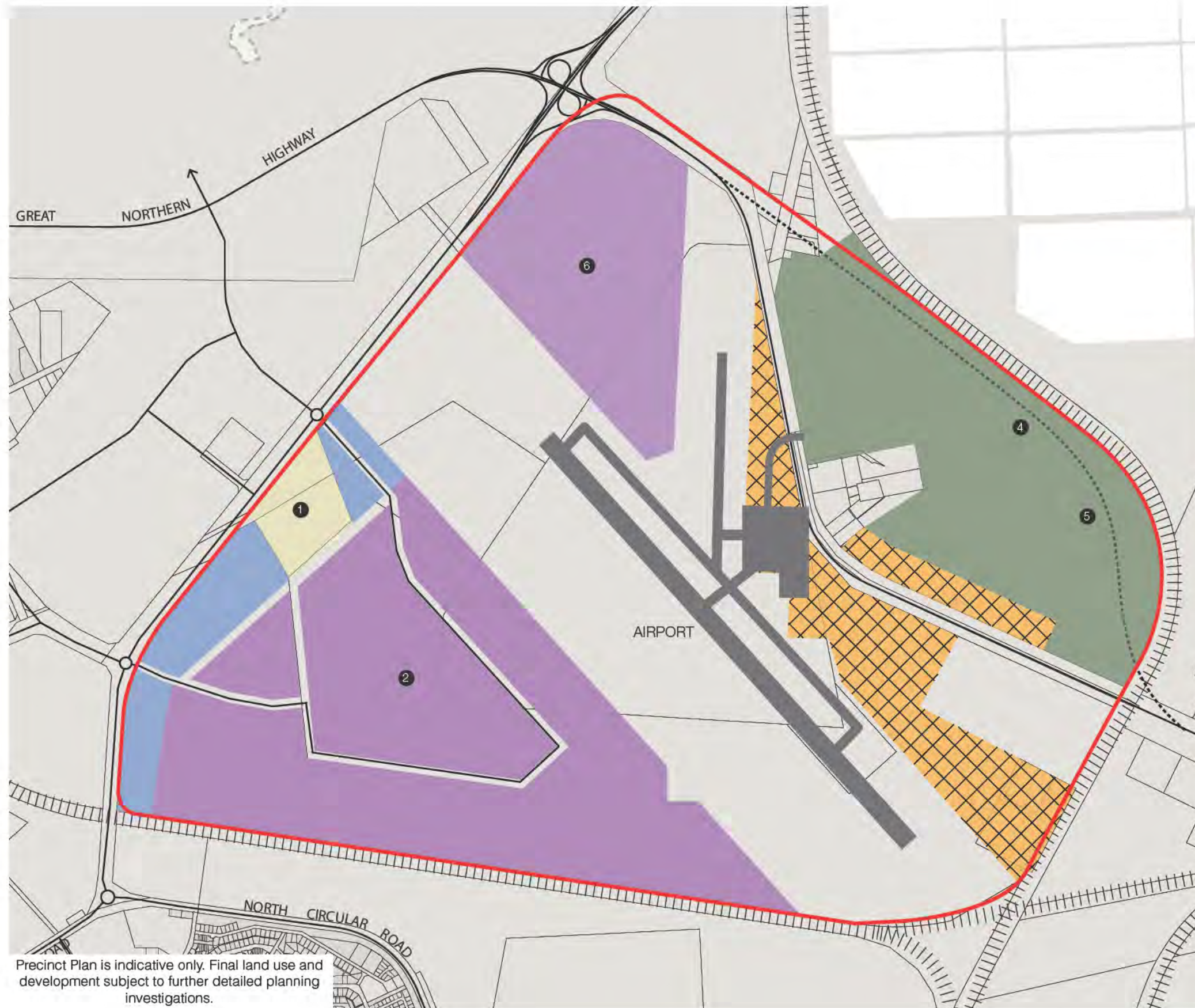
The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan’s objectives:

- More detailed airport masterplan progressing for adoption under TPS5 and thereafter implementation and delivery.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

Precinct Highlights

1. Port Hedland cemetery.
2. Short term workforce accommodation opportunity (ultimately replaced by industrial use).
3. Sustainable energy industry precinct (airport masterplan) (low impact development due to flooding).
4. Great Northern Highway realignment to facilitate improved access to surrounds.
5. ‘Green Gateway’ entry.
6. Height limitations associated with air traffic movements.





RESIDENTIAL

- Residential - High Density
(R80 - R120: Apartment Living)
- West End Residential
(Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density
(R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density
(R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre
(Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre
(Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre
(Retail, Commercial, Residential Mixed Use)
- Local Centre
(Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial
(Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community
(Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

- Public Purposes
(Wastewater Treatment, Water, Cemetary, Energy)
- Airport Operations
- Future Expansion - Urban
(Medium-Long Term)
- Future Expansion - Urban / Rural Residential
(Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.8 Precinct 8 – Pippingarra

Precinct Statement

“The Pippingarra area is home to some of Pilbara’s Port City population enjoying a more rural lifestyle. Consolidation and limited expansion of the area has allowed new residents to seek out this lifestyle choice. The wider areas south of Great Northern Highway remain protected land bank for future long term City Growth needs should urban expansion pressures require.”



Key Figures (ultimate)

Area:	6451 (ha) (indicative based on precinct boundary).
New Dwellings:	limited to eastern expansion area.
New Short Stay (rooms):	0 (0 total).
New Transient Workforce Accom:	0 (0 total).
Future Urban Growth Area (ha):	4610ha.
Rural Residential land supply (ha):	502ha.



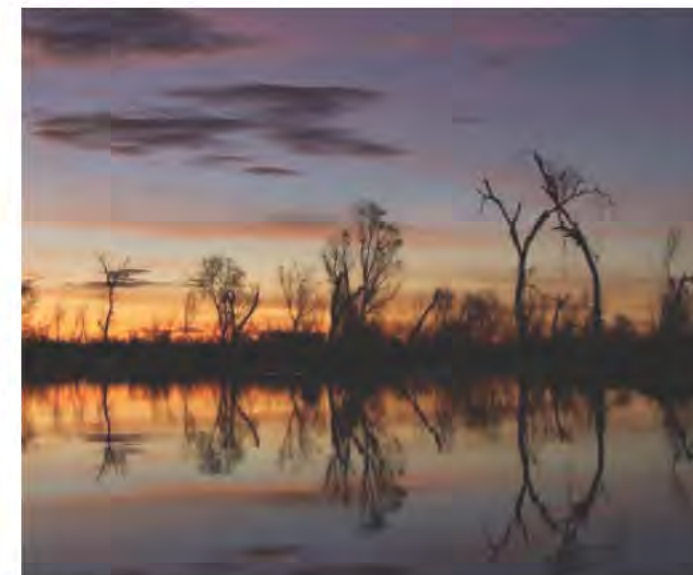
Summary of Influences

Landscape, Heritage & Environment

- Beebingarra Creek.
- Indigenous: Twelve Mile site over eastern boundary. Tjalku Warra Burial in adjacent Precinct 16.
- Non-Indigenous: Du Pont explosives bunkers and Pippingarra Homestead.
- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Limited area of rural small holdings at northern end.
- Great Northern Hwy traverses northern end.
- Rail loop at north western end.
- Aboriginal settlements including; Tialka Warra and Pippingarra.



Precinct Plan Summary

- Consolidation of rural small holdings to rural residential (subject to consolidation of land use/noise buffers associated with rail operations and Precinct 4 land uses).
- Long term land bank for future potential urban development (beyond 50,000 people).
- Industrial plant with associated buffer.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Precinct to be reflected within TPS5 to recognise long term land bank intent.
- Consideration of land use buffers/corridor separation distance to rail lines.
- Progression of community layout plans for Aboriginal settlements.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.

Precinct Highlights

1. Consolidation of rural small holdings to rural residential (subject to consideration of land use/noise buffers associated with rail operations and Precinct 4 land uses).
2. Limited expansion of rural-residential (subject to consideration of land use/noise buffers associated with rail operations and Precinct 4 land uses).
3. Industrial plant with buffer.
4. Potential location for consolidated private recreation facility (e.g. motorsports). Subject to detailed investigation.



RESIDENTIAL

- Residential - High Density
(R80 - R120: Apartment Living)
- West End Residential
(Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density
(R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density
(R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre
(Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre
(Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre
(Retail, Commercial, Residential Mixed Use)
- Local Centre
(Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial
(Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community
(Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

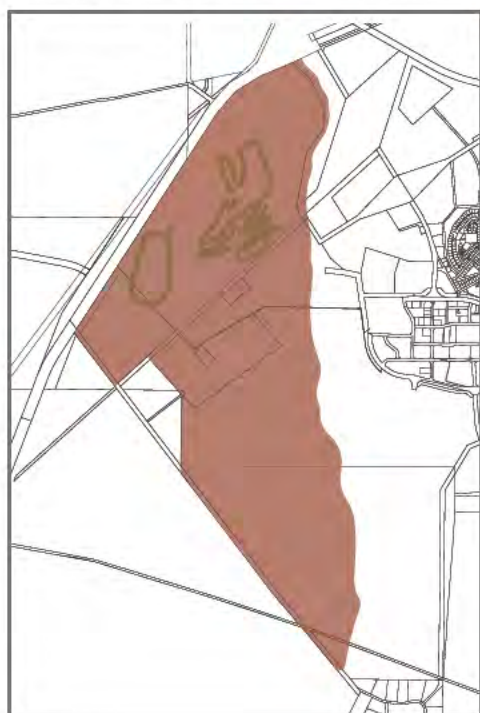
- Public Purposes
(Wastewater Treatment, Water, Cemetary, Energy)
- Airport Operations
- Future Expansion - Urban
(Medium-Long Term)
- Future Expansion - Urban / Rural Residential
(Long Term - Beyond 50,000)
- Potential Boating Facility Site

Precinct Plan is indicative only. Final land use and development subject to further detailed planning investigations.

5.6.9 Precinct 9 – Western Gateway

Precinct Statement

“The Western Gateway area typifies the Pilbara Port City lifestyle of sporting opportunity, being home to our equestrian precinct and golf club. It is the western gateway for visitors to our City Centre travelling from the south, or heading west where they enjoy the magnificent Pilbara sunsets.”



Key Figures (ultimate)

Area:	742 (ha) (indicative based on precinct boundary).
New Dwellings:	0 assumed (golf course estate concept subject to environmental approvals).
New Short Stay (rooms):	0 (0 total).
New Transient Workforce Accommodation:	0 (short term TWA use subject to environmental assessment).
Golf Course & Surrounds (ha):	183ha (includes land identified for golf course estate assessment).
Equestrian Precinct (ha):	103ha (comprising race track and stabling surrounds – approximate area).
Wastewater Treatment Plant (ha):	28 expansion (50ha total).
New Light/General Industry (ha):	0 (0 total).
New Strategic Industry (ha):	0 (0 total).

Summary of Influences

Landscape, Heritage & Environment

- South Creek environs and surrounding lower-lying land.
- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- South Hedland Golf Club.
- Hedland Turf Club Training Track.
- Leases in horse training/stables area adjoining track.
- South Hedland Waste Water Treatment Plant (WWTP).
- South Hedland Pistol Club.

Current or Planned Projects

- WWTP expansion planning.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Precinct 9 lies within Town Planning Scheme No.5 Boodarie Special Control Area which prohibits residential or other forms of accommodation. There is an opportunity to investigate the revitalisation of the golf course in conjunction with potential residential or tourism development. Precinct is outside formal S.19 legislation controlled Boodarie Core and Buffer.
- Precinct to be encapsulated within TPS5 as a 'Development Plan' area.
- Implementation of WWTP expansion to consider options to minimise impact on South Hedland urban settlement planning as a result of buffer requirements.
- Detailed consultation and funding required to facilitate equestrian precinct consolidation.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

Precinct Highlights

1. Potential residential/tourism development (subject to detailed environmental assessment and clarification of land use restrictions in Town Planning Scheme regarding Boodarie Special Control Area).
2. Potential short term workforce accommodation (subject to detailed environmental assessment and clarification of land use restrictions in Town Planning Scheme regarding Boodarie Special Control Area).
3. Port Hedland golf course.
4. Western 'gateway' entry road.
5. Turf club race track with grandstand off entry road.
6. Equestrian precinct.
7. Waste Water Treatment Plant (WWTP).
8. Potential future WWTP expansion area.





Precinct Plan is indicative only. Final land use and development subject to further detailed planning investigations.

RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetary, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.10 Precinct 10 – South Hedland West

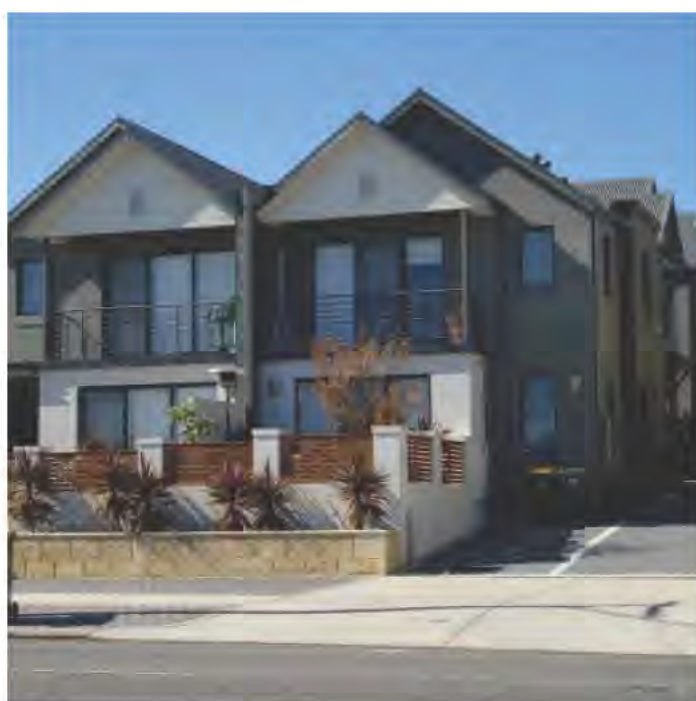
Precinct Statement

“South Hedland West is South Hedland’s newest land release area. It supports immediate and short term land supply, bringing a permanent population catchment to the west of the City. Densities are greatest in proximity to the City Centre, with more traditional home sites provided to the south west and south of the precinct.”



Key Figures (ultimate)

Area:	1070 (ha) (indicative based on precinct boundary).
New Dwellings:	Up to 7,210 (7,210 total).
New Short Stay (rooms):	0 (0 total).
New Transient Workforce Accommodation:	2,186 (2,642 total).
New Retail Floorspace (sqm):	6,287 (6,287 total).
New Commercial Office Floorspace (sqm):	0 (0 total).
New Schools:	1 Primary School (4.0ha).
New Sport Facilities:	1 Regional Level Facility (expansion to multi-purpose centre fields and facilities) plus local facilities.



Summary of Influences

Landscape, Heritage & Environment

- South Creek environs and surrounding lower-lying land.
- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Water tanks at north end of precinct.
- FIFO facilities adjoining Hamilton Road.
- Main Sporting facilities.
- Pilbara TAFE.
- Landfill facility to southeast of precinct.

Current or Planned Projects

- Major City Multi-Purpose Sport Facility.
- 'Site A' development for workforce accommodation & residential west of TAFE.
- 'Site B' development south of Forrest Cir / west of Scadden Road for permanent residential land uses.
- Expansion of existing Hamilton workforce accommodation.
- Masterplanning for 120ha of medium density residential housing commenced.

Precinct Plan Summary

- Medium/High density residential reducing to medium/low density further from City Centre.
- Drainage Corridors to west reflecting drainage/flood needs and retention of Pilbara landscape elements.
- Outer 'ring road' to define western edge.
- Workforce Accommodation opportunities at northern / western edge.
- Medium-longer term Urban Land Bank at southern end (potentially developed earlier if required, subject to resolution of Native Title, etc).
- District Sporting Facilities and associated land bank designated over existing landfill facility.

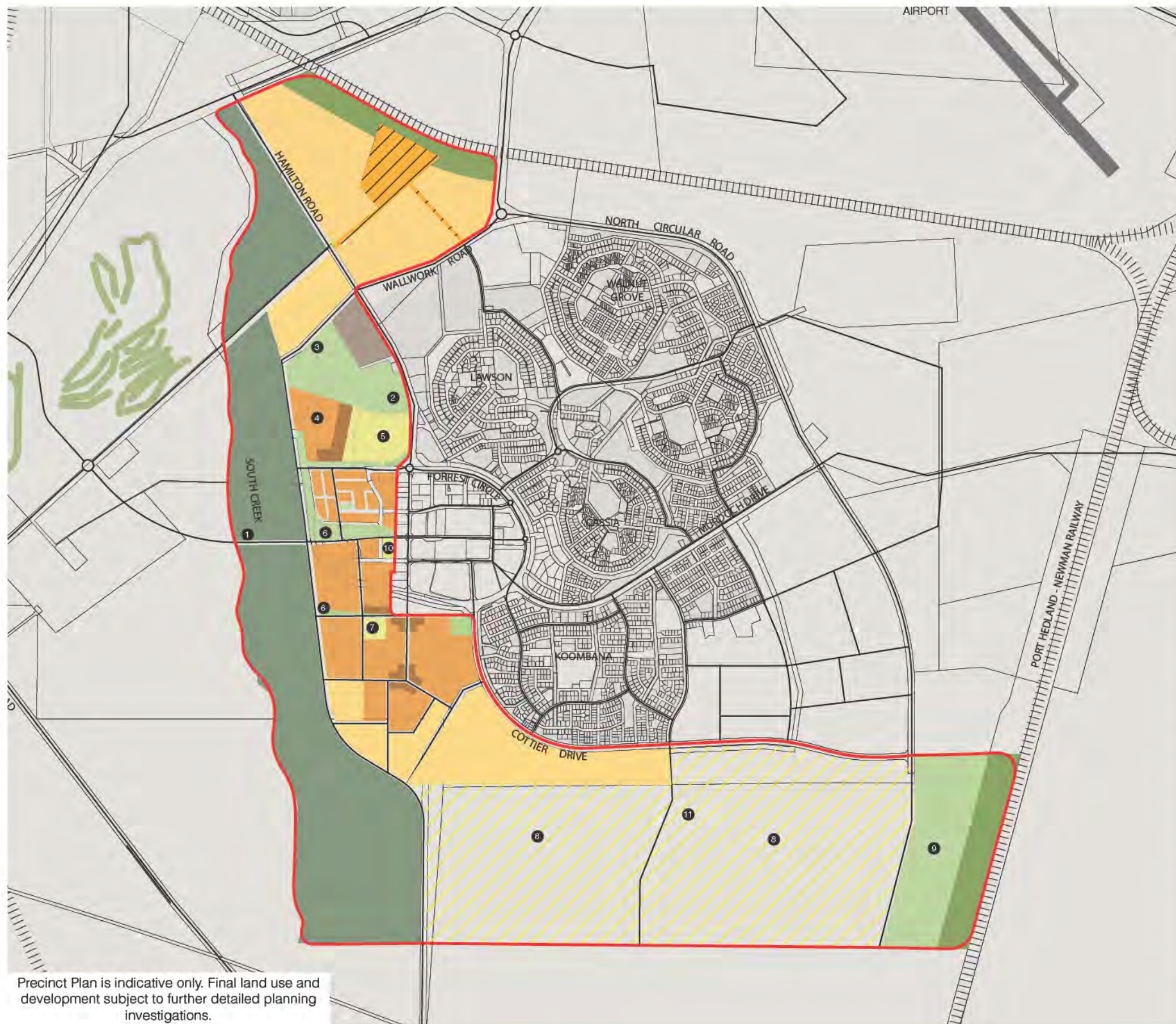
Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Immediate land release requirement of 120ha (western edge) requires fast-track 'intervention' approach to bring forward standard agency approval timeframes and facilitate a 0-2 year development and lot release timeframe.
- Immediate traffic planning required for western ring road.
- Landfill relocation planning required to remove buffer impacts to urban development land in southeast.
- Precinct encapsulated in TPS5 as a 'Development Plan' area(s).
- Development Plan to be prepared over priority development areas (leaving land bank areas).
- Flexible approaches to immediate/short term water and wastewater infrastructure provision required.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

Precinct Highlights

1. Western 'gateway' entry road connection with CBD.
2. Multi-purpose regional sporting facility.
3. Medium term expansion of regional sports facilities and playing fields.
4. Short term workforce accommodation.
5. Tertiary Education precinct.
6. Open space 'green links' to South Creek environs.
7. Future Primary School (location subject to detailed design).
8. Medium/long term future urban (linked to demand/supply requirements).
9. District sporting facilities (and future sporting land bank).
10. Tertiary Education Facility/Centre for Excellence precinct.
11. Compensating drainage basin required south of Cottier Drive.



Precinct Plan is indicative only. Final land use and development subject to further detailed planning investigations.

RESIDENTIAL

- Residential - High Density (R80 - R120: Apartment Living)
- West End Residential (Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density (R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density (R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre (Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre (Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre (Retail, Commercial, Residential Mixed Use)
- Local Centre (Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial (Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community (Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

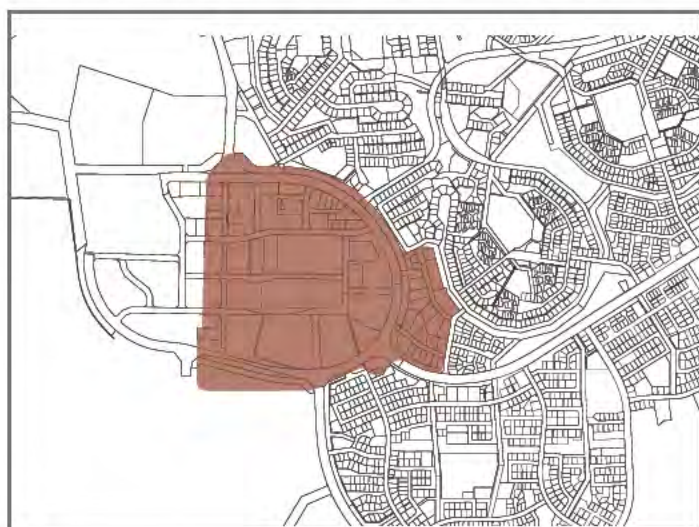
OTHER

- Public Purposes (Wastewater Treatment, Water, Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban (Medium-Long Term)
- Future Expansion - Urban / Rural Residential (Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.11 Precinct 11 – City Centre

Precinct Statement

“A place of ‘northern Australian life’, Pilbara’s Port City Centre is a dynamic, accessible and inclusive place that is the heart of the South Hedland community and the major regional centre for the City of 50,000 people. It is an exciting destination for visitors, business people and residents. It has great public spaces, friendly streets, landmark buildings and innovative architecture. There are many visual cues through public art and spaces, and a strong association with indigenous heritage and the natural landscape. Like the many other destinations throughout Pilbara’s Port City, culture and social destinations are woven into the fabric of the City Centre”.



Key Figures (ultimate)

Area:	85 (ha) (indicative based on precinct boundary).
New Dwellings:	up to 1,470 (1,470 total).
New Short Stay (rooms):	294 (533 total).
New Retail Floorspace (sqm):	38,086 (63,831 total).
New Commercial Office Floorspace (sqm):	7,500 (15,971 total).
Hospital Expansion (ha):	4

Summary of Influences

Landscape, Heritage & Environment

- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Civic / Justice uses in proximity to Forrest Cir / Hamilton Road.
- Multicultural uses in proximity to Hamilton Rd/Rason Ct.
- Local recreation facilities / Community Services in proximity to Colebatch Way / Forrest Cir including Library, Aquatic Centre.
- Main Shopping/Retail area of Port and South Hedland.
- Primary office/commercial area of Port and South Hedland.
- Regional Hospital and Health Care.
- Commercial/retail east of Forrest Circle (Hunt St and surrounds).

Current or Planned Projects

- Town Centre Revitalisation Project (ToPH / LandCorp / Pilbara Cities) works currently underway to establish / facilitate:
 - ‘Main Street’ and connection to Murdoch Dve.
 - Mixed Use Development Sites.
 - Shopping Centre revitalisation and expansion.
 - Medium/High Density residential development sites.
 - New ‘Town Park’.
 - Hotel and Residential Apartments.
 - General upgrade to road network and connection to Eastern commercial area via Hunt Street.

- Mixed Use Development (apartments, café, commercial) at corner of Colebatch and new Murdoch Drive extension.
- Library redevelopment and community facility building (ToPH).
- Aquatic Centre revitalisation and expansion (ToPH).
- Relocation and redesign of skate park.
- Commercial Entertainment Complex feasibility investigations (cinema, bowling alley).
- Townhouse and multi-storey residential building development by BHP Billiton.

Precinct Plan Summary

As Port and South Hedland continue to develop, the South Hedland City Centre (SHCC) will play an increasingly important role not only as the primary activity centre catering for the retail and service needs of a growing population, but also as a visual focal point and constant reminder of Hedland’s modernisation and emergence as a “nationally significant, friendly City where people want to live and are proud to call home”. In this sense, the development and revitalisation of SHCC has the potential to act as a catalyst for further development and growth, engendering business confidence as well as local community pride and ownership.

The City Centre precinct is currently undergoing a transformation under the guidance of an adopted 2009 Master Plan, which has seen the delivery of a new ‘main street’ and release of a number of land parcels for mixed-use redevelopment. To align with the Pilbara’s Port City Growth Plan and Implementation Plan, a new 2012 Master Plan is also being finalised to align with current visioning and achievements to date. At the local level, the SHCC Master Plan provides a spatial plan and urban design framework for the City Centre that seeks to facilitate/stimulate development and meet the needs of a rapidly growing population. This includes:

- Facilitating the orderly and timely release and development of SHCC land to meet the ongoing needs of a rapidly growing population;



- Guiding development to ensure best practice, high quality built form and public space outcomes;
- Identifying the required levels of retail and commercial floor space to facilitate local economic development and increase the offering of services and facilities for residents and visitors;
- Increasing housing supply, product choice and affordability;
- Improving movement network efficiency, sustainability and attractiveness; and
- Providing a level of certainty and confidence for the private and public sector to operate within.

Retail and commercial floor space demand is expected to grow strongly in the Town of Port Hedland over the next two decades,

with SHCC positioned to play a central role in meeting this demand. SHCC is currently the largest concentration of retail floorspace in the LGA, and possesses the greatest capacity for floorspace expansion to meet future demand growth. Meeting retail demand will require not only an increase in retail and commercial floorspace, but also further diversification away from core grocery and specialty food stores towards an increased supply of café and restaurant, specialty stores, Discount Department Stores (DDS) and full Department Stores. There is also a requirement for some larger format retail and commercial offerings, to supplement Main Street, Shopping Centre and Mixed Use formats that traditionally define City Centre offerings.

The commercial office market in the City Centre will grow over the next 20 years, in response to a critical mass of local labour force and collocation with major medical facilities generating health-

based floorspace demand. While it is expected that the West End (Precinct 1) will play an increasingly important role in the Town of Port Hedland as a primary concentration of premium and A Grade office floorspace (fulfilling its role as a Commercial and Cultural Precinct), SHCC has a critical role to play in maintaining and increasing the diversity of office accommodation locations and availability across the LGA. This will assist in providing a “release valve” for future potential pressures in office space demand. This commercial analysis is considered further in the SHCC Master Plan.

In addition to increased retail and commercial floor space, further provision of medium and high density residential development is to occur throughout the City Centre. The incorporation of increased residential development (in some locations incorporated as a mixed use development with retail and commercial offerings) will also help to revitalise South Hedland by bringing significant numbers of people into the core. The inclusion of a residential component also helps facilitate the provision of affordable housing alternatives in areas of high amenity and close to key services.

The key objectives for the SHCC Master Plan are to facilitate positive experiences for greater numbers of visitors and permanent residents by:

- Providing a City Centre focal point or ‘hub’ of activity where people can meet and interact on an organised or chance basis and which supports a variety of services and functions;
- Providing stronger pedestrian / cyclist and vehicular connections into the City Centre making travel more convenient;
- Providing shaded pedestrian walkways and open areas in an attractive setting within the City Centre that encourage people to remain and spend time;
- Introducing a greater permanent residential population through the release of a variety of medium and higher density housing types reflective of a City Centre location;
- Providing a logical program for the redevelopment of available existing land and the future release of vacant land with an overall vision of a more vibrant place to live, work and recreate;
- Recognising demands for short-stay and tourism with the release of land for accommodation, entertainment and related uses.

Through a mixture of public works projects and private sector redevelopment, improvements to the public realm will be achieved in line with the following planning and design principles:

- Clear definition of public spaces, with each having a unique character and sense of place, and surrounding built form

interacting positively for ease of site identification and recognition.

- Functionality and usability of public spaces for a wide range of people, with appropriate levels of landscaping and public facilities to encourage activity.
- High levels of visual amenity and points of interest, including key destinations, landmarks and gateways.
- Ensuring that streets serve not only to provide for the safe, efficient movement of vehicles, but also for the movement of pedestrians and cyclists, and act as dynamic, interesting public spaces in their own right.
- Celebration of community heritage through the use of public art and landscaping to tell the story of the place and its people.
- Adequate levels of lighting, activity and passive surveillance to improve the safety of public spaces.

Streetscapes generally within the SHTC will be improved to include pavement treatments, street furniture, public art, interpretive signage, canopy street trees and shade structures within verges all promoting a positive pedestrian oriented environment. Further streetscape planning and development within the City Centre area will be assessed by the Town of Port Hedland and LandCorp in accordance with City Centre Design Guidelines.

Implementation Indicators

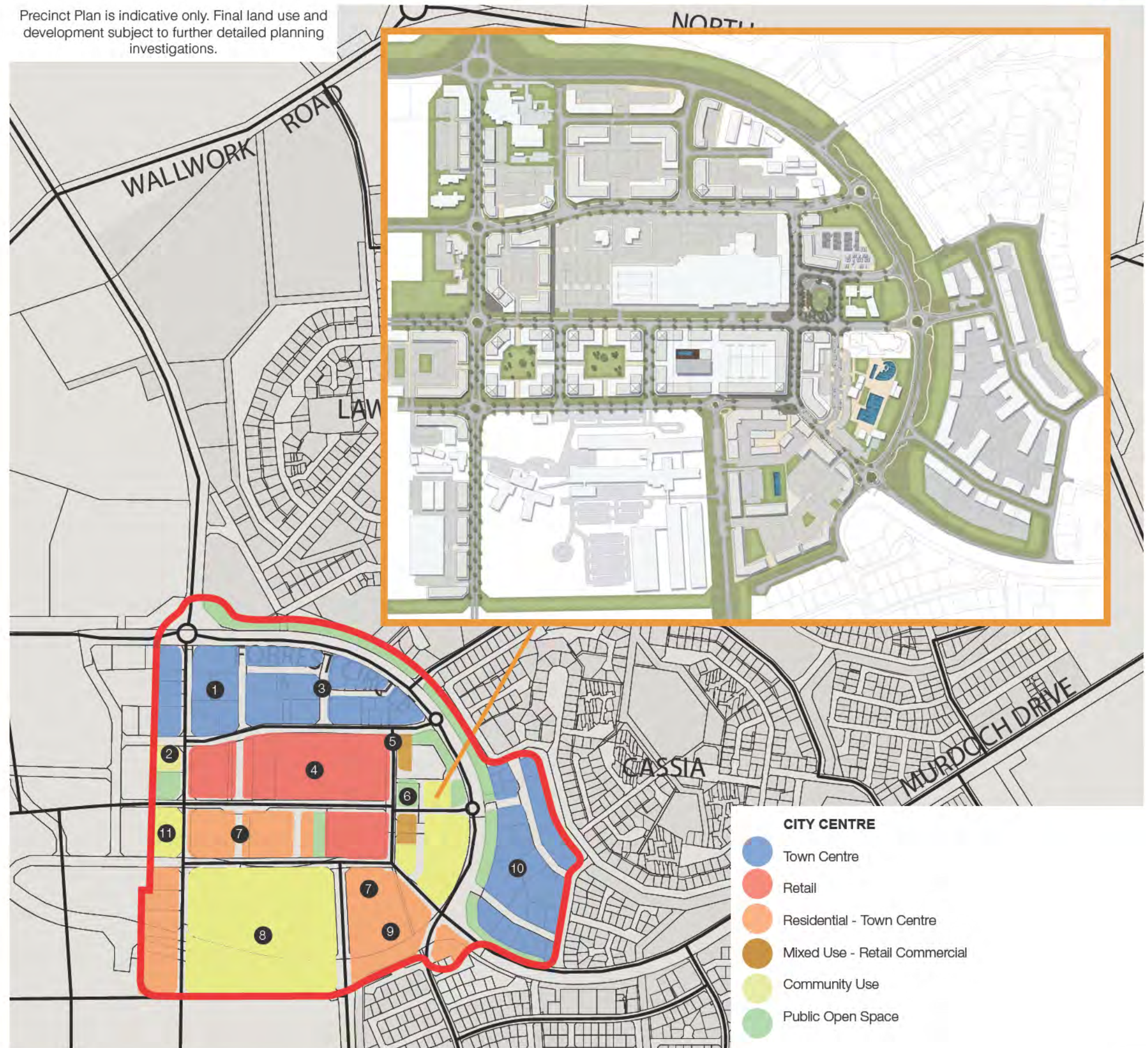
The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Review / refinement of existing South Hedland Town Centre Development Plan to reflect enhanced City Centre role.
- Use of a ‘City Architect’ in conjunction with urban design practitioners to ensure best practice development outcomes are achieved.
- ‘Phase 1’ deliver underway and continuing to deliver new “main street”, town park and associated land releases to the private sector.
- ‘Phase 2’ delivery of further road/infrastructure upgrades and release to private sector of residential/mixed use and commercial opportunities during 2011/2012.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.





Precinct Plan is indicative only. Final land use and development subject to further detailed planning investigations.



Precinct Highlights

1. Civic / Justice precinct.
2. Indigenous Culture precinct.
3. City Commercial / Office Precinct.
4. Retail / Shopping Centre.
5. 'Main Street' Activity Precinct.
6. Town Square.
7. High density mixed use residential.
8. Regional Health Centre Precinct (including expansion area for hospital).
9. High end medium density residential.
10. Mixed use commercial precinct connected to City Centre.
11. Tertiary Education Facility/Centre for Excellence precinct.

5.6.12 Precinct 12 – South Hedland East

Precinct Statement

“South Hedland East comprises the original four neighbourhoods of South Hedland, together with adjoining land to the south within Circular Road and Cottier Road. It is a place of safe, landscaped and connected streets and a place that continues to be regenerated through redevelopment and infill. A strong sense of community continues to develop through the celebration of local art and culture, community uses and sporting opportunity.”



Key Figures (ultimate)

Area:	715 (ha) (indicative based on precinct boundary).
New Dwellings:	Up to 6,070 (9,578 total).
New Short Stay (rooms):	196 (396 total).
New Transient Workforce Accom:	364 (550 total).
New Retail Floorspace (sqm):	7,137 (7,137 total).
New Commercial Office F'space (sqm):	0 (0 total).
New Schools:	1 PS (4.0ha), 1 HS (12.0ha)
New Sport Facilities:	1 District Recreation in addition to demand led local facilities – (20ha).

Summary of Influences

Landscape, Heritage & Environment

- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Predominantly residential (single with nodes of grouped and higher density).
- Hedland High School (encompassing Matt Dan Theatre).
- South Hedland Bowls Club.
- Vacant undeveloped land.
- South Hedland Water Tower.
- Black Rock Caravan Park.

Current or Planned Projects

- Water Park (ToPH).
- Community Centre Redevelopment (JD Hardie Centre) and improvements to Matt Dann Theatre.
- New Living Revitalisation Program.
- Parker Street planned residential project (Cedar Woods).
- Koombana School Site planned residential project (Jaxon).
- 'Site K' on North Circular Road / Murdoch Drive for residential.
- Landscape amenity improvement program.
- National Rental Affordability Scheme (NRAS).
- Town Planning Scheme Amendment seeking to upgrade all R20 zoned land to R20/30.

Precinct Plan Summary

- Significant on-going infill/redevelopment of residential land.
- Immediate term residential land release to south east.
- Education and community facilities.
- Mixed Use local centre at eastern end of Murdoch Drive.

Implementation Indicators

The following is a guide to some of the considerations needing to

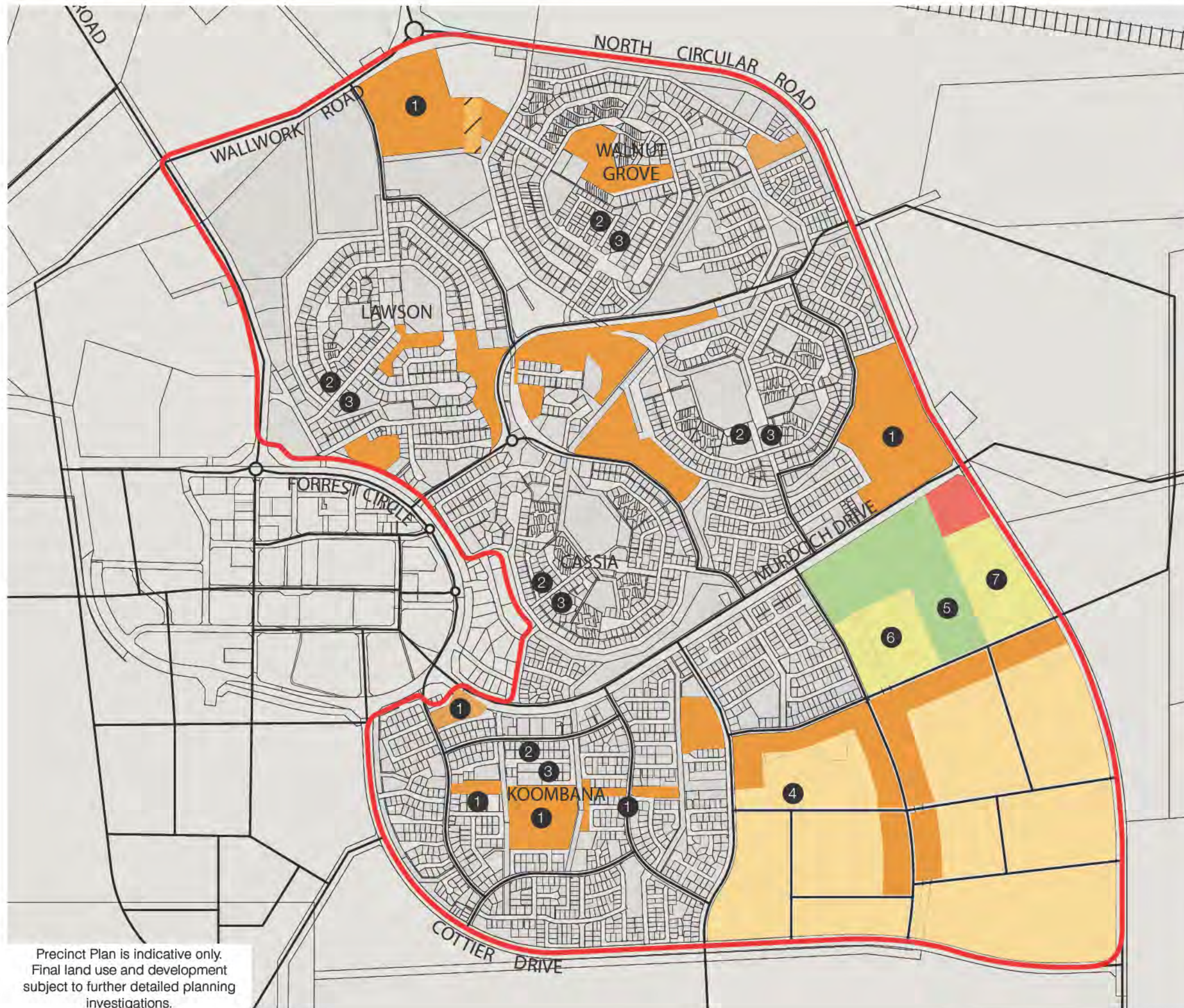
be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Master planning commencing (Department of Housing) for detailed site design and development of priority land release south of Murdoch Drive.
- Amendment to TPS5 proposed to facilitate continued regeneration of established areas following progression of 'New Living' program.
- Key immediate land release sites being progressed by the private sector and not-for-profit organisations.
- Flexible approaches to immediate/short term water and wastewater infrastructure provision required.
- Encourage improved development outcomes in terms of built form, urban design and placemaking to overcome negative elements of the previous 'Radburn' design (both through major new development proposals and ongoing renewal of established areas, e.g. through design guidelines)
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

Precinct Highlights

- Immediate term housing supply opportunity.
- Opportunities for density increases across neighbourhood.
- Way-finding improvements through streetscape planting, signage and public art across precinct neighbourhoods.
- Immediate / short term expansion of residential land supply east of Koombana.
- District playing fields co-located with High School/Primary School (indicative location).
- Primary School (indicative location).
- High School (indicative location).





RESIDENTIAL

- Residential - High Density
(R80 - R120: Apartment Living)
- West End Residential
(Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density
(R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density
(R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre
(Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre
(Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre
(Retail, Commercial, Residential Mixed Use)
- Local Centre
(Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial
(Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community
(Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry /
Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

- Public Purposes
(Wastewater Treatment, Water,
Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban
(Medium-Long Term)
- Future Expansion - Urban /
Rural Residential
(Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.13 Precinct 13 – Eastern Gateway

Precinct Statement

“The Eastern Gateway precinct forms part of the much needed spatial growth of South Hedland. It supports a mix of urban development and consolidates the eastern entry to our City Centre via Great Northern Highway and Murdoch Drive.”



Key Figures (ultimate)

Area:	545 (ha) (indicative based on precinct boundary).
New Dwellings:	Up to 2,650 (2,650 total).
New Short Stay (rooms):	0 (0 total).
New Transient Workforce Accom:	729 (729 total).
New Retail Floorspace (sqm):	1,354 (1,354 total).
New Commercial Office F'space (sqm):	0 (0 total).

Summary of Influences

Landscape, Heritage & Environment

- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Predominantly vacant.
- Major drainage area off North Circular Road.

Precinct Plan Summary

- Low and medium density residential development opportunity east of North Circular Road.
- Medium to long term urban expansion.
- District sporting facilities to replace landfill site.
- Landscape buffers to rail corridors.
- Potential short term/interim opportunity for TWA development integrated with existing residential areas.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Investigation required to facilitate site planning and development of workforce accommodation (potentially housing construction workforce).
- Precinct encapsulated in TPS5 as a 'Development Plan' area.
- Development Plan to be prepared over priority development areas (leaving land bank areas).
- Detailed consideration of land use/noise buffer requirements to railway corridors.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.



Precinct Highlights

1. Eastern 'gateway' entry road linking Murdoch Drive to city centre.
2. Opportunity for short term transient workforce accommodation.
3. District sporting facilities (and long term sporting land bank).



RESIDENTIAL

- Residential - High Density
(R80 - R120: Apartment Living)
- West End Residential
(Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density
(R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density
(R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre
(Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre
(Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre
(Retail, Commercial, Residential Mixed Use)
- Local Centre
(Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial
(Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community
(Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry /
Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

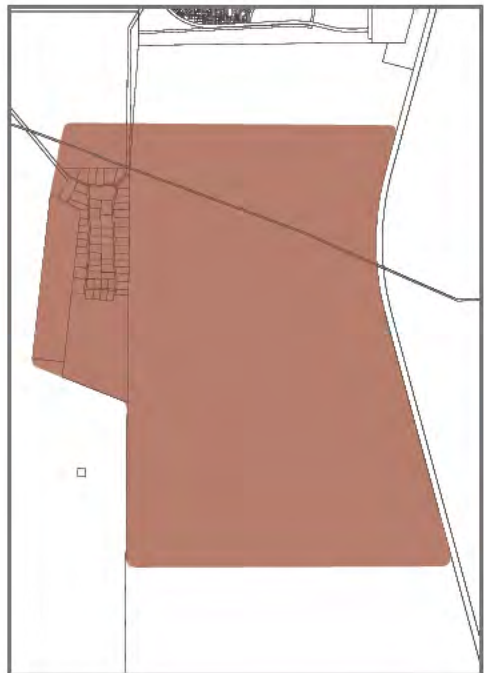
- Rural Residential
- Rural Industry

OTHER

- Public Purposes
(Wastewater Treatment, Water,
Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban
(Medium-Long Term)
- Future Expansion - Urban /
Rural Residential
(Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.14 Precinct 14 – Southern

“The Southern precinct provides opportunities for residents opting for a rural-residential lifestyle. Limited growth of the established rural-residential area is balanced with the need to protect the wider area for future urban development requirements.”



Key Figures (ultimate)

Area:	2300(ha) (indicative based on precinct boundary).
New Dwellings:	limited to eastern expansion area.
New Short Stay (rooms):	0 (0 total).
New Transient Workforce Accom:	0 (0 total).
Rural Residential Expansion:	92ha.
Future Urban Growth Area (ha):	1425ha.

Summary of Influences

Landscape, Heritage & Environment

- South Creek environs to the west and lower lying surrounds.
- Localised flooding and inundation in storm/cyclone events over a 100 year planning period.

Existing Land Use

- Limited area of rural small holdings at north west edge.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Precinct to be reflected within TPS5 to recognise long term land bank intent.
- Consider Rural Residential zone objectives and demand.
- Precinct encapsulated in TPS5 as a 'Development Plan' area.
- Development plan to be prepared.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- A coordinated approach to transport planning through a strategic transport assessment for all major roads.

Precinct Highlights

1. South Hedland rural residential estate expansion.





RESIDENTIAL

- Residential - High Density
(R80 - R120: Apartment Living)
- West End Residential
(Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density
(R40 - R60: Apartment, townhouse, villa residential)
- Residential - Low Density
(R15 - R30: Traditional Single Residential)

COMMERCIAL

- City Centre
(Civic, Cultural, Major Retail, Commercial, Mixed Use Residential and Entertainment)
- Commercial/Cultural Centre
(Retail, Commercial, Office, Short Stay Accommodation, Research & Education, Cultural and Entertainment)
- Neighbourhood Centre
(Retail, Commercial, Residential Mixed Use)
- Local Centre
(Convenience retail, Mixed Use, Short Stay Accommodation)
- Highway Commercial
(Bulky Goods, Motor Vehicle/Boat Sales, Show Room, Warehouse Commercial)
- Short Stay Accommodation
- Community
(Community, Education & Health)
- West End Mixed Use

INDUSTRIAL

- Light Industry
- General Industry /
Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

- Public Purposes
(Wastewater Treatment, Water,
Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban
(Medium-Long Term)
- Future Expansion - Urban /
Rural Residential
(Long Term - Beyond 50,000)
- Potential Boating Facility Site

5.6.15 Precinct 15 - Boodarie

Precinct Statement

“The Boodarie Strategic Industrial Area is recognised as a priority strategic industrial area by the State and Structure Planning for the estate is funded under the Cabinet-endorsed Heavy Use Industrial Land Strategy. The area supports major down-stream processing, port dependant industrial land uses, noxious industry, utilities and general industrial support operations. Major infrastructure and rail corridors protecting connectivity between the port and Boodarie, as well as wider rail networks are recognised.”



Key Figures (ultimate)

Area:	15000 (ha) (indicative based on precinct boundary).
New Strategic Industry (ha):	1,090 (1,658 total) (Note: includes former BHPBIO HBI Plant & surrounds in modelling as existing).

Summary of Influences

Landscape, Heritage & Environment

- Significant mangrove environments (northern edges).
- Rock art sites.
- South Creek environments.
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.

Existing Land Use

- Predominantly vacant land.
- Rail line on eastern edge.
- Power Station off Great Northern Hwy on north eastern edge.
- Boodarie Station House.
- FMG Mining operations and rail loop.

Current or Planned Projects

- Boodarie Strategic Industrial Area Masterplan.
- Rail line expansions (under investigation) as part of PHPA expansion.
- BHP “Quantum” Project planning.

Implementation Indicators

The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan’s objectives:

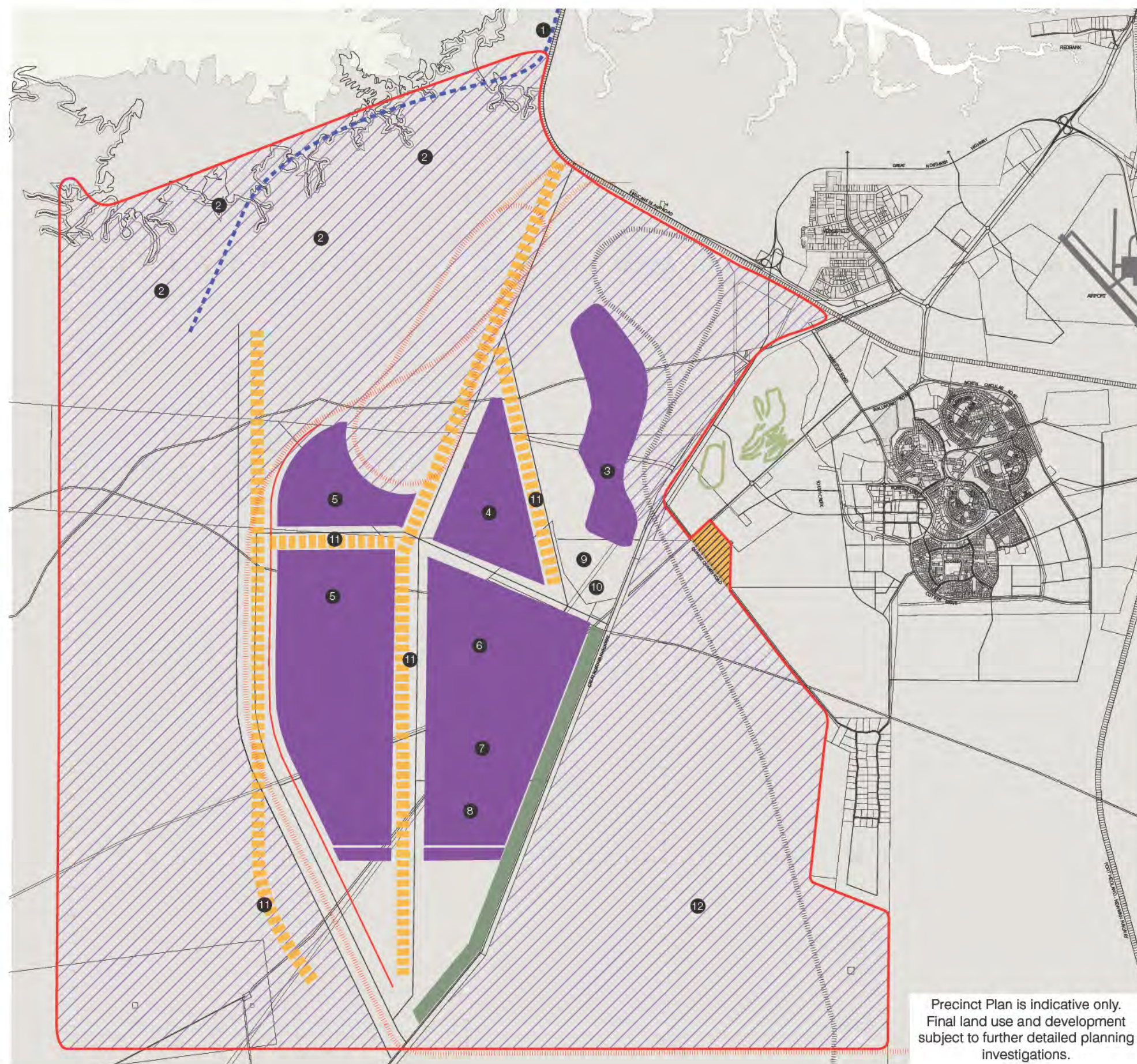
- Boodarie Development Pan to be completed and adopted under TPS5 as framework for development (under preparation by Department of State Development).

- Coastal hazard risk management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.

Precinct Highlights

1. Outer Harbour conveyor corridor.
2. New stockyards.
3. Industry Support Cell.
4. Port dependant operations.
5. Processing.
6. Utilities.
7. General/heavy industry.
8. Noxious industry.
9. Power station.
10. Energy.
11. Key corridors.
12. Potential future heavy industry (combine with Boodarie SIA operations and any buffers contained within existing Boodarie Special Control Area) - investigate for limited accommodation of uses not able to establish in Boodarie core area.





RESIDENTIAL

- Residential - High Density
(R80 - R120: Apartment Living)
- West End Residential
(Residential R80 with design controls consistent with TPS 5)
- Residential - Medium Density
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- Light Industry
- General Industry / Transport and Logistics
- Strategic / Heavy Industry
- Strategic / Heavy Industry Buffer

RECREATION AND CONSERVATION

- Coastal Lookout
- Local Open Space / Recreation
- Landscape Buffer
- Natural Landscape / Conservation

RURAL

- Rural Residential
- Rural Industry

OTHER

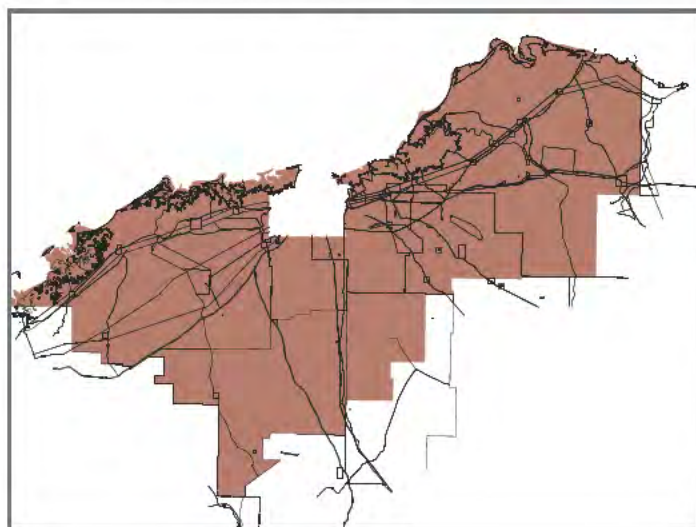
- Public Purposes
(Wastewater Treatment, Water, Cemetery, Energy)
- Airport Operations
- Future Expansion - Urban
(Medium-Long Term)
- Future Expansion - Urban / Rural Residential
(Long Term - Beyond 50,000)
- Potential Boating Facility Site

Precinct Plan is indicative only.
Final land use and development
subject to further detailed planning
investigations.

5.6.16 Precinct 16 – Port & South Hedland Surrounds

Precinct Statement

“Coast and landscape define Pilbara’s Port City. Opportunities for connection and association with coast and landscape are typified through the recreation and tourism nodes that bring greater lifestyle choice in the wider Port and South Hedland areas. Camping, fishing and beach walking form an important part of the northern Australian life.”



Summary of Influences

Landscape, Heritage & Environment

- Historic De Grey Stock Route.
- Wider coastal landscape and environs subject to coastal vulnerability.
- Indigenous heritage throughout.
- Indigenous: Sites registered in Precinct with potential for currently unknown sites to occur. Boodarie Landing engravings.
- Non-Indigenous: Heritage items such as pastoral properties exist with potential for further unregistered sites. Condon/ Shellborough Pastoral properties include Pippingarra, Mundabullangara, Boodarie, Wallareenya, De Grey, Strelley and Woodstock Stations.
- Localised flooding and inundation in storm/cyclone events along with potential changes in shore line condition over a 100 year planning period.

Existing Land Use

- Pastoral Station Leases / operations.
- Informal camping/fishing.
- Aboriginal communities including; Yandeyarra (Mugarinya), Jinparinya, Ngarla coastal Njamal, Marta Marta and Strelley.

Precinct Plan Summary

- Key locations identified for coastal access, fishing and camping.
- Newman turn off identified for further investigation of transport and regional landfill uses.
- Improved provision of key services and infrastructure for remote indigenous communities.

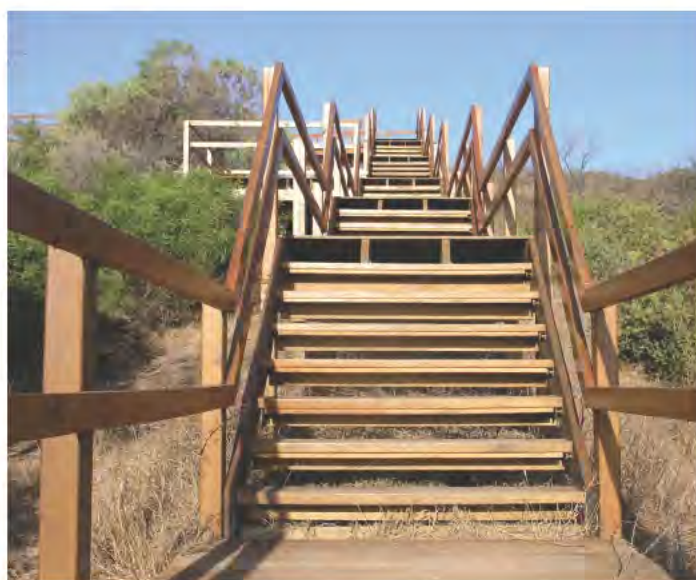
Implementation Indicators

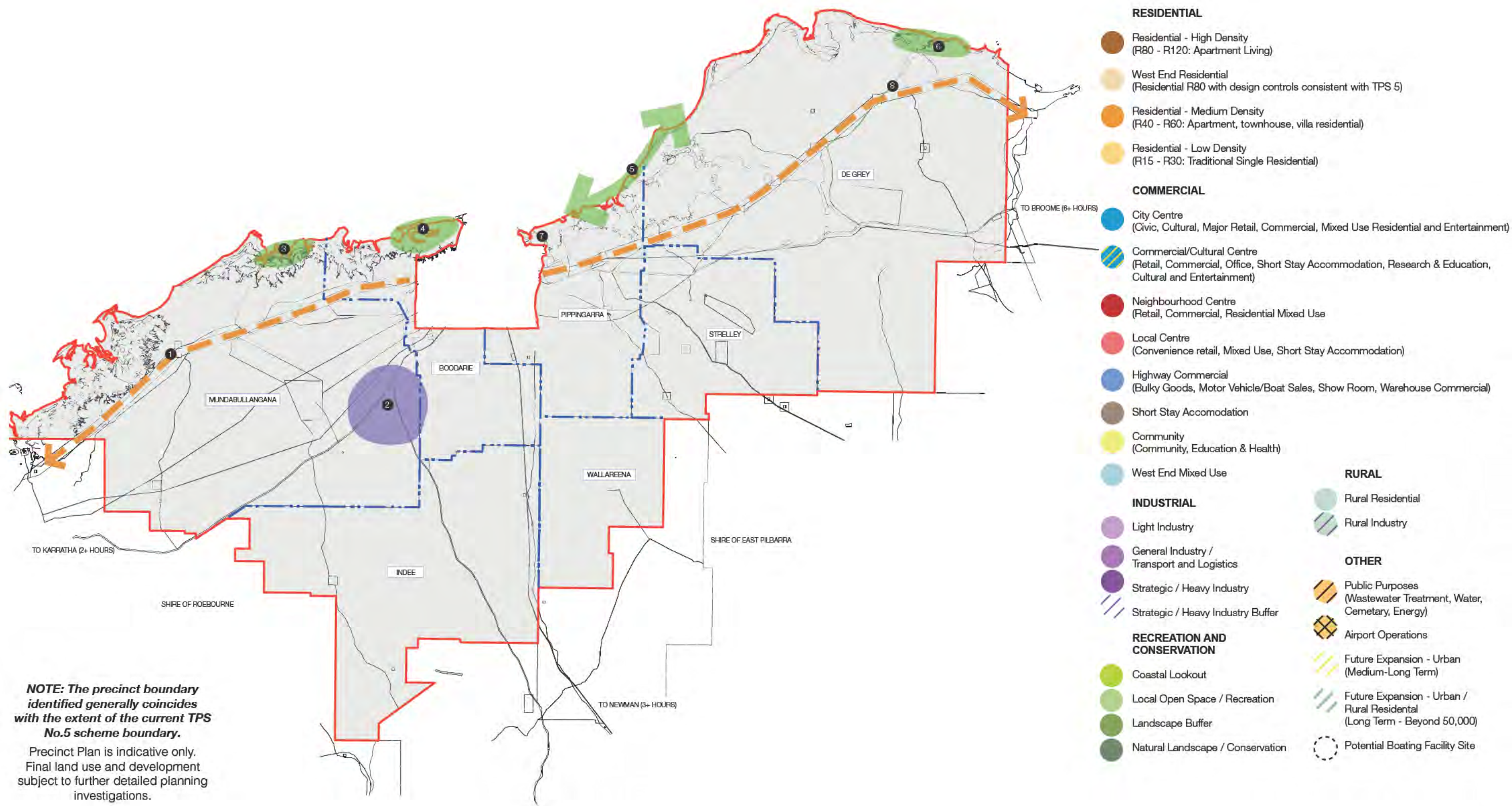
The following is a guide to some of the considerations needing to be examined in detail to facilitate implementation and delivery of the Growth Plan's objectives:

- Coastal hazard risk management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Establishment of order of costs, timing and funding necessary to deliver earlier upgrades to identified coastal access locations.
- Wider coastal access study, particularly of Port Hedland, required to determine opportunities at a local level.
- Investigation of Area A as a priority.
- Progression of community layout plans and extension of infrastructure to Aboriginal settlements. Coastal hazard risk management and adaptation planning for new development within areas identified as at risk of coastal erosion.
- Hazard risk management assessment and adaptation planning for all new developments identified as at risk of localised flooding and inundation.
- All Western Australian pastoral leases are due to expire in 2015. The expiry of the leases in 2015 will provide an opportunity to negotiate exclusions from pastoral leases of key areas that may be required for public works, conservation, national park, nature reserve, tourism or other State purposes.

Precinct Highlights

1. De Grey-Mullewa stock route.
2. Investigation Area A: Newman turnoff (potential waste disposal transfer, industrial transport depot/storage).
3. Investigation Area B: Turtle Tourism.
4. Horseshoe and Bus Stop (camping, fishing locations) to be considered in context of Boodarie Station Management Plan.
5. Investigation Area C: (fishing, camping, swimming with improved coastal access).
6. Investigation Area D: Condon Shellborough tourism location (camping & coastal access) and/or within the De Grey station.
7. Investigation Area E: Development Investigation.
8. Current access to Shellborough.





6.0 SUMMARY AND IMPLEMENTATION

6



6.1 SUMMARY AND IMPLEMENTATION

The Pilbara's Port City Growth Plan has laid the foundations for Port Hedland to grow into a city of 50,000 people and become Pilbara's Port City.

The document has outlined the principles, challenges, opportunities and strategies for achieving the Town of Port Hedland's vision of a nationally significant, friendly City, where people want to live and are proud to call home.

In addition the document has identified a Preferred Growth Scenario. Under this scenario, emphasis is placed on a balance between infill and immediate extension of services to provide new development; with controlled new expansion into greenfield areas within South Hedland. This scenario promotes connectivity through the development of key public transport and the potential to deliver a more transit-oriented sustainable city. It will also allow infrastructure service providers to maximise efficiency in delivery and simplify the priorities for growth.

It is recognised, however, that the preferred scenario does require significant public and private ownership and investment, the basis for which is outlined in the strategies section. The timing and delivery of strategy items is detailed in the accompanying 'Implementation Plan' document.

For the first time, Pilbara's Port City will have clear strategies to map and implement growth across five core themes. Spatially, the Growth Plan identifies 16 Growth Precincts, broadly setting out how land should be used and developed – and protecting the primacy of the Port and resource infrastructure and operations. In addition to non-spatial strategies, these precincts provide the

foundations for the following:

- A population of 54,000 people, including a greatly reduced reliance on a FIFO workforce.
- Significant new residential development capacity (in excess of demand for a population of 50,000), including:
 - 23,043 total new dwellings (including infill development and allowance for normalisation of vacancy rates in line with typical market levels);
 - 17,400 new dwellings in South Hedland;
 - 5,643 new dwellings in Port Hedland;
 - No additional new dwellings in West End.
- Providing housing diversity and housing choice to cater for future growth of both permanent and temporary accommodation;
- Approximately 125,000m² of additional retail/commercial floor space;
- A cultural hub in the West End of Port Hedland and a new retail centre in the East End;
- Delivery of the regional City centre in South Hedland; and
- Approximately 2,161ha of additional strategic industrial land and 450ha of additional general/light industrial land.

To meet the needs of a growing population, the Growth Plan also identifies a range of strategies and initiatives required to address the core themes. In particular, housing has been identified as by far the most critical issue and impediment to economic growth and a range of strategies have been articulated to address this issue; failure to address this issue in a proactive and robust fashion could impair all future growth.

The growth of Port Hedland on the scale envisaged will require a wide ranging and coordinated approach to effectively plan and provide infrastructure for a port city. This is the role of the Implementation Plan, a document prepared concurrently with the Growth Plan.

Pilbara's Port City Growth Plan



A vision for a nationally significant regional city

Pilbara's Port City Implementation Plan



A vision for a nationally significant regional city

"A Plan to Make it Happen"

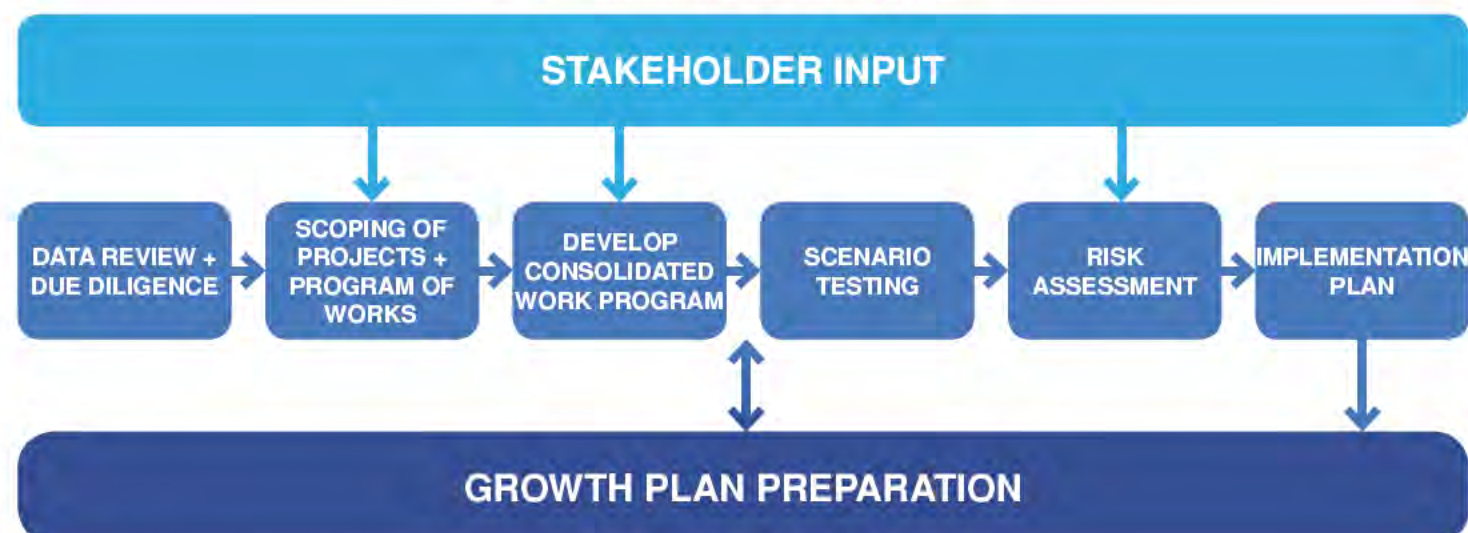


Figure 6.1: Plan to 'Make it Happen'.

Implementation

Detailed implementation measures for spatial and non-spatial strategies are documented in 'Pilbara's Port City Implementation Plan' across each of the Growth Plan themes:

- Sustaining and Diversifying Economic Growth.
- Strengthening Local Communities and Culture.
- Environmental Protection and Change Adaptation.
- Land Supply and Housing.
- Building and Maintaining Infrastructure Capacity.

Implementation is mapped across immediate, short, medium and long term timeframes.

The Implementation Plan sets out the program for delivery of the spatial and non-spatial elements, including community, economic, environmental, physical and infrastructure projects and programs. It includes a broad set of actions, roles and responsibilities, timing, and other information required to inform the delivery plans and programs of project partners.

A key focus of the Implementation Plan is on identifying project inter-dependencies and 'critical paths' to ensure a fully integrated strategy. Critical lead-time projects are elevated and prioritised in the Implementation Plan to fast-track work. For example, opportunities to fast-track infrastructure capacity and environmental studies that can take a number of months (and years in some cases) are considered to ensure an adequate supply of "project ready" land (residential, industrial or commercial).

The Implementation Plan is sufficiently robust to respond to a range of growth scenarios and, importantly, to take into account the range of existing projects and programs that will be or are already progressing concurrently with the Growth Plan.

The support and assistance of all relevant agencies will be vital in the years ahead if both the Town of Port Hedland and the State Government are to realise for the delivery of the spatial and non-spatial elements in the Implementation Plan.

"Quick Wins"

The Growth Plan has identified a number of early or "Quick Wins" that can be progressed immediately (0-2 years). These are summarised below.

The Implementation Plan identifies and documents these "Quick Wins" in more detail, including the specific actions, timeframes, stakeholder roles, etc. to realise them.

Precinct 1 (West End)

- Development of cultural experiences in the West End.
- Business development initiatives.
- Provide for infill development.
- Development of Hotel site, Acton Street.
- Development of old hospital site.

Precinct 2 (East End)

- Development of concept plan (Structure Plan) for future development of East Port Hedland.
- Development of "easy areas" within East Port Hedland.
- Planning scheme amendments to increase density in existing areas to facilitate infill.
- Upgrade of sewer and water infrastructure.
- Relocation of Wastewater Treatment Plant by 2014.

Precinct 3 (Port Authority)

- Progression of inner harbour and outer harbour development.
- Progression of industrial and port facility services eg. rail.

Precinct 6 (Wedgefield)

- Development of industrial land.

Precinct 7 (Airport & Surrounds)

- TWA developments for construction workforce (performance based, ensuring limited lifetime as TWA).
- Expansion of Airport.

Precinct 9 (Western Gateway)

- Master planning of sporting precincts.

- Expansion of WWTP.

Precinct 10 (South Hedland West)

- Progression of rezoning of approximately 120ha of Precinct 10 to facilitate residential development.
- Development of new urban release areas (including Areas A & B).

Precinct 11 (City Centre)

- 'Main Street' opening, including town square (2011).
- Five sites released during 2011 and 2012 .
- Development of Community Facilities.
- Skate Park redevelopment.
- South Hedland Aquatic Centre (SHAC) upgrade.
- Development of hotel site, mixed use residential sites.

Precinct 12 (South Hedland East)

- Rezoning of key areas within established neighbourhoods of east South Hedland to facilitate redevelopment opportunities within existing serviced areas.
- Progression of masterplanning and remaining rezoning to facilitate construction of residential land.
- Development of new urban land release areas.

Precinct 15 (Boodarie)

- Progression of planning for Boodarie SIA.

Precinct 16 (Surrounds)

- Development of Coastal Access Strategies.

In addition to non-spatial strategies, these precincts provide the foundations for the following:

- Significant new residential development capacity (including excess of demand for a population of 50,000), including:
 - 23,043 new dwellings;
 - 17,400 new dwellings in South Hedland;
 - 5,643 new dwellings in Port Hedland;
 - No net additional new dwellings in West End.
- Providing housing diversity and housing choice to cater for future growth of both permanent and temporary accommodation;
- Approximately 125,000m² of additional retail/commercial floor space;
- Delivery of a regional City Centre for South Hedland (61,000m² of additional floor space);
- A cultural hub in the West End of Port Hedland (32,000m² of additional floor space);
- A new centre in the East End of Port Hedland (24,000m² of additional floor space);
- A cultural hub in the West End of Port Hedland and a new retail centre in the East End; and
- Approximately 2,161ha of additional strategic industrial land and 450ha of additional general/light industrial land.

APPENDIX



APPENDIX A: STATE, REGIONAL AND LOCAL PLANNING CONTEXT

The Pilbara's Port City Growth Plan has been prepared to provide a strategic blueprint for the future sustainable development of Port Hedland as it grows into a City of 50,000 people. It is also intended to replace the Port Hedland Land Use Master Plan (LUMP) as the Local Planning Strategy for the Town of Port Hedland (ToPH), informing the land use component of the ToPH Town Planning Scheme which will translate the Growth Plan strategies and recommendations into statutory planning regulations for the City.

The following key state, regional and local planning strategies, plans and policies have been considered alongside the physical, natural, economic and social characteristics of the locality to inform the Growth Plan's development and ensure consistency with wider strategic aims.

1. State and Regional Planning Context

1.1 State Planning Strategy

The State Planning Strategy was published by the Western Australian Planning Commission (WAPC) in 1997, comprising a comprehensive list of strategies, actions, policies and plans to guide the planning and development of regional and metropolitan areas in Western Australia. It is the key strategic planning document coordinating the State Government's response to the major planning challenges and opportunities facing state and local authorities.

The State Planning Strategy sets the following five key principles intended to guide and coordinate action at all levels of government and across all agencies:

- **The Environment** - 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 sound environmentally sustainable principles.
- **The Community** - To respond to social changes and facilitate the creation of vibrant, accessible, safe and self-reliant communities.
- **The Economy** - 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 ensuring land use, transport and public utilities are mutually supportive.
- **Regional Development** - To assist the development of regional Western Australia by taking account of the region's special assets and accommodating the individual requirements of each region.

Consistent with the State Planning Strategy's key principles, the Growth Plan is structured around the following five core themes:

- **Environmental Protection and Change Adaptation** – the protection and enhancement of natural environmental and cultural assets, biodiversity, air and water quality, and building resilience against the long term effects of climate change.
- **Strengthening Local Communities & Culture** – fostering the development of safe, friendly and inclusive communities. Providing places and space that reflect and enhance the unique character, indigenous and non-indigenous heritage and identity of the area. Building resilience within the community and providing services and facilities for a range of diverse community needs and interests, so as to reduce disadvantage and improve social cohesion.
- **Sustained and Diversified Economic Growth** – providing opportunities for regional and local employment generation to address the gaps in employment outcomes within the community and providing the right conditions for robust economic growth to occur across a range of industries.

- **Building & Maintaining Infrastructure Capacity** – strategic and urban transport, utilities and communications infrastructure are provided in a timely, sustainable and efficient manner to cater for a growing resident population and increasing economic activity.
- **Housing Diversity & Land Supply Capacity** – providing an orderly and adequate supply of affordable land along with increased choice in affordable housing products and tenure options to cater for a diverse and permanent population.

These core themes and have helped to guide the development of strategies and initiatives presented in Section 5 of the Growth Plan, which will facilitate implementation of the State Planning Policy principles, strategies and actions. As both a Local Planning Strategy and the ToPH's long term strategy for growth as a sustainable Regional City, the State Planning Strategy's key actions and initiatives associated with the Regional Development principle are particularly relevant to the Growth Plan.

The State Planning Strategy provides the following vision statement for the Pilbara Region:

In the next three decades, the Pilbara Region will be a world leading resource development area focusing on mineral extraction, petroleum exploration and production and the primary stages of downstream processing. The region's population will grow in the future, fuelled by specific resource development projects, the sustainable development of Karratha and Port Hedland and a more diverse economy. A growing tourism industry will have developed based on the region's unique natural environment.

Linked to this vision are a range of specific strategies and actions, of which, the following are considered the most pertinent to (and addressed in) the Pilbara's Port City Growth Plan.

Strategy	Actions	Growth Plan Response
Give greater emphasis to local recruitment and training of the workforce.	<ul style="list-style-type: none"> • Provide more comprehensive vocational training within the region, tailored to regional industry needs. • Encourage Aboriginal participation in industry related vocational training. 	<ul style="list-style-type: none"> • Industry needs and skills/training alignment is investigated in Section 3.2, with specific strategies and initiatives outlined in Section 5.2. (e.g. upgrade/provision of specialist tertiary learning facilities aligned with local industry skills requirements). • Aboriginal participation in industry is considered in Section 3.4, with strategic responses identified in Sections 5.2 and 5.3 (e.g. program of partnerships between industry, training providers and local employers to increase the 'work ready' indigenous workforce and provide appropriate employment, education and training opportunities).
Promote opportunities for economic development.	<ul style="list-style-type: none"> • Encourage mineral development and processing. • Promote development opportunities in all aspects of economic activity, for example, tourism, small business and infrastructure provision. 	<ul style="list-style-type: none"> • The Growth Plan acknowledges the importance of mineral development and processing in the local and regional economies (Section 3.2) and seeks to further capitalise on strategic advantages by developing unique capabilities (Section 5.2). Acknowledges Boodarie Strategic Industrial Area as a future strategic

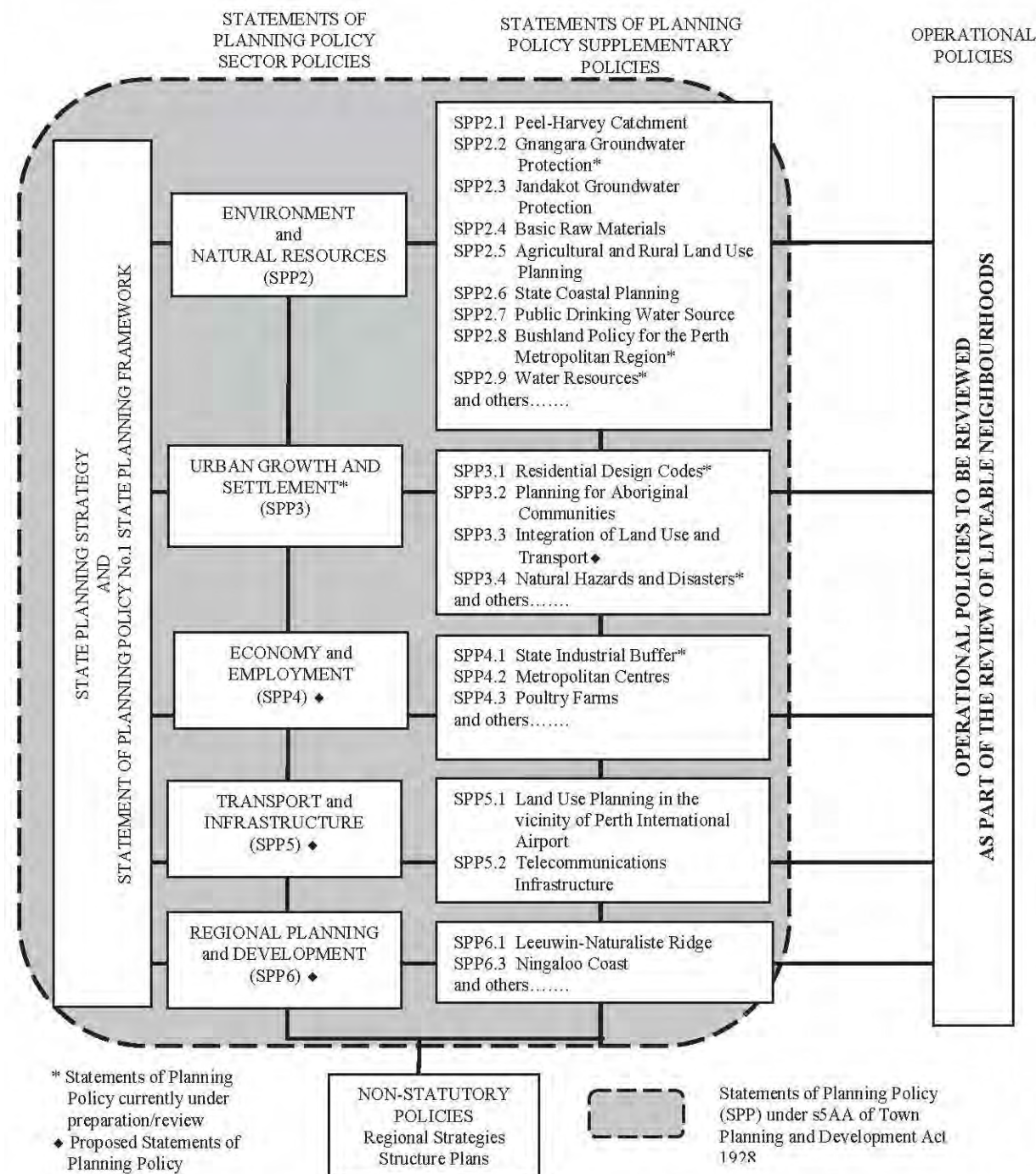
		<p>hub for minerals development and processing activity.</p> <ul style="list-style-type: none"> The need to further diversify the economic base and support a wider range of business activities is highlighted as a key objective and challenge in Sections 2 and 3 of the Growth Plan. A wide range of spatial and non-spatial responses are provided in Section 5.
Minimise the detrimental impact of fly-in, fly-out resource development projects.	<ul style="list-style-type: none"> Encourage alternatives to the fly-in fly-out of workers from projects. Where the fly-in fly-out of workers from projects is absolutely necessary encourage links to regional centres within the Pilbara rather than to Perth. 	<ul style="list-style-type: none"> The Growth Plan acknowledges the role fly-in fly-out (FIFO) workers currently play in Port Hedland, and that in the short to medium term there remains an urgent need to provide a skilled labour force larger than that currently supported by the permanent residential population. The Growth Plan recommends a long term decline in the number of FIFO workers, along with a corresponding increase in the number of permanent resident skilled workers in Port Hedland (through a full range of strategies to improve liveability, housing supply, service provision etc).
Provide coordination of government agencies to minimise the obstructing/delaying of resource developments and associated infrastructure needs.	<ul style="list-style-type: none"> Provide greater coordination between government agencies to allow for the timely provision of supporting community infrastructure for resource developments, including alternative funding arrangements. 	<ul style="list-style-type: none"> Increased agency cooperation to provide necessary community infrastructure (e.g. education, health, housing etc) is advocated by the Growth Plan, and further expanded upon in the associated Implementation Plan which identifies key delivery agency responsibilities etc.
Provide strategic transport linkages within and to the Pilbara Region.	<ul style="list-style-type: none"> Extend port planning to encompass channel capacity and future port infrastructure requirements and access. 	<ul style="list-style-type: none"> Growth Plan identifies the Port as a key economic asset which, along with its key infrastructure corridors, should have primacy in future spatial planning scenarios. This has been reflected throughout the document, including recognition of the future Outer Harbour Development as a significant strategic capacity enhancement.
Improve access to water supplies for domestic and industrial usage.	<ul style="list-style-type: none"> Investigate how to increase water supply to regional centres in the Pilbara. 	<ul style="list-style-type: none"> Water supply is a primary constraint to immediate and short term development in Port Hedland. Section 3.6 identifies this as a major challenge for unlocking future urban

		<p>and industrial development potential. Section 5.6 identifies strategies and initiatives for both increasing water supply (both potable for domestic use and non potable for industry use) and improving water efficiency.</p>
Ensure infrastructure provision is the focus of government agencies.	<ul style="list-style-type: none"> Coordinate government agencies to ensure the timely provision of supporting regional infrastructure to resource developments, such as housing land and water. 	<ul style="list-style-type: none"> Increased agency cooperation to provide necessary infrastructure (e.g. water, housing etc) is advocated by the Growth Plan, and further expanded upon in the associated Implementation Plan which identifies key delivery agency responsibilities etc.

1.2 State Planning Framework

The State Planning Framework is an overarching Statement of Planning Policy (SPP No.1) adopted under Section 5AA of the *Town Planning and Development Act (1928)*. It sets out key principles relating to environment, economy, community, infrastructure and regional development (consistent with those outlined in the State Planning Strategy) and describes the range of strategies and actions which support these principles generally and spatially. It brings together all existing state and regional plans, policies, strategies and actions applying to land use and development in the State.

The framework is further described in the following diagram.



Those elements of the State Planning Framework which specifically apply to the Town of Port Hedland are considered below.

1.3 State Planning Policy

The following State Planning Policies are directly applicable to the Town of Port Hedland and have been considered in the preparation of the Growth Plan.

STATE PLANNING POLICY	GROWTH PLAN RESPONSE/CONSIDERATION
<p>SPP No. 2 Environment and Natural Resources Policy</p> <p>This policy defines the principles and considerations that represent good and responsible planning in terms of environment and natural resource management. It is an overarching policy that is supplemented by more detailed planning policies on specific environmental matters requiring additional information and guidance.</p> <p>The objectives of the policy are to:</p> <ul style="list-style-type: none"> Integrate environment and natural resource management with broader land use planning and decision-making. Protect, conserve and enhance the natural environment. Promote and assist in the wise and sustainable use and management of natural resources. 	<p>Environment and sustainable resource management are key themes within the Growth Plan, forming primary investigation themes underpinning the Plan's development. A strategic assessment of environmental factors and sustainable resource management issues is provided in Section 3.5 of the Growth Plan, with specific spatial and non spatial strategies presented in Section 5.5. Furthermore, city growth scenarios were assessed against these environmental principles in Section 4 of the Growth Plan.</p>
<p>SPP No. 2.6 State Coastal Planning Policy</p> <p>This policy addresses land use planning and development issues specifically as they relate to the protection and management of the coast. It requires strategic plans to guide local planning, development setbacks for protection against coastal processes such as erosion and storms, and the provision of coastal foreshore reserves.</p> <p>The policy provides high order guidance for decision-making on coastal planning matters and applies state wide. Implementation is to be via local government town planning schemes, and regional and local strategies.</p> <p>The objectives of this policy are to:</p> <ul style="list-style-type: none"> protect, conserve and enhance coastal values, particularly in areas of landscape, nature conservation, indigenous and cultural significance; provide for public foreshore areas and access to 	<p>A key consideration in preparing the Growth Plan has been the impact of development on coastal environments and the long term physical processes that change the coastal alignment over time. The Growth Plan team worked closely with LandCorp and Cardno, who have recently produced the Port Hedland Coastal Vulnerability Study (PHCVS), and considered the study findings in the development of Growth Plan strategies and plans (particularly in coastal precincts 1 and 2).</p> <p>Included in Section 3.5 is a diagram illustrating the PHCVS findings, including the identification of a 100 year coastal erosion alignment. As identified in Section 5 of the Growth Plan, future detailed planning and development within areas identified as at risk of coastal erosion (and inundation) will require detailed assessment and consideration of geotechnical factors (e.g. underlying rock) to determine appropriate coastal setbacks and management actions. These requirements will also need to be reflected in any future review of the Town Planning Scheme to ensure SPP2.6 and the PHCVS</p>

<p>these on the coast;</p> <ul style="list-style-type: none"> ensure the identification of appropriate areas for the sustainable use of the coast for housing, tourism, recreation, ocean access, maritime industry, commercial and other activities; and ensure that the location of coastal facilities and development takes into account coastal processes including erosion, accretion, storm surge, tides, wave conditions, sea level change and biophysical criteria. 	<p>recommendations are appropriately implemented.</p>
<p>SPP No. 2.9 Water Resources</p> <p>This policy is directly related to the overarching sector policy SPP 2 Environment and Natural Resources policy and provides clarification and additional guidance to planning decision-makers for consideration of water resources in land use planning.</p> <p>The objectives of this policy are to:</p> <ul style="list-style-type: none"> protect, conserve and enhance water resources that are identified as having significant economic, social, cultural and/or environmental values; assist in ensuring the availability of suitable water resources to maintain essential requirements for human and all other biological life with attention to maintaining or improving the quality and quantity of water resources; and promote and assist in the management and sustainable use of water resources. 	<p>As identified in Section 5, the sustainable use of water resources is a key requirement for all development going forward. The protection of key surface and groundwater assets (both in terms of quality and quantity) through appropriate development interface and the adoption of best practice water management actions is advocated by the Growth Plan. These principles also underpin the development of Precinct plans, to be further implemented through local statutory planning frameworks.</p>
<p>SPP No. 3 Urban Growth and Settlement</p> <p>This policy sets out the principles and considerations which apply to planning for urban growth and settlements in Western Australia.</p> <p>The objectives of this policy are:</p> <ul style="list-style-type: none"> To promote a sustainable and well planned pattern of settlement across the State, with sufficient and suitable land to provide for a wide variety of housing, employment, recreation facilities and open space. To build on existing communities with established local and regional economies, concentrate investment in the improvement of 	<p>This is a key policy in the context of planning for significant population growth in Port Hedland. The Growth Plan adheres and responds to the policy objectives by:</p> <ul style="list-style-type: none"> Identifying significant additional areas of land for housing, employment, recreation and open space. Concentration of new development in and around established urban areas of Port and South Hedland, including consolidation of (and increases in) density around key activity centres and where best served by existing infrastructure. Recognition of key economic, environmental and

<p>services and infrastructure and enhance the quality of life in those communities.</p> <ul style="list-style-type: none"> To manage the growth and development of urban areas in response to the social and economic needs of the community and in recognition of relevant climatic, environmental, heritage and community values and constraints. To promote the development of a sustainable and liveable neighbourhood form which reduces energy, water and travel demand while ensuring safe and convenient access to employment and services by all modes, provides choice and affordability of housing and creates an identifiable sense of place for each community. To coordinate new development with the efficient, economic and timely provision of infrastructure and services. 	<p>social opportunities and constraints through the consideration of growth scenarios and spatial plans.</p> <ul style="list-style-type: none"> Acknowledgement of housing affordability and choice issues, and identification of appropriate spatial and non spatial responses to address these. Providing for the orderly timing and sequencing of new infrastructure to support new development (further defined and detailed in the accompanying implementation plan).
<p>SPP No. 3.1 Residential Design Codes</p> <p>The Residential Design Codes (R-Codes) apply throughout the Town of Port Hedland, with the most recent version being adopted by the WAPC in 2010. They provide a comprehensive basis for the control (administered through local government) of residential development throughout Western Australia.</p>	<p>Whilst not a strategic planning policy document in themselves, the R-Codes have been considered in the Growth Plan's preparation with regard to the nomination of residential densities through each of the precinct plans.</p>
<p>SPP No. 3.2 Aboriginal Settlements</p> <p>This policy was published in May 2011, revoking the first published version. The Policy defines Aboriginal settlement as being: 'a discrete place that is not contiguous with a gazetted town, is inhabited or intended to be inhabited wholly or principally by persons of Aboriginal descent, as defined under the Aboriginal Affairs Planning Authority Act 1972, and which has no less than 5 domestic dwellings and/or is supported by essential services that are provided by one or more state agency(s)'. It is estimated that of the 280 Aboriginal communities in WA that up to 150 may be characterised as Aboriginal settlements.</p> <p>The objectives of the Policy are:</p> <ul style="list-style-type: none"> To provide for the recognition of Aboriginal settlements through local planning schemes and strategies. To collaboratively plan for the orderly and coordinated development of Aboriginal settlements. 	<p>There are a number of aboriginal settlements/communities in Port Hedland and the wider municipal area, including:</p> <ul style="list-style-type: none"> Tjalka Boorda (Precinct 2) Tjalka Warra (Precinct 8) Pippingarra (Precinct 8) Yandeyarra (Mugarinya) (Precinct 16) Jinparinya (Precinct 16) Ngarla coastal Njamal (Precinct 16) Marta Marta (Precinct 16) Strelley (Precinct 16) <p>These are acknowledged in the Growth Plan (precinct plan commentary) as requiring a collaborative approach to ensuring that future development of these settlements occurs in an orderly and coordinated manner (e.g.</p>

	through the preparation of Community Layout Plans).
<p>SPP No. 3.4 Natural Hazards and Disasters</p> <p>The purpose of this policy is to inform and guide the WAPC in the undertaking of its planning responsibilities, and in integrating and coordinating the activities of State agencies that influence the use and development of land that may be affected.</p> <p>Consistent with the purpose of the policy, the objectives of this policy are to:</p> <ul style="list-style-type: none"> • Include planning for natural disasters as a fundamental element in the preparation of all statutory and non-statutory planning documents, specifically town planning schemes and amendments, and local planning strategies; and • Through the use of these planning instruments, to minimise the adverse impacts of natural disasters on communities, the economy and the environment 	<p>Of particular relevance to Port Hedland is the risk of major tropical cyclone impacts, particularly storm surge and localised catchment flooding. The Growth Plan recognises this risk through consideration of the Port Hedland Coastal Vulnerability Study findings and the identification of key areas at risk of inundation during major storm events. The Growth Plan recommends that the findings of the PHCVS be utilised not only to inform further detailed planning and investigation of new development sites, but also in the development of emergency response plans and in the upgrading of key strategic infrastructure in the future.</p>
<p>SPP No. 3.5 Historic Heritage Conservation</p> <p>This policy sets out the principles of sound and responsible planning for the conservation and protection of Western Australia's historic heritage.</p> <p>The objectives of this policy are—</p> <ul style="list-style-type: none"> • To conserve places and areas of historic heritage significance. • To ensure that development does not adversely affect the significance of heritage places and areas. • To ensure that heritage significance at both the State and local levels is given due weight in planning decision-making. • To provide improved certainty to landowners and the community about the planning processes for heritage identification, conservation and protection. 	<p>Indigenous and non indigenous heritage was a core line of investigation as part of the Growth Plan's development, with key opportunities, constraints and issues identified in Section 3. Further strategies and recommendations for future development (particularly in Precincts 1 and 2) are presented in Section 5 to ensure historic heritage is preserved, protected and celebrated as being central to the identity of Port Hedland.</p>
<p>SPP No. 4.1 State Industrial Buffer Policy (Amended)(Draft)</p> <p>This policy applies to all industrial development and sets out how buffers are to be determined in relation to</p>	<p>Detailed consideration of SPP No. 4.1 took place in the Growth Plan's development with regard to identifying existing and potential future land use separation</p>

<p>different industries, their management and the types of land uses that may be permitted within them.</p> <p>This policy applies statewide, to planning decision-making, and proposals which seek to provide for new industrial areas and uses, and essential infrastructure, sensitive land uses in proximity to existing industrial areas.</p> <ul style="list-style-type: none"> • The objectives of the policy are to: • avoid conflict between industry and/or essential infrastructure and sensitive land uses; • protect industry and/or essential infrastructure from encroachment by those land uses that would be sensitive to impacts and adversely impact the efficient operations; • provide for the development of industry and/or the provision of essential infrastructure in a way that maximises amenity, minimises environmental and health impacts and takes account of risk to nearby sensitive land uses; and • promote compatible uses in areas affected by off-site impacts of industry and/or essential infrastructure. 	<p>distances, with these considerations being presented in both the body of the report (Sections 3 and 5) and <i>Appendix B – Technical Summaries</i>, where broad scale mapping is provided showing the typical buffers and areas of influence associated with certain industrial activities (and infrastructure corridors).</p> <p>Whilst generic separation/buffer distances are provided for in both SPP No.4.1 and the Environmental Protection Agency's Guidance Statement No.3 (<i>Separation Distances between Industrial and Sensitive Land Uses</i>), the Growth Plan acknowledges that site-specific technical analysis is able to define the most appropriate separation distances between land uses to avoid conflict. This is consistent with SPP No. 4.1 which states that technical analysis is required if a proponent seeks to reduce the buffer from those specified in EPA Guidance Statement No. 3 and in circumstances where industry seeks to expand their operations or were cumulative impacts may occur. Industries or operations that pose potential risk to amenity or health, and are not addressed in Guidance Statement No. 3 may also require technical analysis.</p>
<p>SPP No. 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning</p> <p>This policy aims to promote a system in which sustainable land use and transport are mutually compatible.</p> <p>The objectives of this policy are to:</p> <ul style="list-style-type: none"> • protect people from unreasonable levels of transport noise by establishing a standardised set of criteria to be used in the assessment of proposals; • protect major transport corridors and freight operations from incompatible urban encroachment; • encourage best-practice design and construction standards for new development proposals and new or redeveloped transport infrastructure proposals; • facilitate the development and operation of an efficient freight network; and 	<p>Given the historic nature of development and land use, both residential and industrial, in Port Hedland, issues of rail and road transport noise are central to the consideration of new development areas and major new infrastructure corridor proposals. Whilst many of the existing issues apply to existing development and infrastructure (which are not covered by this policy), the Growth Plan does identify areas for new residential development (e.g. Precinct 2, Precinct 13) which are in the vicinity of key rail and road corridors and therefore need to be considered in the context of this policy. In these instances, precinct plans have been developed to locate/orientate new potential development areas so that appropriate buffers and/or management measures can be maintained. Furthermore, the Growth Plan also identifies specific implementation factors for each precinct which will need to be addressed as part of detailed planning and development proposals – this includes the detailed assessment of noise and vibration impacts (and appropriate buffering/design/management measures) for any new development areas where in the vicinity of key</p>

<ul style="list-style-type: none">facilitate the strategic co-location of freight handling facilities. <p>It should be noted that the policy and these guidelines apply to proposals for new noise-sensitive developments, new railways or major roads, major redevelopments of existing railways or major roads, and new freight handling facilities. The policy and guidelines do not apply to noise from existing railways or major roads in the vicinity of an existing noise-sensitive land use, or an increase in traffic along an existing railway or major road in the absence of a major redevelopment.</p>	rail and road corridors.
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1.4 Non-Statutory Policies (Regional Strategies, Structure Plans)

Port Hedland Area Planning Study

Published in 2004, the Port Area Planning Study provided a comprehensive strategy framework to guide State decision-making and detailed planning at the local level, with a planning horizon of 20-25 years. The study made several recommendations regarding the future of Port Hedland, many which have been implemented. Although now replaced by the Pilbara Planning and Infrastructure Framework as the primary regional strategy, the Study and its recommendations have been reviewed as part of the Growth Plan’s development.

Pilbara Planning and Infrastructure Framework

The Pilbara Planning and Infrastructure Framework (PPIF) was published in February 2012. The PPIF defines a strategic direction for the future development of the Pilbara region, over the next 25 years, and seeks to ensure that development and change in the Pilbara is achieved in a way that improves people’s lives and enhances the character and environment of the region.

In summary, the Framework:

- Addresses the scale and distribution of future population growth and housing development, as well as identifying strategies for economic growth, environmental issues, transport, infrastructure, water resources, tourism and the emerging impacts of climate change.
- Sets out regional planning principles, together with goals, objectives and actions to achieve these. It represents an agreed ‘whole of government’ position on the broad future planning direction for the Pilbara, and will guide the preparation of local planning strategies and local planning schemes.
- Informs government on infrastructure priorities across the Pilbara and gives the private sector more confidence to invest in the region. The infrastructure priorities identified in the Framework have been determined, following extensive liaison with State Government agencies, local government and other key stakeholders.

Importantly, the PPIF sets a population target of 50,000 people for both Port Hedland and Karratha, reflecting their designation as Pilbara Cities. It also establishes several key themes including settlement, economy, utility infrastructure, community infrastructure, transport, natural environment, cultural heritage and development. The Growth Plan has been formulated having regard to the PPIF key themes, objectives and actions, and crucially, is consistent with the PPIF’s population target of 50,000 people by 2035.

1.5 Operational Policies and Guidelines

In addition to the range of SPPs and Non Statutory Policies described above, the WA Planning Commission has also adopted a range of operational policies to guide decision making on subdivision and development applications. These apply when the Town of Port Hedland or the Commission consider applications for subdivision or development within the Town of Port Hedland municipal area. Provided below is a summary of the Development Control Policies, manuals and guidelines of particular relevance for subdivision and development in Port Hedland.

DC1.1	Subdivision of Land – General Principles
DC 1.2	Development Control - General principles
DC 1.3	Strata Titles
DC 1.4	Functional Road Classification for Planning
DC 1.5	Bicycle Planning
DC 1.7	General Road Planning
DC 2.2	Residential Subdivision
DC 2.3	Public Open Space in Residential Areas
DC 2.4	School Sites
DC 2.5	Special Residential Zones
DC 2.6	Residential Road Planning
DC 3.4	Subdivision of Rural Land
DC 4.1	Industrial Subdivision
DC 4.2	Planning for Hazards and Safety
DC 5.1	Regional Roads (Vehicular Access)
DC 5.3	Use of Land Reserved for Parks and Recreation and Regional Open Space
DC 5.4	Advertising on Reserved land
DC 6.1	Country Coastal Planning Policy
Manual	Local Planning Manual
Manual	Visual Landscape Planning in Western Australia
Manual	Coastal Planning and Management Manual
Guidelines	Better Urban Water Management
Guidelines	Designing out Crime Guidelines
Guidelines	The Preparation of Local Structure Plans for Urban Release Areas

Guidelines Transport Assessment Guidelines for Developments

Guidelines The Design and Geometric Layout of Residential Roads

Guidelines Acid Sulfate Soils Planning Guidelines

Guidelines Planning for Bush Fire Protection (Edition 2)

Guidelines Reducing Crime and Anti-Social Behaviour in Pedestrian Access Ways

Guidelines Road and Rail Transport Noise and Freight Considerations in Land Use Planning

In addition to the policies, manuals and guidelines listed above, *Liveable Neighbourhoods* has been adopted by the WA Planning Commission as operational policy applying to residential structure planning and subdivision for greenfield sites and for the redevelopment of large brownfield and urban infill sites. Where there is conflict with existing development control policies, *Liveable Neighbourhoods* generally will prevail.

Overlaps between development control policies and *Liveable Neighbourhoods* are to be progressively removed through gradual review and incorporation into Liveable Neighbourhoods, leaving only development control policies required for those matters not covered by Liveable Neighbourhoods.

2. Local Planning Context

2.1 Town of Port Hedland Strategic Plan

The 2010-2015 Town of Port Hedland Strategic Plan was developed to provide a high level Vision for the Town in 2025 and outlines the key roles and functions that the Town of Port Hedland will be undertaking to help make the Town's Vision a reality.

The Strategic Plan has been used to inform the overall vision of the Growth Plan. As part of the Growth Plan process however, Council with the project team has aimed to test a number of key assumptions in the Strategic Plan. Some of these have been validated whilst some have been slightly altered to reflect the additional level of technical information available to inform the Growth Plan.

2.2 Hedland's Future Today

Hedland's Future Today document established a number of key project initiatives intended to be implemented over the next 15 years. These projects are aimed at achieving Council's vision set out through their Strategic Plan. These projects have been considered in informing the spatial and non-spatial planning in the Growth Plan. More importantly specific projects will be integrated into the both the Growth Plan and implementation Plan.

2.3 Port Hedland Land Use Master Plan

The Port Hedland Land Use Master Plan (LUMP) was published in 2007 and adopted as the Town of Port Hedland's Local Planning Strategy in to guide the town's growth and development over a 20 to 25 year period. It focuses on the use of land and its development character, defining the community's long-range vision of how the physical form of the town should develop.

The LUMP was developed through a high level of consultation with the local community and ground truthing of key issues. It established some key visionary points for the future development of Port Hedland, however, it did not establish the 'path way forward' to achieve the outcomes.

The Growth Plan integrates many of the key visionary elements of the Land Use Master Plan given its acceptance as a guiding document for growth by the community and also the Western Australian Planning Commission. The Growth Plan however, provides a stronger focus on the practical and achievable actions which can be implemented to deliver the vision.

APPENDIX B



APPENDIX B: TECHNICAL SUMMARIES

The following technical summaries provide an overview of key lines of investigation and reporting carried out by the Growth Plan consultant team during preparation of Pilbara's Port City Growth Plan. They have been included here to provide additional context and background information, summarising the key consultant findings and recommendations that underpinned the Growth Plan's development.

Summaries are provided for the following lines of investigation:

- Heritage;
- Landscape;
- Environment;
- Transport;
- Socio-Economics (Profile and Strategy);
- Property (Profile and Strategy); and
- Sustainability.

Technical Summary - Heritage

RPS has been engaged by Town of Port Hedland Council to act as an Indigenous and non- Indigenous Heritage Consultant for the Town. A requirement of this consultancy is to assist in the preparation of a strategic Town of Port Hedland City Growth Plan and an Implementation Plan to guide the growth of Port Hedland to a sustainable city. These programs are in accordance with the Town of Port Hedland's Strategic Plan and the State Government's 'Pilbara Cities' vision that anticipates a future population of at least 50,000 people by 2031.

The growth of the urban centres of Port Hedland and South Hedland from a present population of around 15,000 to an anticipated 50,000 or more has significant implications for the area's cultural heritage. The Town of Port Hedland has the opportunity to promote cultural heritage at the local level with an integrated approach to conserving heritage buildings and revitalising public streetscapes. At the regional level there is the opportunity to develop cultural tourism in areas such as Condon or on pastoral properties such as Boodarie.

A *Town of Port Hedland City Growth Plan – Heritage Preliminary Report* and a *Phase Two Report* has been completed as part of this project. This *Final Report* consolidates those reports and provides advice on heritage issues at a precinct level.

Acknowledged is the significant Indigenous heritage in the area encompassed by the Town of Port Hedland local government area. In addition the assessment demonstrated the important role the Town of Port Hedland has played in the development of the Pilbara region and north- west Australia, accordingly this report identifies those items of non-Indigenous heritage that reflects that history.

It was found during this study that the *Town of Port Hedland Heritage Review* is out-of-date. With regards both non-Indigenous and modern Indigenous history it is important that this Review is updated to ensure against the loss or damage to any heritage item yet to be identified or properly assessed. In addition the lack of accurate recording and investigation of the unique Indigenous heritage of Two Mile Ridge should be addressed. These factors are particularly critical as Port Hedland faces a renewed impetus in development.

Technical Summary - Landscape

EXECUTIVE SUMMARY

PORT HEDLAND

- Create a continuous east-west coastal path to connect Port Hedland with its coastal context extending from the west end to pretty pool.
- Connect coastal parks and activity nodes in walkable catchments (max. 400m). Link with high amenity connections back to Anderson Street through avenue plantings and pathways.
- Activate Anderson Street as the primary amenity route with pedestrian, cycle and public transport.
- Maintain Wilson Street as the main arterial entry into Port Hedland for industrial and through traffic and celebrate industrial edges to the south.
- Create a public transport option between the West End > Cooke Point / Pretty Pool > Airport > Wedgefield > South Hedland to provide an alternate transport option other than by car.

EAST END

- Investigate a new coastal park / destination at the continuation of Cooke Point Drive and its intersection with Sutherland Street to connect East End with Waterfront.
- Create pedestrian bridge across pretty pool creek connecting Cooke Point with Pretty Pool.
- Continue and connect coastal path along pretty pool creek and back into the East End and Anderson Street. This will establish an amenity route that takes in key cultural and ecological features such as 2 mile ridge and the former air strip site as well as the East End commercial precinct.

SOUTH HEDLAND

- Create high amenity streetscape works along main connectors into the South Hedland Town Centre to establish comfortable movement corridors and a legible streetscape hierarchy.
- Investigate incidental POS opportunities adjacent to road corridors by providing community assets in large road reserves, pocket parks and unused land.
- All new development is to have either open or an absence of front fencing to allow housing to address the street.
- Focus on create high amenity loops which link boroughs and circulation routes. This will require future rationalisation of road networks, cul-de-sac and unoccupied tracts of land.
- Activate residential borough areas with local facilities situated at entries, gateways and adjacent to schools / public open space to create walkable destinations for residents.
- Introduce maintenance programme for drainage lines to slash grass lands and remove dense shrubs to increase visibility and safety around these areas.

ENTRIES & ARRIVALS

Great Northern Highway - Karratha Entry

- Relocation of turf club adjacent to existing golf course create 'green' experience to the east.
- Opportunity to celebrate innovative energy creation adjacent to waste water treatment ponds with methane capture plant.
- Decision point created at Great Northern Highway and Hamilton Road interface. Possible elevated views of landscape at on/off ramps.

Great Northern Highway - Adjacent to Wedgefield

- Improve legibility of Finucane Island turnoff to highlight recreational opportunities.
- Maintain open and unobstructed views to the north over the mangrove areas and Port on the horizon.
- Incorporate vegetated buffers to the Wedgefield industrial areas to soften the visual edge effects.

Great Northern Highway - Broome Entry

- Celebrate long views of Dampier Salt.
- Investigate opportunities to celebrate the significance of the Stockman Strike that occurred to the north of the highway.
- Decision point created at Great Northern Highway interface at the northern edge of Wedgefield. Possible elevated views of landscape at on/off ramps. Opportunity for architectural statement made in the design of bridge infrastructure to celebrate place and capture traffic. Could involve wayfinding to direct traffic into Port or South.

LOCAL GEMS

- Create rest stops / sites of interest which celebrate unique qualities, cultural heritage and the industrial tourism of Port Hedland to complement 'Transform', Redbank Tourist Bay and 'The Barrow' at Wedgefield.

INDUSTRIAL STREETSCAPE AMENITY

- Provide road corridor widths that allow for open swales and Eucalypt buffers to all industrial properties in Wedgefield and the Future Airport Industrial Precinct.

BUFFERING TO INDUSTRIAL AREAS

- Create a native Eucalypt buffer to Wedgefield and future Airport Industrial Precinct to screen views from the Great Northern Highway and approach roads.
- Implementation of buffer plantings to coincide with development to ensure establishment and consistency of plantings.

Technical Summary - Environment

Conserving Biodiversity and Ecosystems

The coastal lands of Port Hedland and surrounding areas consist of natural coastline fringed by white sandy beaches, extents of intertidal mudflats and mangroves, rocky outcrops and reefs. These coastal lands support a diverse habitat for a wide variety of marine and terrestrial fauna, including marine turtles and migratory birds. Unique ecological communities such as mangrove and samphire ecosystems are interwoven within the coastal landscape. Additionally, mangrove communities fringing the estuarine environments of Pretty Pool, Sting Ray and Four Mile Creeks provide natural diversity and a level of aesthetic amenity characteristic of the Pilbara region to the Port Hedland townscape.

The interior lands surrounding Port Hedland primarily consists of areas large expanses of natural vegetation dominated by savannah grasslands and undispersed with shrub steppe communities. These lands, which have historically been subject to extensive pastoral leases, provide a range of habitats for terrestrial fauna species.

The City Growth Plan aims to conserve and protect the areas of high biodiversity value and regionally significant ecosystems through:

- Conservation of mangrove ecosystems of very high value which occur outside designated industrial and associated port areas.
- Conservation of benthic primary producer habitat through the application of impact avoidance and minimisation principles.
- Protecting important marine turtle nesting sites through avoiding, managing and mitigating light impacts.

Investigating Flora and Fauna

The City Growth Plans recommends specific environmental investigations which are required to be undertaken in order to identify and assess the significance of flora and fauna species and vegetation communities prior to any proposed development works being undertaken. These investigations will ensure that appropriate measures are undertaken to make sure that the abundance, diversity and geographic distribution and productivity of significant flora and fauna species and vegetation communities are not diminished by any proposed development works.

The City Growth Plan aims to protect and conserve significant species and communities through:

- Undertaking appropriate flora and vegetation surveys and fauna surveys for areas of land where there is a requirement to remove native vegetation to facilitate development in order to assess the environmental values of the land.

Sustainable Natural Resource Management

The City Growth Plan aims to foster sustainable natural resource management through undertaking actions designed to protect the landscape, landform and the identified environmental assets of Port Hedland when development opportunities are advocated. These management actions will be addressed as part of land use planning and at the various stages in the land development process. These actions will include:

- Undertaking of appropriate Coastal Process and Foreshore Assessments, should any development proposals be expected to impact upon either the existing coastal processes or foreshore reserves.
- Undertaking of preliminary Acid Sulfate Soils Investigations, where appropriate, to assess the presence or absence of Acid Sulfate Soils and recommend remedial actions to be undertaken, prior to the commencement of development works.
- Undertaking of detailed site investigations to ensure that the quality of surface and ground water resources is not impacted by development proposals.
- Provision of appropriate Water Management Strategies to accompany scheme amendments and structure planning activities which consider any impacts to the total water cycle posed by development proposals and provide outcomes to achieve appropriate water quality objectives. The Water Management Strategies should also address water quantity parameters, incorporate mechanisms to address storm surge and flooding and advocate erosion control mechanisms.

The City Growth Plan identifies a number of sites contained within Port Hedland which have been identified as having various levels of site contamination. To ensure that these sites do not pose any further risk to the natural environment or human health specific management actions proposed to address the issue of contamination have been advocated on a site specific basis.

Climate Change Mitigation and Adaptation

Major flooding events in Port Hedland and surrounding areas are typically associated with storm surge, given that Port Hedland is not situated on a major river and therefore not subject to flooding caused by rainfall alone. Additionally during the time of the year when tropical cyclones are common in Port Hedland localised flooding can be worsened especially if coinciding with high tidal variations.

Heavy rainfall in the interior can cause localised flooding along the neighbouring major river systems of the De Grey, Turner and Yule, as these systems turn into key flow paths, that can impact low-lying areas including pastoral stations, mining activities and cause transport delays and damage to road and rail infrastructure.

The effects of a changing climate are expected to increase the frequency and intensity of cyclonic activity and rainfall events. This situation is likely to result in an increased risk of localised flooding in low-lying areas and along creek lines.

The City Growth Plan aims to be responsive to the expected effects of climate change through:

- Advocating for detailed site investigations to be undertaken which determine appropriate foreshore reserves between areas of proposed development and floodways.
- Advocating that any areas which are identified as being subject to the effects of storm surge and flooding will require finished floor levels to be established at least 0.5 metres above the 100 year ARI level.

Additional Management Actions

Dust and noise levels in the Port Hedland have historically been above currently accepted recommended levels. The high concentrations of dust that exists within the West End of Port Hedland presents potential health risks to the local residents. Noise and vibration from the existing and planned road and rail transport network and the airport could affect the amenity of future residents. Mosquitoes and midges are

endemic to the Pilbara, and are particularly prevalent in the wet season. The amenity of future residents could potentially be impacted by these pest species if residential land uses are proposed in locations within close proximity to known breeding areas.

The City Growth Plan advocates that the following additional management actions are undertaken to ensure the health and amenity of the local and future residential population is not adversely impacted:

- Advocating that any sensitive land use developments being proposed in areas that are in close proximity the existing and planned rail or high use local road transport network or the Port Hedland International Airport require an investigation to determine appropriate buffer controls and/or separation distances.
- Advocating that any sensitive land use developments being proposed in areas that are in close proximity to known breeding areas of local pest populations require management programs for these pests to be invoked post development.

All the management actions, surveys, assessments, investigations or strategies that have been identified as being required to be undertaken to achieve the outcomes of the City Growth Plan are to be consistent with the requirements of the state regulatory authorities and the Environmental Protection Authority.

Figures 1 and 2 over page provide broad scale land use separation distances and areas of influence for key industrial land uses and infrastructure corridors in Port and South Hedland. They should be read in conjunction with the following guidance notes:

General Guidance – Separation Distances

Environmental Protection Agency (EPA) Guidance Statement No. 3: Separation Distances between Industrial and Sensitive Land Uses provides advice on the use of the generic separation distances for a range of industrial land uses. Land uses considered to be potentially sensitive to emissions from industry and infrastructure include residential developments, hospitals, hotels, motels, hostels, caravan parks, schools, nursing homes, child care facilities, shopping centres, playgrounds, and some public buildings. Some commercial, institutional and industrial land uses which require high levels of amenity or are sensitive to particular emissions may also be considered “sensitive land uses”.

Where on site analysis has not been undertaken, the generic separation distances advocated in Guidance Statement No. 3 have been applied to create the buffers in Figures 1 and 2. Where on site analysis has been undertaken and buffer distances established these have been used.

Where “areas of influence” have been identified, these areas relate to infrastructure for which no generic separation distances are advocated by EPA Guidance Statement No. 3.

A sound site-specific technical analysis will provide the most appropriate guide to the separation distance that should be maintained between a particular industry / piece of infrastructure and sensitive land uses, or between industrial precincts and sensitive land uses, to avoid or minimise land use conflicts. The draft State Planning Policy No. 4.1 State Industrial Buffer (amended) states that technical analysis is required if a proponent seeks to reduce the buffer from those specified in EPA Guidance Statement No. 3 and in circumstances where industry seeks to expand their operations or where cumulative impacts may occur. Industries or operations that pose potential risk to amenity or health, and are not addressed in Guidance Statement No. 3 may also require technical analysis.

Specific Guidance

Only low impact industrial uses may be located within the On-site Port Buffer and an Off-site Port Buffer has been defined along the sections of the Port Boundary which do not contact existing development.

The Airport Noise area of influence has been determined by the 25 ANEF contour of the Australian Noise Exposure Forecast map to comply with Section 6.15.2 in the Town of Port Hedland's Town Planning Scheme No. 5 (TPS No. 5).

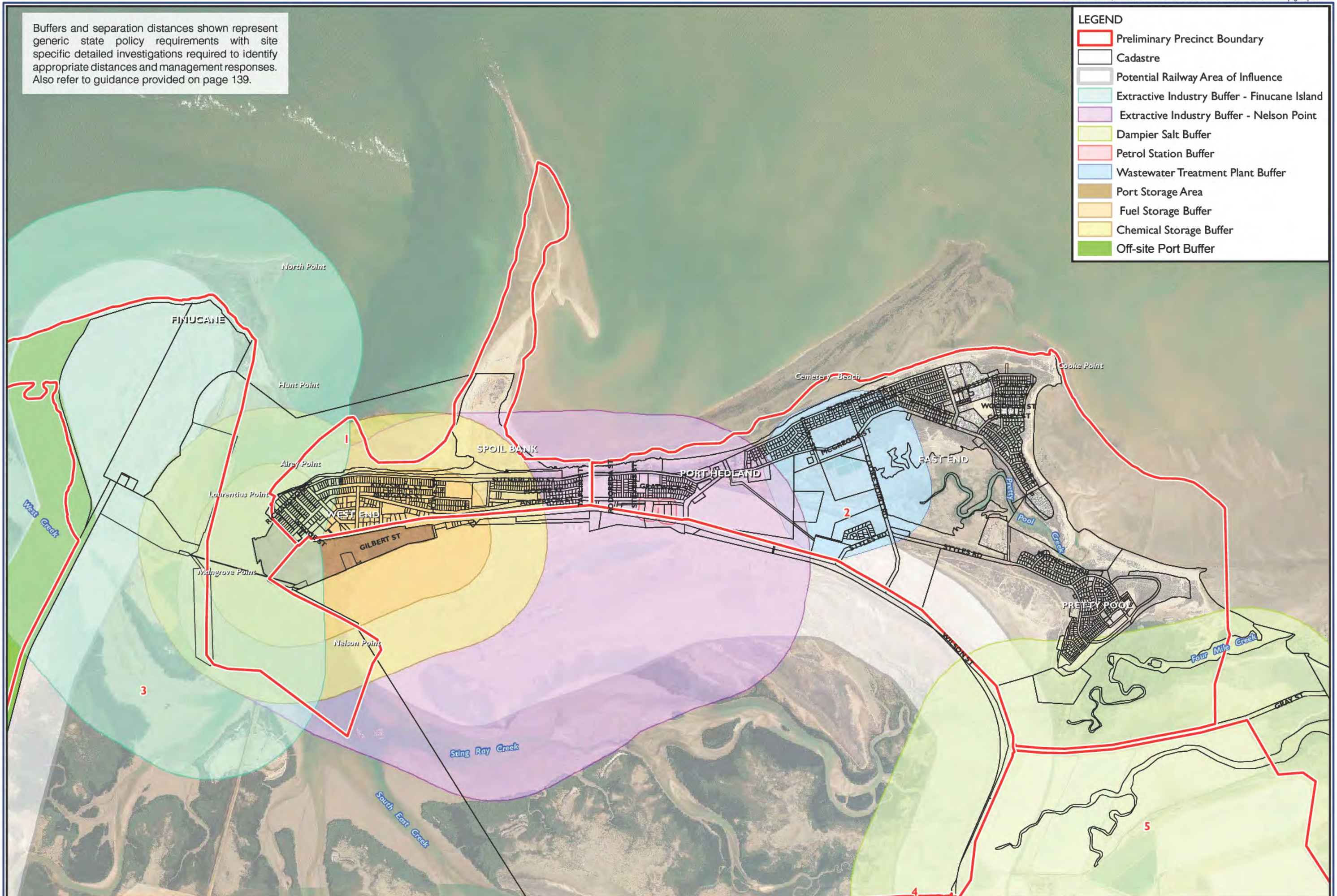
The Airport Building Height area of influence has been determined by a proposed expansion corridor of approximately 1km in width which extends northwest along the centre line of the main runway. Section 6.15.1 in TPS No. 5. governs the maximum height of buildings in areas directly surrounding the Airport Building Height area of influence.

As a guide the Potential Railway areas of influence have been shown to provide an indication only of potential separation distances from sensitive land uses to the railway line. A sound site-specific technical analysis should be undertaken to provide the most appropriate guide to the separation distance that should be maintained between the railway line and all sensitive land uses.

Buffers and separation distances shown represent generic state policy requirements with site specific detailed investigations required to identify appropriate distances and management responses. Also refer to guidance provided on page 139.

LEGEND

- Preliminary Precinct Boundary
- Cadastre
- Potential Railway Area of Influence
- Extractive Industry Buffer - Finucane Island
- Extractive Industry Buffer - Nelson Point
- Dampier Salt Buffer
- Petrol Station Buffer
- Wastewater Treatment Plant Buffer
- Port Storage Area
- Fuel Storage Buffer
- Chemical Storage Buffer
- Off-site Port Buffer



Buffers and separation distances shown represent generic state policy requirements with site specific detailed investigations required to identify appropriate distances and management responses. Also refer to guidance provided on page 139.

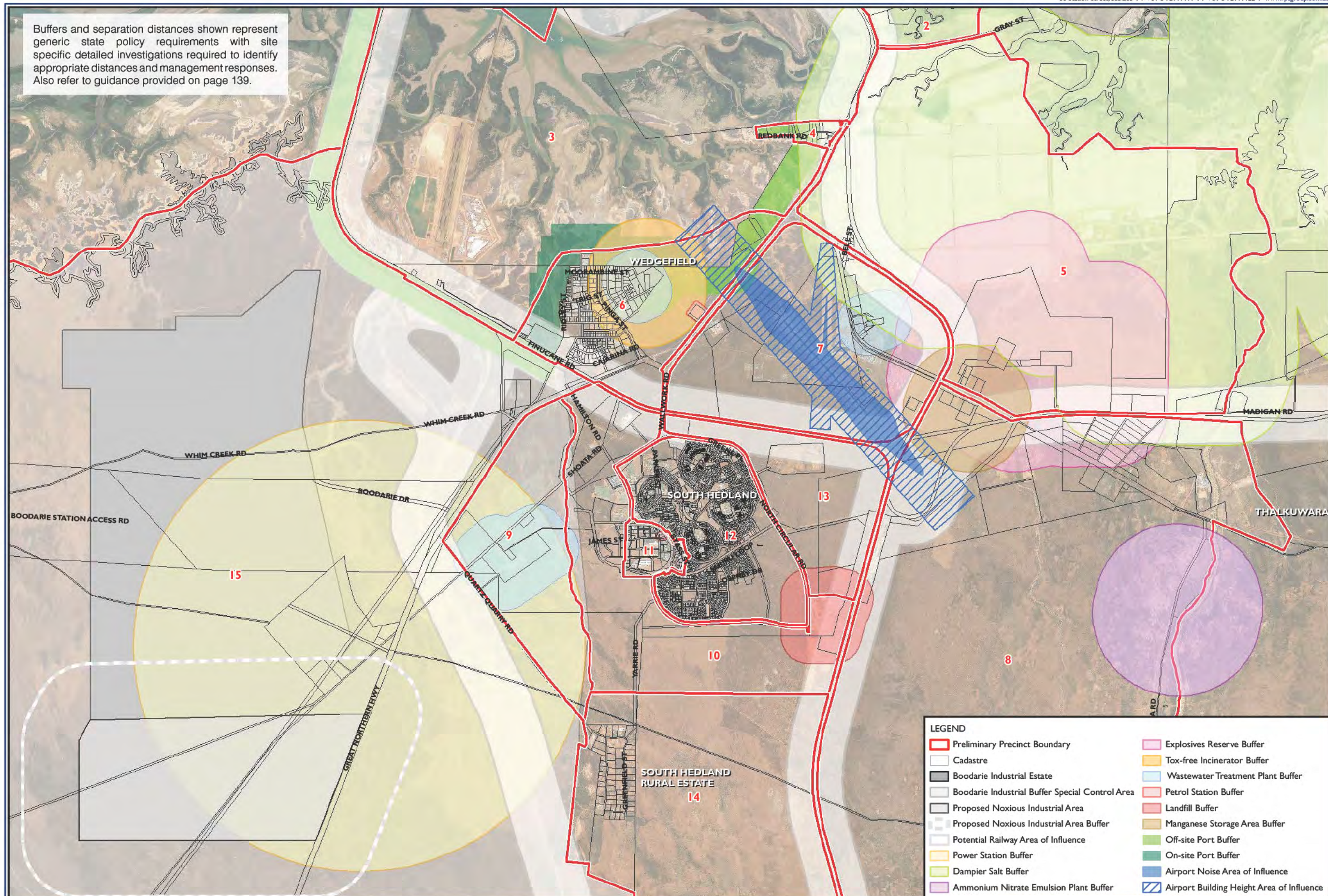


Figure 2
Separation Distances Between
Industrial and Sensitive Land Uses - South Hedland and Wedgefield

Technical Summary - Transport

Introduction

The Town of Port Hedland (the Town) is located in the Pilbara Region of Western Australia.

In late 2009, the Town adopted a Strategic Plan supporting the State Government's "Pilbara Cities" vision. The Town's aim is to turn this vision into a reality, to transform the Town into a vibrant, significant and friendly regional city, where people want to live and are proud to call home.

The vision includes a population growth to a target of 50,000 by 2031. Two thirds of the population will reside in South Hedland, with the other third living in Port Hedland and some smaller communities along the coast.

AECOM were commissioned by the Town to provide transport consulting services in the development of Pilbara's Port City Growth Plan and Implementation Plan. This included undertaking a study of the existing and planned future land use and transport facilities.

Literature Review

Various reports have been prepared for the expansion of the Town. These reports were reviewed to understand the Town's existing and future land use and transport infrastructure. Further information was also obtained from liaison with key stakeholders.

Background

The Pilbara is a sparsely populated, resource rich region of Australia. The Town is one of the largest in the region and its location on the coast makes it an important transport and accommodation hub for the surrounding mining industry. For that reason the Town has a well established strategic transport network.

The Town has a current population of 19,822 people, including: 14,987 permanent residents and 4,835 short term residents.

The Town's residents have a high dependency on the private car; however the percentage of people who walk to work is greater than that of either Karratha or metropolitan Perth.

Land Use

The Town currently has a number of distinct urban districts: West End, East End/Cooke Point, Pretty Pool, Redbank, Wedgefield and South Hedland. It is also undergoing a major revitalisation with several developments being planned and built in both South and Port Hedland.

Growth plans have been developed by the design team for 16 Precincts within the Town. For each of the Precincts land use scenarios for four future years (2016, 2021, 2026 and 2031) were developed.

Pedestrian and Cycle Network

Within Port Hedland all streets appear to contain verges wide enough to accommodate a pathway. However, most do not currently have a continuous path. Those that do mostly contain a path on one side of the road only. The paths are scattered throughout Port Hedland and in some cases are not linked at all or directly to the rest of the network. The paths are of varying widths, but mostly do not appear wide enough to cater for both pedestrian and cycle movements (although the verge width appears wide enough). On some streets the location of the path changes sides forcing pedestrians and cyclists to cross the street.

The path network in South Hedland is more extensive and continuous than in Port Hedland. However, due to the street layout many routes are less direct than those in Port Hedland.

There is currently no pathway linking Port Hedland, South Hedland and Wedgefield, nor any facilities within Wedgefield.

The Port Hedland Cycle Plan was prepared in 2008. The plan outlined improvements required to the cycle network with the vision "to make cycling and walking within the Town safer, more convenient and hence an attractive alternative means of transport and form of recreation". Since its publication the town has undertaken Substantial network improvements including the completion of part of the proposed Port Hedland to South Hedland cycle path.

In Port Hedland, the path upgrades complete some of these missing links, such as the coastal path connection to West End and Cooke Point and the connection of Pretty Pool to the network. However, the network could be enhanced further with the provision of more connections, including a pedestrian and cycle bridge across the waterway between Pretty Pool and Cooke Point.

In South Hedland, the planned upgrades increase the network provision in the Town Centre, extend the facilities along Murdoch Drive and provide a link around South Hedland (along North Circular Road) for leisure cyclists. Further to these improvements, the permeability of the South Hedland layout would be improved through the provision of direct routes out of the circular layout.

In Wedgefield, there are currently no existing or planned facilities. The community survey has identified a need for such facilities. These should be off-road due to the high volume of heavy vehicles and should connect to the Port to South Hedland Cycle Path. Similar facilities should also be provided for the proposed industrial estate at the Airport.

Walk and cycle catchment diagrams for Port and South Hedland illustrate that most of the residents will be within a 20 minute walk or 10 minute cycle of the Town's commercial and retail areas.

Public Transport Network

Route 501 provides a good internal Port Hedland connection, as well as an external connection to South Hedland Town Centre. However, its service is not frequent enough to encourage its use over the private vehicle. Routes 301 and 401 connect most of the existing South Hedland to its Town Centre. Again its frequency is not high enough to encourage its use over the private vehicle. The services require expansion to cater for the proposed new development areas and to provide a more frequent service with extended hours (including Sunday operation).

The low-density nature of the Town provides some challenges in managing an effective transport system. Low demand for services means that traditional, fixed-scheduled bus services are likely to be inefficient. On the other hand, taxi services (which are currently provided within the Town) are not a sustainable transport option for the projected Town growth.

The City Growth Plan presents the opportunity to introduce an alternative transport system. Demand Responsive Transport (DRT) is a combination of traditional bus services and taxi services. One example of a DRT service is the existing Port Hedland Airport Shuttle Bus transferring passengers from all incoming flights to their destinations.

DRT services have failed when their demand is too high. Fixed scheduled buses should be run at high demand times such as peak hours, with DRT used on the same route during non-peak hours. As the population grows and more routes become more popular, DRT services should be replaced with fixed schedule buses. Running the DRT services on future bus routes will allow for easy transition between the two.

The public transport routes proposed for the Precincts have been designed to enable residents within Port and South Hedland to be within 400 metres (five minute walk) of the route.

Freight and Logistics Network

Port Hedland's close proximity to substantial mining activity in the Pilbara and its coastal location make it a regional transport hub. Goods are transported from the mine sites, by road and rail, to the Port Hedland Port from where they are shipped around the world.

This results in a high level of heavy vehicles on the strategic road network connecting the mines to the Port. The route along the Great Northern Highway and Wilson Street currently has no priority at Port Hedland Road, Wallwork Road and Pinga Street. It also crosses four railway level crossings, reducing safety and efficiency. This route also requires the Port traffic to travel through the Port Hedland Town Centre which is causing conflict between Port and local traffic.

According to Curtin University's report "From Projects to Places", currently only five percent of goods are produced locally with the rest requiring importation. Most of the goods are being transported to Town by road from Perth due to the lack of economic viability of travelling by sea. Furthermore, Port Hedland Port does not currently handle container freight.

Isolation and the high reliance on the road network and diesel train system to deliver goods to the area may become costly in the future with rising fuel prices. The region will need more resilient transport links for its long term prosperity. Regional shipping and rail links could be explored to ease the transport issues such as vulnerability to fuel price rises for road and air transport, and increasing congestion and conflict on the Town road network.

There are also efficiency and safety issues along the Great Northern Highway due to level railway crossings and limited priority. Some of these issues are being addressed through the realignment of the Great Northern Highway around Wedgefield, grade separating the Broome turn-off and duplicating Redbank Bridge.

The population increase to 50,000 as well as the increase in Port activity will increase the efficiency and safety issues. Methods to produce goods locally and opportunities to transport more material to the Port by rail should be investigated to reduce road movements.

The provision of an intermodal terminal could reduce truck trips to the Port through the Port Hedland Town Centre.

Rail Network

The rail infrastructure is privately owned and operated and thus well maintained and upgraded as required to support the mining industry. The private ownership of the lines reduces the ability to share the infrastructure leading to duplication of infrastructure and the requirement for some junior miners to use the road network to transport their material to the Port, even though their mine is located adjacent to a railway line heading to the Port.

There are no public or passenger rail facilities. Given the isolation of Port Hedland and the surrounding population these facilities are not likely to be viable.

Road Network

The strategic roads servicing the Town are generally good and are highly utilised by heavy vehicles. The volumes of traffic on the roads are increasingly placing pressure on the network, as shown by crash statistics and traffic volumes. The proposed duplication, realignment and intersection upgrades on the Great Northern Highway will reduce these issues.

Crash analysis data indicates that current road traffic volumes are resulting in conflicts at intersections, particularly along the Great Northern Highway. It is understood that the Great Northern Highway Bypass is anticipated to ease some of the urban and industrial transport conflict, particularly between South Hedland and Port Hedland by downgrading the volume and size of traffic between South Hedland and the Broome turn-off and by improving the operation of the Broome turn-off intersection.

The Town's population is proposed to increase by approximately 150 percent over the next 14 years. On top of this the Port's throughput is expected to increase by approximately 200 percent (with the construction of the outer harbour). These increases will impact on the Town's road network. The Port's increased activity will mostly impact the strategic road network, Great Northern Highway. The proposed duplication of Port Hedland Road and the grade separation of the railway lines and the Broome Road intersection will be required to cater for this increase in activity.

Within the local street network, Wallwork Road is currently at capacity and will be duplicated to cater for its current and future demand. All other roads operated within their capacity.

Extreme weather in the summer, including heavy rain and flooding can affect the road network and cut off access to some of the smaller communities and tourist sites. These roads should be upgraded to allow all year access.

High level traffic analysis was undertaken based on the Precinct Plans and future land use schedules. The analysis was undertaken using a spreadsheet model, the existing traffic flow data and the proposed increased future land use. This analysis will require more detailed modelling as more information on the Precinct becomes available. The analysis as it stands does not account for mode shift changes as public transport, cycle and walking become more viable. It should be recognised that traffic forecasting does have limitations, particularly at this strategic high level, and that forecast traffic volumes should be taken as only indicative of the likely traffic that the road will carry.

The high level traffic analysis undertaken predicts that:

- In Port Hedland, if all local traffic is redirected to Anderson Street then Anderson Street may require two lanes in each direction (throughout Precinct 1 and 2) by 2026. If local traffic is not redirected then Wilson Street may require two lanes in each direction by 2016.
- Port Hedland Road may require upgrading to two lanes in each direction by 2021.
- The Athol / McGregor Street corridor may require upgrading to two lanes in each direction by 2021.
- Cooke Point Drive is predicted to reach its one lane capacity by 2021.
- Pinga Road, in Precinct 6, may reach its one lane capacity by 2016. However, the construction of a new parallel road north east of Pinga Road should enable the redirection of some traffic, reducing the need to widen the road.
- The two airport access roads, in Precinct 7, may reach their one lane capacity by 2021. To reduce the impact of the 8,395 bed Transit Worker Accommodation on the surrounding road network and thus the requirement of unnecessary road upgrades to two lanes in each direction, parking at the accommodation should be limited with workers being bussed to work sites and the airport, and retail and leisure facilities being provided on site. This will also increase safety and efficiency of the work force.
- Hamilton Road and Forest Circle may require upgrading to two lanes per direction by 2026.
- Throssell Road may require upgrading to two lanes per direction by 2016.
- Murdoch Drive may require two lanes in each direction by 2031.

There are two methods to address congestion on these roads. One is to widen the roadway and the other is to implement congestion management initiatives. It is not sustainable or desirable to continue addressing congestion solely through increasing road infrastructure. This does not encourage use of alternative transport and can

segregate and isolate communities. There will be roads, such as the Great Northern Highway, that require some form of widening. However for the local network, opportunities to implement congestion management measures should be investigated.

Port

The Port Hedland Ultimate Development Plan (PHPA, 2007) predicts that in 2025 the port will have a total throughput of 536Mtpa. This is an increase of 200 percent from its current throughput.

The Port Hedland Ultimate Development Plan (PHPA, 2007) outlined that this will be achieved by the following proposed upgrades:

- Increasing the inner harbour number of berths from nine to 23.
- Constructing an outer harbour with 20 berths.
- Constructing four off shore bulk liquid terminals.

The port upgrades have been developed to cater for the predicted increase in port demand. However, the facilities should also cater for container ships to reduce the freight movement by road.

Airport

The predicted airport passenger volume in 2015 is 450,000, which is a 60 percent increase from current levels. The parking and terminal facilities are strained under the current passenger throughput. These are to be upgraded to handle a throughput of one million passengers per year (a 260 percent increase from the current passenger numbers) and to cater for international travel (that is provide adequate customs and immigration facilities). The runway facilities are adequate to handle significantly more flights, and thus will not require upgrading.

Conclusion

The vision is to create a vibrant, significant and friendly regional city of 50,000 people. The precinct plans have been developed with this in mind. The proposed layouts reduce the travel distance between residents, employment and services, increasing the attractiveness of sustainable transport which has a positive impact on health and community interaction. Increased bus services, initially through the use of DRT, will reduce congestion on the road network and provide access for all. The strategic road network will be upgraded to reduce conflict between Port and local traffic and to provide more efficient and safe access to the Port. The road network will be designed to match its function: strategic roads as highways moving freight and vehicles efficiently and safely from a to b and low volume local streets as shared surfaces encouraging social interaction and sustainable transport. The Port and Airport will be expanded and improved to cater for the increased mining activity and local population growth and needs (including an international connection). Above all the City Growth Plan provides the Town's growing population with transport choices and connections making the Town a place where people want to live and are proud to call home.

Technical Summary - Socio Economic Profile

The Town of Port Hedland (Port Hedland) is one of Australia's most prominent metals exporters, and is located on the North West coast of Western Australia. Like many other mining areas of regional Australia, Port Hedland has experienced the pressures of significant development over the past 10 years and the challenges that come with rapid economic growth. The continued (and projected) strength of the mining, mineral processing and transportation activities in Port Hedland will continue to drive the local economy, in addition to strong residential and service population growth, which will be required to sustain activity into the future.

Overall, there is a need to guide and streamline future economic growth to benefit all stakeholders. This need has given rise to the development of the City Growth Plan – a multifaceted plan which draws upon the expertise multiple teams to assess the spatial, economic, social and infrastructure planning requirements to achieve the future vision for Port Hedland.

Purpose of This Report

This report forms a component of the Economic Consultancy of the City Growth Plan. The purpose of this profile is to collate existing information on the Local Government Area and consolidate new and existing indicators into a single report. This report sets the current socio-economic context for the City Growth Plan and is intended to inform all teams contributing to the City Growth Plan.

Key Findings

Port Hedland has experienced robust economic growth over the past 5 years, which has resulted in a recent acceleration in residential population growth after more than a decade of flat trends and increases in transient population cohorts. Key findings of the current socio-economic context can be summarised as:

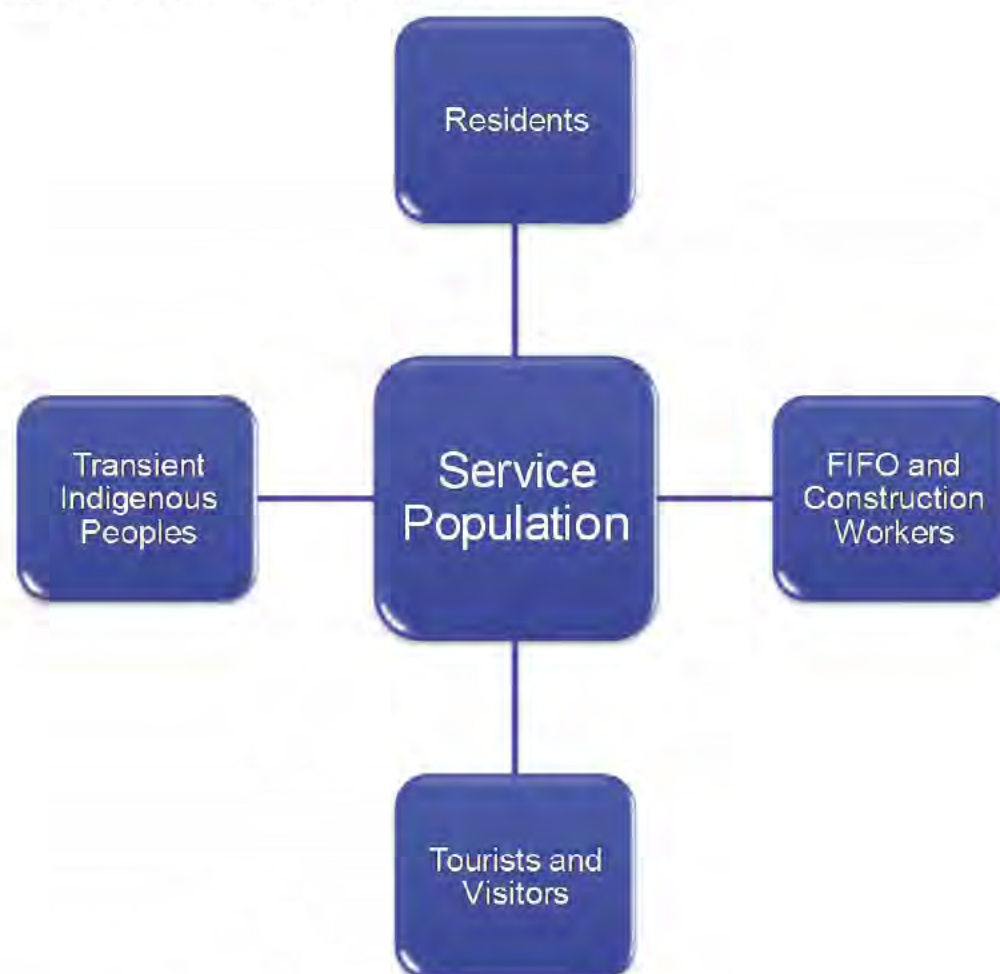
Resident & Service Population

Port Hedland has a resident population of over 14,600 but services a much larger population of 19,216, which includes transient workers, indigenous persons and short-stay visitors...

Port Hedland's estimated residential population was over 14,600 in 2010, having experienced growth of 1.5% per annum over the past nine years – below the average growth of the region and the State. This low average population growth is surprising given the high level of economic activity and is an underestimate of the actual population which services the region. This under-representation is likely due to the prevalence of transients such as FIFO and contract workers; the indigenous populations; and the level tourist and short-stay visitors. In short, Port Hedland services a greater level of population than indicated by ABS estimated residential population estimates.

AECgroup has attempted to estimate the magnitude of this population - or total service population - which is defined to include the estimated resident population (ABS), FIFO and construction workers and the level of other overnight visitation to the region (refer to Figure ES.1.). Using this methodology, it was estimated that Port Hedland's total service population was approximately 19,216 persons in 2010.

Figure ES.1: Components of Service Population



Source: AECgroup

Demographics & Socio-Economics

Port Hedland's population is divided by high levels of economic prosperity and significant pockets of socio-economic disadvantage...

The Port Hedland population is characterised by a relatively young age demographic, with high proportions of families with children aged under 15 years. Average incomes are above the Perth and regional Western Australia averages. There are suburbs of Port Hedland which are highly prosperous and have benefitted from the strength and growth of mining and its associated industries.

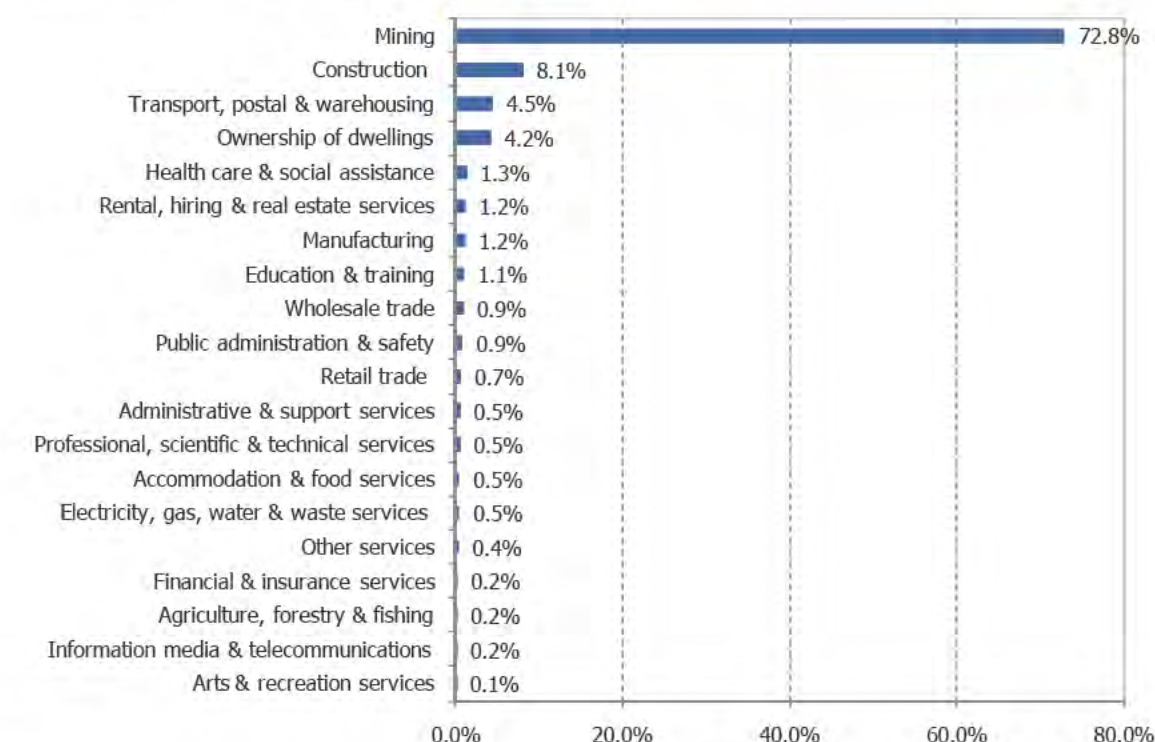
In contrast, Port Hedland also has high proportions of indigenous persons, above average levels of unemployment, high levels of crime and pockets of socio-economic disadvantage. This discrepancy highlights the large gap in the levels of economic wealth and social divide between Port Hedland's residents.

Employment, Business & Economic Activity

Port Hedland is driven by the mining sector and its associated industries and is highly reliant on these activities, which provide many challenges and risks...

The Port Hedland economy is dependent on the strength of its leading sector – iron ore mining, transport and construction industries. There is little economic diversity – as with many resource based economies this presents a high risk and many challenges. The economic prosperity of the region can be evidenced by the region's significant growth in Gross Regional Product (GRP), employment and business incomes over the past five years. Port Hedland represents over 16% of Pilbara SD's and 5% of regional Western Australia's GRP for 2009-10.

Figure ES.2: % Industry Contribution to GRP, Port Hedland 2009-10



Source: AECgroup

The evolution of Port Hedland...

Although Port Hedland and the surrounding Pilbara Region has experienced some of the strongest economic growth in Western Australia over the past five years, the reliance of the town upon the mining sector is cause for grave concern – presenting huge risks in the face of international iron ore demand and export contracts with China and India.

In achieving a sustainable future for Port Hedland, it is important that the economy is diversified to reduce these risks. At the same time, economic diversification will also assist in addressing some of the socio-economic challenges currently facing the region, such as reducing unemployment by creating a greater diversity of jobs, reducing crime and raising levels of social welfare. Greater economic diversification would also provide alternative, full time jobs, which could assist in increasing the permanent population.

The next step for Port Hedland is to further develop an understanding of the challenges and the opportunities for development in the region, which will assist in the development of strategies, actions and tasks to be delivered by the Port Hedland City Growth Plan. The challenges are further explored in the **Port Hedland: Economic Opportunity and Gap Analysis Report**.

Theme	Indicator	Analysis	Key Findings
Residential and Service Population	Residential Population	<ul style="list-style-type: none"> Population of 14,624 in 2010 1.5% average annual growth (2001-10) 	Port Hedland has grown at a slower rate than the broader Pilbara Region over the past ten years. This is in contrast to neighbouring Roebourne which has experienced very strong growth trends.
	Fertility Rates	<ul style="list-style-type: none"> 2.6 children per mother (above replace levels of 2.1) 	Increasing fertility rates in Port Hedland means that the size of local resident families and households are growing. This impacts not only the local demand for child-related services (e.g. childcare, primary schooling, etc.) but also the housing type and locational preferences of residents of Port Hedland.
	Service Population	<ul style="list-style-type: none"> Service Population of approx. 19,216 in 2010 comprising residential, FIFO/Construction and Short term visitors. 	Residential population estimates alone are not representative of the actual population in Port Hedland. FIFO and construction workers, as well as short-term visitors also draw upon local facilities and services. These components must be included in any future infrastructure, accommodation and service delivery planning.
	Population Projections	<ul style="list-style-type: none"> Service population of 39,500 in 2031 Comprising 30,500 residents, 5,900 FIFO/Construction workers and 3,400 short-term visitors 	The 40,000 population target by 2025 (Town of Port Hedland) and the 50,000 population target for 2035 (Pilbara Cities) are aspirational only and difficult to achieve in reality. Based on a Gross Regional Product based population methodology, AECgroup estimates a population of close to 40,000 by 2031 is achievable based on currently available information.
Demographics and Socio-Economics	Age and Gender	<ul style="list-style-type: none"> Average Age = 31.2 years High Proportion of Persons: <ul style="list-style-type: none"> Aged Under 15 Years (23.9%) Aged between 25 & 34 years (18%) Male pop. = 55% Female pop. = 45% 	Port Hedland has a relatively young age demographic with high proportions of children and young working aged persons. There are relatively even proportions of males and females for a regional resource based community and is reflective of the role of Port Hedland as the major service centre within the broader Pilbara Region.
	Household and Family Structure	<ul style="list-style-type: none"> Total of 3,089 households Average of 2.7 persons per household High proportion of families with children (35.8%) 	Port Hedland has a higher average number of persons per household and proportion of families with children when compared to regional WA and WA averages. Compared to regional areas Port Hedland also has higher proportions of lone person and group households.
	Income Levels	<ul style="list-style-type: none"> Average income of \$71,243 in 2007-08 Increasing proportion of higher income earners over the past four years: <ul style="list-style-type: none"> 2004: 16.6% earning over \$83,000 2008: 30% earning over \$83,000 	Port Hedland has experienced significant changes in wage structure since 2004, with increasing proportions of higher wage earning employees in the area. Compared to Perth and Regional WA, Port Hedland has significantly higher average taxable incomes.
	Socio-Economic Status	<ul style="list-style-type: none"> 0.8% growth p.a. in crime rates over the past four years. Average of 13.5 offences per person (well above regional WA and Perth SD averages) Port Hedland accounts for 55% - 60% of Crime in the Pilbara Region 	Despite having a significant level of wealth and higher income earning households there are pockets of significantly lower socio-economic disadvantage in Port Hedland. As such, Port Hedland has higher and faster growing crime rates compared to Perth SD and regional areas of Western Australia. Port Hedland is also the centre for Pilbara Regional crime activity – highlighting the need for a proactive crime reduction program, increased Police resourcing and increased assistance to socio-disadvantaged families.
	Cultural Diversity	<ul style="list-style-type: none"> 15% Indigenous Persons 80% Born In Australia 	Port Hedland has a high indigenous representation in the local population when compared to elsewhere in the State. Outside of this there is little cultural diversity.
	Personal Mobility	<ul style="list-style-type: none"> 61.8% of people drive their car to work 9.4% were a passenger in a car travelling to work 296,810 air passengers in 2009-10 24.5% p.a. growth in air passenger transport 84% self-containment rate in Port Hedland 	Residents of Port Hedland are highly reliant upon travel by car to work. This is likely due to the low level of alternative and reliable transport methods. Air passenger demand has grown significantly over the past five years driven by increasing reliance of the mining sector upon FIFO workers. Of those living in Port Hedland, the region has an 84% self-containment rate with 681 persons travelling out for work each day.
Employment, Business and Economic Activity	Employment	<ul style="list-style-type: none"> Top 3 sectors of employment: <ul style="list-style-type: none"> Mining (45.5%) Construction (13.9%) Transport, postal & warehousing (5.1%) 	Mining is Port Hedland's leading sector for employment, followed by construction and transport, postal and warehousing, highlighting the economy as a resources and industrial based economy. Population services feature as the remaining key sectors in the region with only a very small proportion of employment generated by professional business types of services. As such, there are a higher proportion of 'blue-collar' types of workers in the region, particularly those with specialist trades and technicians skills required to support the local mining and construction sectors.
	Labour Force	<ul style="list-style-type: none"> Labour force of 7,091 persons in September Q 2010 Unemployment rate of 6.7% 	Despite growth in employment over the past five years, unemployment rates have increased to 6.3% (from 4.2%) over the past four years. This is likely due to the higher levels of socially disadvantaged persons in the area.
	Business	<ul style="list-style-type: none"> 746 businesses: <ul style="list-style-type: none"> 27.9% construction 13.7% rental hiring & real estate services 11.6% transport, postal & warehousing Personal incomes growth of 10.4% p.a. \$54,183 average annual income in 2005-06 	To support the size and scale of the regional mining sector there are a number of small to medium business types in the Port Hedland economy. Average business incomes for unincorporated businesses are significantly higher than elsewhere in the state highlighting the prosperity of business trade in the Pilbara region.
	Economic Activity	<ul style="list-style-type: none"> \$3.3 billion GRP in 2009-10: <ul style="list-style-type: none"> 72.8% mining 8.1% construction 4.5% transport, postal & warehousing Represents 16% of Pilbara SD GRP >\$45.2 billion in investments over the next five years 	Economic activity in Port Hedland is heavily based on resources mining, representing almost three quarters of Port Hedland's GRP. This lack of economic diversity opens the region to high risk due to the reliance of the region upon mining. The strength of the mining sector in Port Hedland and the broader Pilbara Region is likely to continue over the medium to longer term. There is an expected \$42.5 billion in investment to occur in the broader region over the next five years. Port Hedland has the opportunity to become a key services and industrial centre for the broader Pilbara Region.

Technical Summary - Economic Strategy

The Town of Port Hedland is one of Australia's most prominent metals exporters, and is located on the North West coast of Western Australia. Like many other mining areas of regional Australia, Port Hedland has experienced the pressures of significant development over the past 10 years and the negative challenges that come with rapid economic growth. The continued strength of the mining, mineral processing and transportation activities in Port Hedland will continue to drive the local economy, in addition to strong residential and service population growth, which will be required to sustain activity into the future.

Overall, there is a need to guide and streamline future economic growth to benefit all stakeholders. This has given rise to the development of the City Growth Plan – a multifaceted plan which draws upon the expertise multiple teams to assess the spatial, economic, social and infrastructure requirements to achieve the future vision for Port Hedland.

Purpose of This Report

This report forms a component of the Economic Consultancy of the City Growth Plan – the Economic Development Strategy. The purpose of this report is to identify key strategies and initiatives for the future development of the local economy, which will assist in the achievement of the overall aspirations of the City Growth Plan.

Current Context

Population

The Town of Port Hedland has an estimated population of 19,216, but as a dynamic mining region, the population changes rapidly depending on the amount, stage and timing of various major projects.

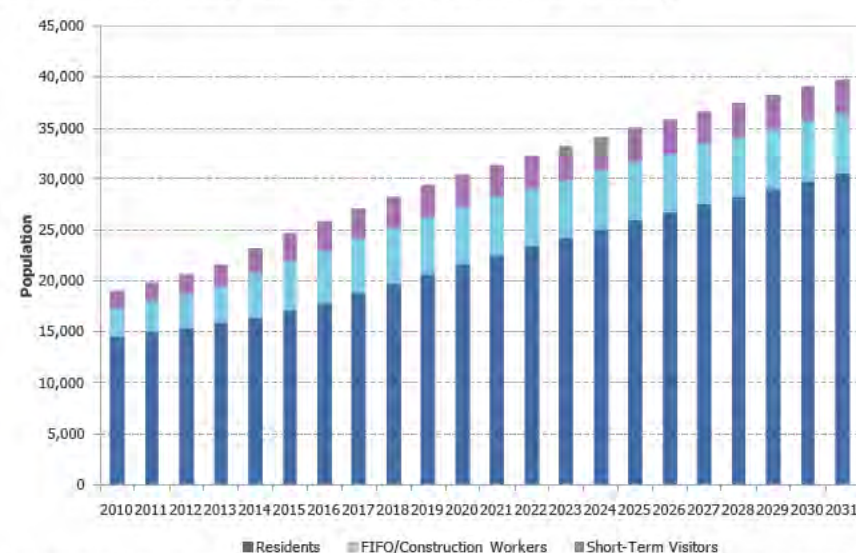
Table E.1: Estimated Population, Port Hedland, 2010

Population	Population No. (2010)
Estimated Resident Population	14,624
Construction and FIFO	2,906
Short-term Visitor	1,686
Total Population	19,216

Source: ABS (2011a), Western Australian Planning Commission (2011), TRA (2010), AECgroup

The population is expected to increase significantly in the future. Pilbara Cities has established the goal of planning for a regional city with a population of 50,000. AECgroup projections highlight the potential to reach 40,000 by 2031.

Figure E.1: Estimated Future Population, Port Hedland, 2010-2031p



Note: Future projections are subject to change based on allocation of transient workers. Source: AECgroup

The recent population pressures have caused many serious issues, most notably in regards to the need for housing. Prices (both purchase and rental) have climbed rapidly and today command considerable premiums above other parts of Australia.

Economy

The economy of the Town of Port Hedland is dominated by mining, which directly contributes 73% of the total \$3.3 billion Gross Regional Product (GRP) and 46% of total employment. For 2010-11, the port exported 199 million tonnes, making it the largest bulk commodity port in the world. Iron ore is the dominate export and Port Hedland is responsible for 48% of all Australian iron ore exports and contributes 18% of global iron ore trade.

Global demand for steel is anticipated to increase by 6% per year over the next two years and by 2025, global steel production will reach 2,446 Mt (a 73% increase over 2010 levels). This long-term demand as well as strong pricing and investment will create a solid platform for the future economic development of the Town of Port Hedland.

Issues and Opportunities

Given its unique dynamic, the Town of Port Hedland is faced with numerous issues and opportunities. *Housing is by far the most critical issue and impediment to future economic growth.* The undersupply of housing is causing prices (both rental and sales) to increase beyond the point that residents can afford to pay. The end result (given the strong demand) is that housing is provided by employers. The mining companies are quickly becoming the only employers that can afford to purchase the existing housing stock, pushing residents further out of the market (and some businesses). Currently, the lack of residential housing means that construction workers cannot be accommodated, which puts additional impediments on constructing new residential dwellings.

This issue is pervasive throughout the economy, causing numerous companies to stay out of the region, making it impossible for local small businesses to expand and forcing some existing companies to consider leaving the market (and supplying the area from Perth). *Failure to address the housing issue could impair all future growth.*

Additional issues facing the future development of the economy include:

- **Reliance on the Mining Sector:** The economy of the Town of Port Hedland is solely reliant on mining. The future risk is that any disturbance to mining, iron ore export or to one of the mining companies would jeopardise the entire economy of the area;
- **Shortage of Property:** There is currently an undersupply of many types of property including industrial, commercial and retail. An insufficient supply of property across the economy could impair future economic growth;
- **Lack of Retail Offering:** There is currently an undersupply of retail offering in the Town of Port Hedland, which can discourage future residents to move to the area; and
- **Lack of Innovation & Knowledge:** The economy currently lacks strong innovation and knowledge driven activities, which could assist in diversifying the economy away from its reliance on mining and iron ore export.

At the same time, the Town of Port Hedland has many ways to grow the economy, which would add significant value locally and assist in reducing the reliance on mining:

- **Mining:** The expansion of the local mining support sector to make the Town of Port Hedland a regional mining centre. Expanded activities would include aspects of the mining supply chain (contractors), unique research centres, educational/training facilities;
- **Professional Services:** The expansion of local professional services sector would include engineering, design and planning firms engaged in mining related activities as well as other professional service firms associated with a vibrant and growing economy;

- **Residential Services:** Expansion of the retail offering would increase the residential amenity of the area. The addition of a local hydroponic vegetable growing operation would provide further amenity through the delivery of fresh vegetables;
- **Manufacturing:** Large scale, industrial manufacturing or processing in the Boodarie Industrial Estate would add significant value to the local economy, particularly if the products were used in the mining process (e.g. ammonium nitrate). Additional industrial processes such as a commercial laundry or other aspects of the mining supply chain, would also support future growth;
- **Transport / Logistics:** The expansion of the port will assist the continued growth of the transport sector. The expansion of the local transport and logistics operations to include vehicle servicing and regional distribution would add considerable value to the local economy;
- **Defence:** The ADF is currently conducting a review and has signalled the growing importance of Australia's North West region. With the growing value that this region generates for the national economy, the recruitment of an ADF facility would add considerable value and diversity to the local economy; and
- **Tourism:** The further development of the leisure tourism market in the Town of Port Hedland would utilise the port as a unique experience and create increased visitation, length of stay and expenditure.

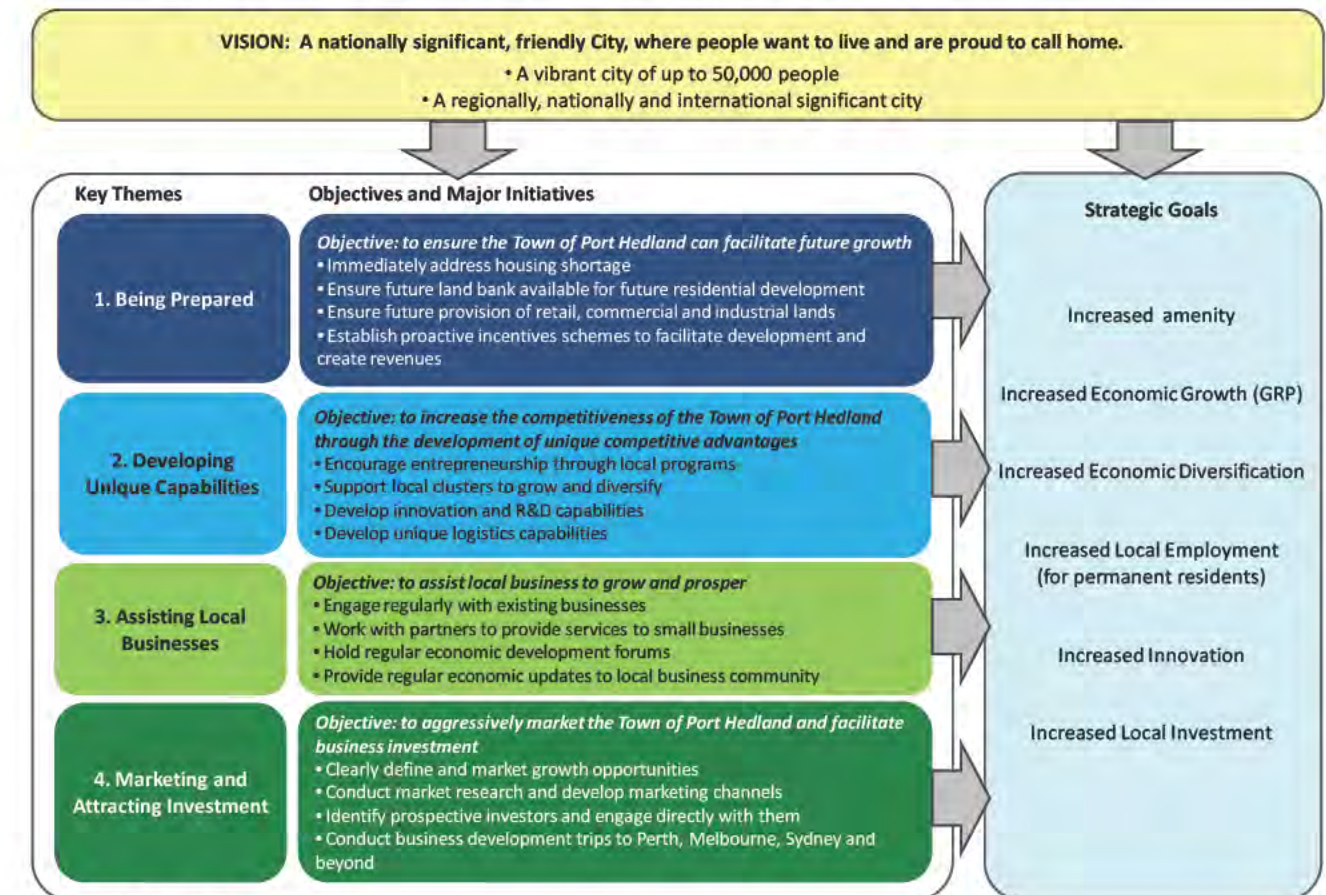
Economic Development Framework

Based on research, analysis and consultation conducted for this project, AECgroup has recommended an economic development framework to address current issues, leverage existing conditions to take advantage of specific opportunities and generate economic development outcomes for the community.

The economic development framework has four main components:

- Being prepared: to ensure the Town of Port Hedland can facilitate future growth;
- Developing unique capabilities: to increase the competitiveness of the Town of Port Hedland through the development of unique competitive advantages;
- Assisting local businesses: to assist local businesses to grow and prosper; and
- Marketing and attracting investment: to aggressively market the Town of Port Hedland and facilitate business investment.

Figure E.2: Town of Port Hedland Economic Development Framework



Source: AECgroup

The evolution of Port Hedland...

Given its unique characteristics, the Town of Port Hedland has the significant chance to build a nationally significant city and generate numerous economic, social and environmental benefits through economic development.

The definition of specific actions and tasks for economic development related to each theme of the strategy is dealt with further in the **Implementation Plan**.

Technical Summary - Property Profile

The Town of Port Hedland is Australia's most prominent iron ore exporters, and is located on the North West coast of Western Australia. Like many other mining areas of regional Australia, the Town of Port Hedland has experienced the pressures of significant development over the past 10 years and the challenges that come with rapid economic growth. The continued (and projected) strength of the mining, mineral processing and transportation activities in the Town of Port Hedland will continue to drive the local economy, in addition to strong residential and service population growth, which will be required to sustain activity into the future.

Overall, there is a need to guide and streamline future economic growth to benefit all stakeholders. This need has given rise to the development of the City Growth Plan – a multifaceted plan which draws upon the expertise multiple teams to assess the spatial, economic, social and infrastructure planning requirements to achieve the future vision for Port Hedland.

Purpose of This Report

This report forms a component of the Property Consultancy of the City Growth Plan. The purpose of this profile is to collate existing information on the Local Government Area and consolidate new and existing indicators into a single report. This report sets the current context around the property market for the City Growth Plan and is intended to inform all teams contributing to the City Growth Plan.

Key Findings

Port Hedland has experienced robust economic growth over the past 5 years, which has resulted in a recent acceleration in residential population growth after more than a decade of flat trends and increases in transient population cohorts. Key findings of the current property market can be summarised as:

Resident & Service Population

Port Hedland's estimated residential population was over 14,600 in 2010, having experienced growth of 1.5% per annum over the past nine years – below the average growth of the region and the State. This low average population growth is surprising given the high level of economic activity and is an underestimate of the actual population which services the region. This under-representation is likely due to the prevalence of transients such as FIFO and contract workers; the indigenous populations; and the level tourist and short-stay visitors. In short, Port Hedland services a greater level of population than indicated by ABS estimated residential population estimates.

AECgroup has attempted to estimate the magnitude of this population - or total service population - which is defined to include the estimated resident population (ABS), FIFO and construction workers and the level of other overnight visitation to the region. Using this methodology, it was estimated that Port Hedland's total service population was approximately 19,216 persons in 2010.

Residential Property Market

The recent population growth has driven a strong residential market recently. Prices have increased on average 14% between 2008-2010. On the back of demand and strong pricing, building approvals have risen strongly to 300 dwelling approvals per year in 2009 and 2010. South Hedland market has the majority of residential lands but Port Hedland commands higher prices and rents.

Non-residential accommodation has also been strong with hotels/motels and caravan sites experiencing 90% occupancy rates. This level of demand usually indicated a shortage of accommodation and triggers new development. Temporary worker accommodation also provides housing for some 3,000 workers.

Retail Property Market

Buoyed by recent residential growth (permanent residents and transient workers) and a strong economy, the Town of Port Hedland's retail market is performing well. There are three retail precincts including South Hedland, West End and the Boulevard Shopping Centre. South Hedland has the majority of the retail lands and floorspace.

Table E.1: Current Retail Supply (sqm), Town of Port Hedland, 2010

Retail	West End	Boulevard	South Hedland	Total
Groceries	-	3,695	5,298	8,993
Cafes and Restaurants, Takeaway	3,000	541	2,365	5,907
Shop Retail	2,145	1,083	12,944	16,171
Bulky Goods	3,100	609	3,423	7,132
Services	1,200	-	1,646	2,846
Vacant	-	20	800	820
Total Retail	9,445	5,948	26,476	41,869
% of Total	23%	14%	63%	100%

Source: AECgroup, PCA (2011)

Demand for retail services is currently strong, providing \$263 million in retail spending. This level of spending would support over 48,000sqm of retail space.

Table E.2: Total Retail Demand by Catchment (sqm), Town of Port Hedland, 2010

Category	Port Hedland	South Hedland	LGA Total
Groceries	4,581	7,180	11,761
Cafes, Restaurants &	8,908	2,933	11,841
Shop Retail	8,646	9,206	17,852
Bulky Goods	2,791	2,647	5,438
Services	670	489	1,159
Total	25,597	22,454	48,051

Source: AECgroup

The Town of Port Hedland is currently undersupplied in retail space, especially in groceries and food outlets.

Table E.3: Current Retail Supply Gap/Surplus (sqm), Town of Port Hedland, 2010

Category	Port Hedland	South Hedland	LGA Total
Groceries	-886	-1,882	-2,768
Cafes, Restaurants &	-5,367	-567	-5,935
Shop Retail	-5,418	3,738	-1,681
Bulky Goods	918	776	1,694
Services	530	1,157	1,687
Total	-10,224	3,222	-7,002

Note: Negative numbers represent an undersupply of retail space.

Source:
AECgroup

Commercial Property Market

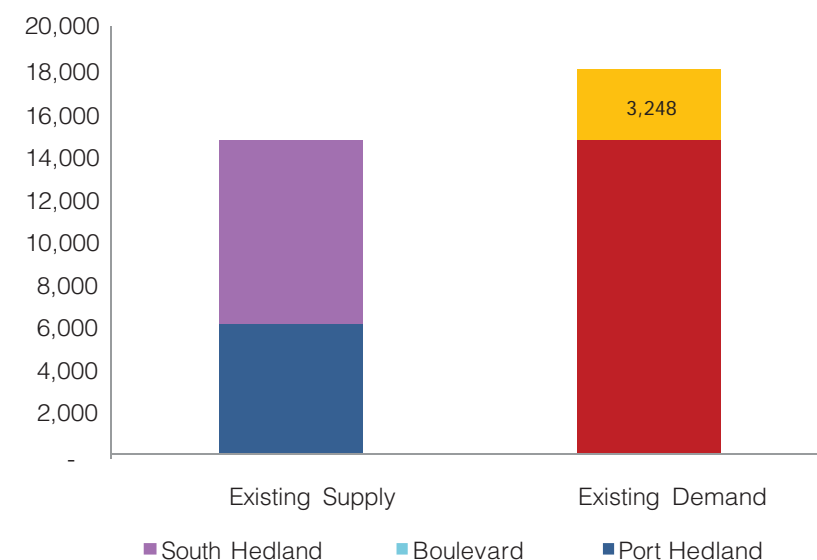
Similar to the retail market, the commercial office property market in the Town of Port Hedland is strong. Commercial office property is split between South Hedland and Port Hedland (West End).

Table E.4: Current Office Supply (SQM), Town of Port Hedland, 2010

Retail Category	West End	Boulevard	South Hedland	Total
Commercial	5,815	311	8,471	14,597

Supported by a strong economy, mining and resource projects as well as major construction projects, there is strong demand for commercial office space in the Town of Port Hedland, especially from professional business services. AECgroup estimates that there is currently demand for 17,845sqm of commercial office space in the Town of Port Hedland, which provides an undersupply of 3,248sqm.

Figure E.1: Current Office Supply Gap/Surplus (SQM), Town of Port Hedland, 2010



Source: AECgroup, ABS (2007)

Industrial Property Market

The mining and resource developments are creating a strong environment for industrial property. The Port of Port Hedland currently has plans for strong growth and expansion that would see continued high levels of throughput through the port facilities and continue to drive demand for industrial land. Additionally, the major investment projects in the area are also providing stimulus for industrial land.

The market in the Town of Port Hedland can be separated into the following segments:

- Mining / Port Activities;
- Heavy Industrial / Noxious Industry;
- Light Industrial; and
- Transport and Logistics.

There are currently 6,350 ha of land zoned for industrial uses, which is the largest land use in the Town of Port Hedland. More than half of all developed land is industrial. 5,123ha of the current supply are undeveloped, with the majority dedicated to the Boodarie Industrial Estate. There are five industrial precincts in the Town of Port Hedland:

- Port Hedland;
- Redbank;
- Boodarie;
- Finucane; and
- Wedgefield.

Demand for industrial property is strong and there are muted plans for expansions of the Wedgefield Industrial Area to add 250ha and rezone land specifically for transport related uses. There are additional lands south of the airport, which may also be used for light industry.

The evolution of Port Hedland...

Although the Town of Port Hedland has experienced a strong property market (across residential, retail/commercial and industrial) in recent years, there are numerous challenges. Ensuring that supply of not only available lands but developed space is challenging amongst such strong demand. The construction activity around various major projects for the mining and resource sector consumes material and labour, forcing other construction types to compete for these resources and pay a premium, significantly increasing construction costs for residential, retail/commercial and industrial premises.

As the Town of Port Hedland continues to grow, innovative solutions to some of these challenges will be needed. The next step for Port Hedland is to further develop an understanding of the future demand for property across residential, retail/commercial and industrial. The challenges and future opportunities will be further explored in the **Port Hedland: Property Opportunity and Gap Analysis Report**.

Theme	Indicator	Analysis	Key Findings
Residential and Service Population	Residential Population	<ul style="list-style-type: none"> Population of 14,624 in 2010 1.5% average annual growth (2001-10) 	Port Hedland has grown at a slower rate than the broader Pilbara Region over the past ten years. This is in contrast to neighbouring Roebourne which has experienced very strong growth trends.
	Fertility Rates	<ul style="list-style-type: none"> 2.6 children per mother (above replace levels of 2.1) 	Increasing fertility rates in Port Hedland means that the size of local resident families and households are growing. This impacts not only the local demand for child-related services (e.g. childcare, primary schooling, etc.) but also the housing type and locational preferences of residents of Port Hedland.
	Service Population	<ul style="list-style-type: none"> Service Population of approx. 19,216 in 2010 comprising residential, FIFO/Construction and Short term visitors. 	Residential population estimates alone are not representative of the actual population in Port Hedland. FIFO and construction workers, as well as short-term visitors also draw upon local facilities and services. These components must be included in any future infrastructure, accommodation and service delivery planning.
	Population Projections	<ul style="list-style-type: none"> Service population of 39,500 in 2031 Comprising 30,500 residents, 5,900 FIFO/Construction workers and 3,400 short-term visitors 	The 40,000 population target by 2025 (Town of Port Hedland) and the 50,000 population target for 2035 (Pilbara Cities) are aspirational only and difficult to achieve in reality. Based on a Gross Regional Product based population methodology, AECgroup estimates a population of close to 40,000 by 2031 is achievable based on currently available information.
Residential Market	Residential Land	<ul style="list-style-type: none"> Currently, there are 389 vacant residential lots (122 – Port Hedland, 267 – South Hedland) 369.6 ha of developed residential land 114.9 ha of undeveloped residential land 	Residential land use planning and the delivery of residential lands to support future residential growth will be important in the future. South Hedland currently has the majority of the available residential lands, but Port Hedland is commanding higher prices.
	Residential Housing	<ul style="list-style-type: none"> 1,000 dwellings advertised for sale in 2010 <ul style="list-style-type: none"> 70% in South Hedland 40% 3 bedroom homes House prices are strong: <ul style="list-style-type: none"> \$640,000 - \$920,000 (South Hedland) \$650,000 - \$1.4 million (Port Hedland) Housing prices have increased an average of 14% between 2008-2010 Rental prices range from \$600 - \$2,300/week (South Hedland) and \$800 - \$2,300/week (Port Hedland) Rents have grown an average of 14% between 2008-2010 	Residential housing is in short supply, which is causing significant price increases as a result of the strong population growth (across permanent resident and temporary workers). Prices are high and the market tends to favour Port Hedland, with Pretty Pool commanding higher prices than areas of South Hedland. Delivering unique residential dwelling solutions, dealing with high construction costs, labour and supply shortages and current housing affordability, will be critical to growing the local population.
	Non-Residential Housing	<ul style="list-style-type: none"> There are 3,565 rooms for temporary workers, housing 2,906 workers There are six tourism accommodation establishments, providing 462 rooms, operating at 90% occupancy rate There are 600 caravan sites, with many types operating around 90% occupancy 	FIFO/Construction workers are driving strong demand for short stay accommodation, occupying many accommodation establishments and caravan sites. Additionally, the resource and major project developments are driving demand for business travellers, providing further stimulus to the accommodation sector. Occupancy rates above 65% in regional areas typically signal a shortage of rooms and trigger new developments.
Retail & Commercial Market	Retail Sector & Offering	<ul style="list-style-type: none"> There are 48 retail businesses in the Town of Port Hedland Coles/Woolworths, Kmart and Harvey Norman are major retail businesses Three retail precincts including South Hedland, West End and the Boulevard shopping centre in Port Hedland 	South Hedland is the dominant precinct for retail in the Town of Port Hedland. Port Hedland is limited to minor convenience retail in West End but has the Boulevard Shopping centre providing a Woolworths, Harvey Norman and other shops.

	Retail/Commercial Land	<ul style="list-style-type: none"> 83.5 ha of developed retail/commercial land 27.7 ha of undeveloped retail/commercial land Majority of available retail/commercial land is in South Hedland 	South Hedland provides to majority of available lands for retail/commercial development. Port Hedland (West End) is constrained through existing structures, however, there are other opportunities for retail/commercial development.
	Current Retail Supply & Demand	<ul style="list-style-type: none"> Existing retail supply of 41,869 sqm: <ul style="list-style-type: none"> 63% in South Hedland 37% in Port Hedland 2% vacancy rate Majority of space is shop retail Estimated \$262.7 million in retail spending in the Town of Port Hedland (2010) Existing demand for 48,051 sqm 	Given recent population growth (including FIFO/Construction workers and temporary visitors), demand for retail space is strong. There is an estimated \$262.7 million in retail spending, which drives demand for 48,051 sqm of space.
	Retail Supply Alignment	<ul style="list-style-type: none"> Market is currently undersupplied by 7,002 sqm of retail space with the largest shortage in: <ul style="list-style-type: none"> Groceries (2,768 sqm) Food outlets (5,935 sqm) 	Retail market is currently undersupplied by 7,002 sqm of space. There is existing demand for another grocery store and several food outlets, including cafes, restaurants and takeaways. There is excess retail shop space in Port Hedland and an undersupply in South Hedland, showing the dominance of South Hedland. Due to demand and limited supply, commercial office uses are intermingled with retail space.
	Current Commercial Supply & Demand	<ul style="list-style-type: none"> Existing commercial office supply of 14,597 sqm: <ul style="list-style-type: none"> 58% in South Hedland 42% in Port Hedland No vacancy Existing demand for 17,845 sqm 	The strong economy is driving demand for commercial office space, particularly for professional business services to support resource and major project growth. Supply is split between South and Port Hedland, with Port Hedland almost completely built out.
	Commercial Supply Alignment	<ul style="list-style-type: none"> Market is currently undersupplied by 3,248 sqm 	There market is currently undersupplied by 3,248 sqm of space. The intermingling of commercial and retail uses demonstrates the strong demand for office space. Further development of commercial office space, particularly in Port Hedland (West End) would help to grow the economy.
Industrial Market	Industrial Market	<ul style="list-style-type: none"> Industrial market includes: <ul style="list-style-type: none"> Mining / Port Activities Heavy Industrial / Noxious Industry Light Industrial Transport and Logistics Mining sector and associated major projects are key drivers Port of Port Hedland plays a critical role in the industrial market 	Industrial activities in the Town of Port Hedland are driven by the mining and resource sector and the Port of Port Hedland is a critical component to the industrial market. Future growth and diversification of the industrial market will assist with economic growth.
	Industrial Land	<ul style="list-style-type: none"> Total of 6,350 ha of industrial land: <ul style="list-style-type: none"> 1,229.7 ha of developed land 5,123.0 ha of undeveloped land Majority of undeveloped land is in Boodarie Major industrial precincts include: <ul style="list-style-type: none"> Port Hedland Redbank Boodarie Finucane Wedgefield Strategic industrial land makes up 96% of all industrial zoned land 	There is a large amount of available industrial lands in the Town of Port Hedland, with the Boodarie Industrial Estate representing the majority of the space. Boodarie and Wedgefield will provide the major growth areas for industrial development in the short to medium term.
	Industrial Demand	<ul style="list-style-type: none"> Demand for industrial land is strong, driven by mining and resource activity as well as major projects Strong demand for iron ore driving Port expansions, which also contributes to demand for industrial land 	Industrial land demand is driven by mining and resource developments and growth at the Port of Port Hedland. Growth in supporting industrial sectors will provide stimulus for light industrial and transport related industrial land.

Technical Summary - Property Strategy

The Town of Port Hedland is Australia's most prominent iron ore exporter, and is located on the North West coast of Western Australia. Like many other mining areas of regional Australia, the Town of Port Hedland has experienced the pressures of significant development over the past 10 years and the challenges that come with rapid economic growth. The continued (and projected) strength of the mining, mineral processing and transportation activities in the Town of Port Hedland will continue to drive the local economy, in addition to strong residential and service population growth, which will be required to sustain activity into the future.

Overall, there is a need to guide and streamline future economic growth to benefit all stakeholders. This need has given rise to the development of the City Growth Plan – a multifaceted plan which draws upon the expertise multiple teams to assess the spatial, economic, social and infrastructure planning requirements to achieve the future vision for Port Hedland.

Purpose of This Report

This report forms a component of the *Property Consultancy* of the City Growth Plan. The purpose of this report is to analyse the potential distribution of floorspace/activity/land demand and supply across Precincts in the City Growth Plan area, along with the identification and analysis of key property issues. This forms a key input into the establishment of a broad Property Framework for the Town of Port Hedland to provide the structure within which key initiatives and strategies defined in the *Implementation Plan* will be implemented.

Key Findings

Key Issues Analysis

Development in the Town of Port Hedland is currently constrained by a range of core property issues that not only influence the dynamics and operation of property markets, but also the achievement of core objectives of the City Growth Plan. The issues, identified from the research of this consultancy and consultation with primary stakeholders, are outlined in the following table.

Table E.1: Property Issue Identification

Categories	Issue
Housing	Housing Affordability
	Home Ownership
	Housing Diversity
	Housing Supply
	Lack of Business Accommodation
Development and Operational Feasibility	Construction Costs
	Seasonality of Construction
	Accommodation for Construction
	Labour Force Availability
	Enabling Infrastructure Requirements
Market Size and Risk	Small Market Size
	Risk Profile and Uncertainty

Source:
AECgroup

These issues are group into three broad categories, which represent the primary impediments to the effective normalisation of the Port Hedland property market, restricting growth and investment across all market segments.

A review of these property issues against the Core Objectives of the City Growth Plan reveals that the achievement of Objectives 1 (Sustained and Diversified Economic Growth) and 3 (Housing Diversity & Land Supply Capacity) are most impacted by the property issues identified. Considering the importance of both of these objectives to enhancing the growth and quality of life of the residential population in the Town of Port Hedland – a key goal of the *Pilbara Cities* – emphasis must be placed on addressing these two issues as a priority.

Precinct Role and Function

AECgroup has reviewed and summarised the key property drivers of each Precinct in the Town of Port Hedland. These drivers have been identified through an examination of the current role and function of the Precinct, land supply pipelines, development opportunities, and location-based amenity and accessibility factors. The critical mass of residential and economic activity that will occur over the next twenty years will result in an increase in segmentation of market demand. This segmentation will reinforce Precinct level specialisation of role and function and result in differences in the activity profiles of each Precinct as well as the interrelationship between Precincts over time.

The property issues identified in this report will also impact individual Precincts differently. The development of Precinct 2 (East End) and 11 (South Hedland Town Centre) are likely to be impact by all identified issues, reflecting the fact that both of these locations are projected to accommodate the fully spectrum of activity, floorspace and land uses. Development in other Precincts, in both Port and South Hedland are expected to experience similar, albeit slightly less, impacts from the identified property issues, though the combination of issues varies across the Precincts. This reflects differences in the current and future role and function of each Precinct and the highlights the need for Precinct and whole-of-Port Hedland level approaches, initiatives and strategies.

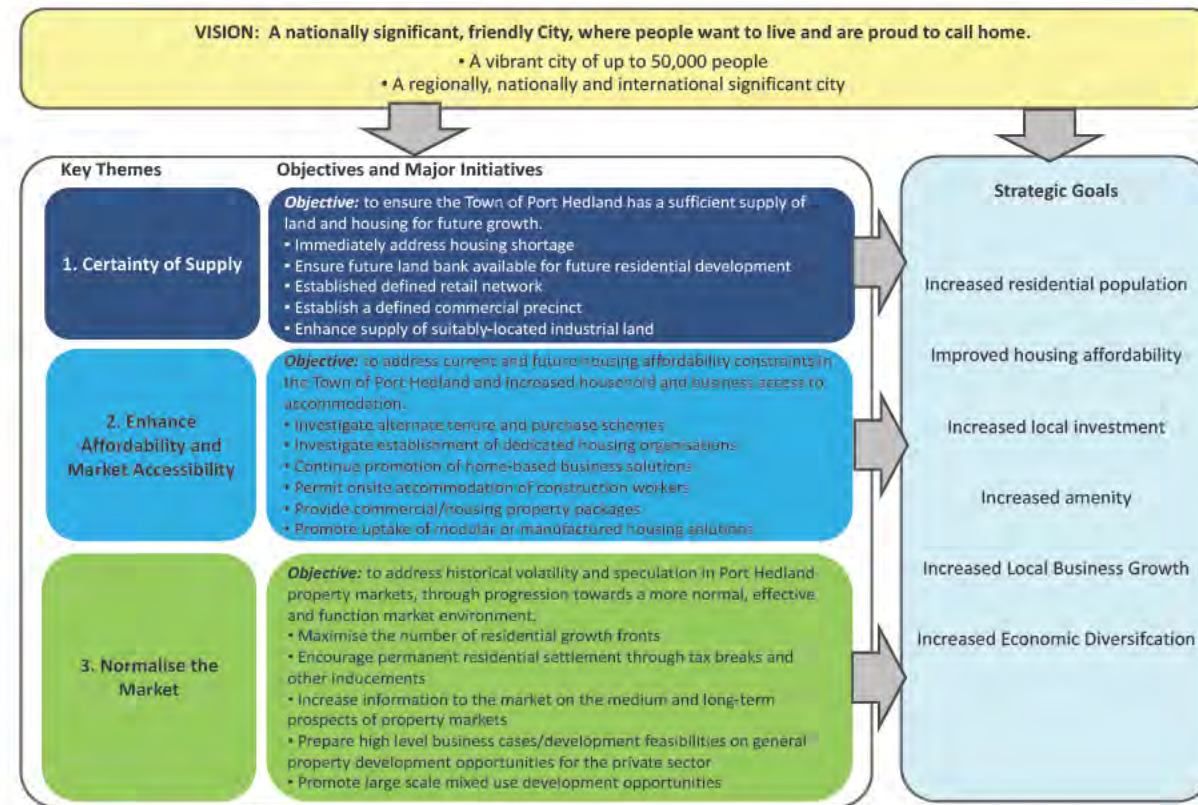
Property Framework

Based on the analysis of this report, AECgroup proposes the following framework be established to guide long-term property-related activities by key stakeholders. The following diagram provides an overview of the property framework for the Town of Port Hedland.

This framework is comprised of three broad themes, which reflects the need for a multi- pronged approached to addressing the property issues identified in this report. These themes include:

- **Certainty of Supply** - to ensure the Town of Port Hedland has a sufficient supply of land and housing for future growth;
- **Enhance Affordability and Market Accessibility** - to address current and future housing affordability constraints in the Town of Port Hedland and increased household and business access to accommodation; and
- **Normalise the Market** - to address historical volatility and speculation in Port Hedland property markets, through progression towards a more normal, effective and function market environment.

The broad initiative concepts identified under each of these themes, as part of the Property Framework, have been incorporated into the **Implementation Plan** through provision of detailed and specific advice regarding activities and the associated key performance indicators (KPIs) and budgets.



Source: AECgroup

The evolution of Port Hedland...

The development of the Town of Port Hedland is currently constrained by a range of housing, development feasibility and risk profile issues. These issues influence not only the ability of the Core Objectives of the City Growth Plan to be achieved, but also the role and function of individual Precincts. Housing (namely affordability and supply), and Development and operational viability-related issues (construction costs, uncertainty and infrastructure constraints) were identified as those most critical to both property and economic development in the Town of Port Hedland.

The three themes of the Property Framework - Certainty of Supply, Enhancing Affordability and Market Accessibility, and Normalising the Market – reflect the need for a multi-pronged strategy to addressing the property issues that constrain development.

Definition of individual initiatives, policies and strategies related to each theme of the Property Framework will be the focus of the **Implementation Plan**.

Technical Summary - Sustainability Framework

Sustainability executive summary

"The issues of sustainable development should not be seen as problems to be solved but rather as opportunities for greater cooperation and limitless possibilities for more innovative and efficient ways of creating human settlements"

Daniel Williams (taken from LandCorp website)

Purpose

The Town of Port Hedland in partnership with LandCorp, the Department of Planning and the Office of the Pilbara Cities, has set an ambitious vision for the development of a sustainable city in the Pilbara. Supporting this vision is the sustainability framework which provides a set of principles and aspirations to help guide and support planners and decision makers on how to achieve sustainable development and build a resilient Port Hedland for current and future generations.

This brief sets out the draft sustainability framework for the Pilbara's Port City Growth Plan (CGP) and provides some of the headline opportunities for sustainable development and an assessment of the plan against the sustainability principles.

Sustainability framework

The sustainability framework provides a consistent and agreed approach to sustainable development in the Pilbara's Port CGP. This is important in the Port Hedland context as there are many stakeholders who are interested in the economic, cultural, social and environmental success of the region. The sustainability framework is designed using the guiding principles and themes of state, regional and local policies and supplemented with 'best practice' sustainable community frameworks.

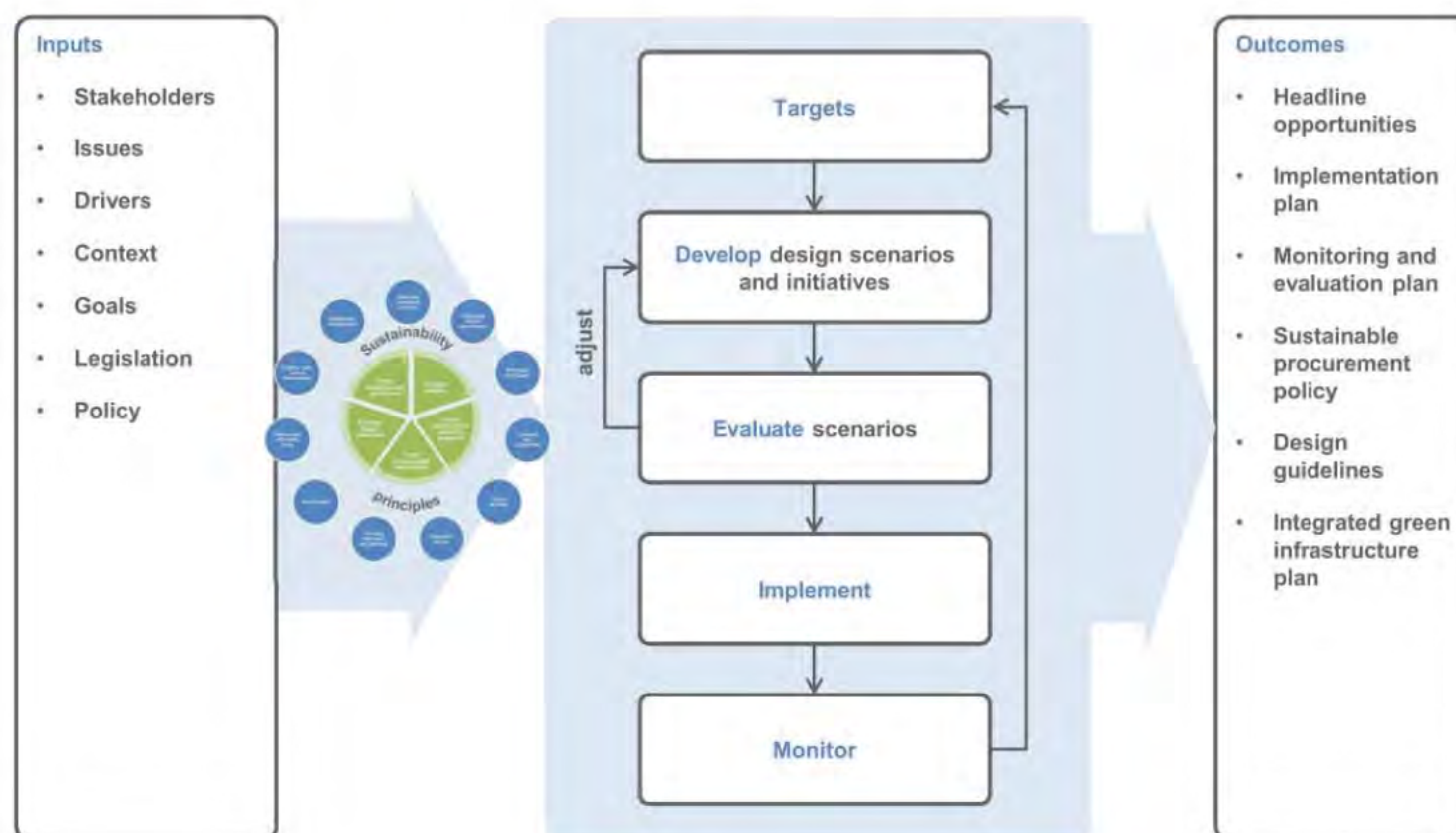
The sustainability framework is a working document that is continuously improved and updated throughout the project. The sustainability framework is currently focussed on the planning and design stages of the project and should be used as guidance for design development and evaluation of initiatives however it can be adapted for future use as a sustainability framework for the Town of Port Hedland and community groups.

The sustainability principles are:

- enhance liveability
- create opportunities for economic prosperity
- foster environmental responsibility
- demonstrate visionary leadership and strong governance
- embrace design excellence.

The following schematic outlines the sustainability framework process.

Pilbara's Port City Growth Plan sustainability framework



Inputs

The **inputs** to the process are the:

- vision and goals
- context
- stakeholders (*steering group + external*)
- issues (*current + future*)
- legislation, regulation, policies and guidelines.

These inputs will generally be developed and identified in the initial stages of planning and updated and refined over time.

Iterative + integrated design

The **iterative + integrated design** stage involves:

- identifying the appropriate measures for the design process and setting appropriate targets
- developing the design scenario, initiative or strategy that is part of achieving the vision and goals
- selecting an evaluation tool
- evaluating against the principles, measures and targets and adjusting design (et al) if required
- implementing and monitoring outcomes (*this won't be used at the planning stage but is useful for long term use of the framework*).

Design development

This stage is useful for both land use planning and design and other initiatives and strategies. Broadly, the design tools for this stage are:

- design and technology
- markets, behaviour change and incentives
- institutions, policy and governance.

Although efficient design of the built environment and infrastructure is important, there may be other ways to achieve the desired sustainability outcomes. For instance, if we want to reduce household water use, water efficiency and water re-use strategies can only go so far – incentives may be required to either change people's behaviour or create an opportunity for the market to provide a water reduction solution. This applies equally to policy led initiatives such as sustainable procurement practices by the Town of Port Hedland and design guidelines for the CGP.

Evaluation

Evaluation requires first the selection of the most appropriate evaluation tool for the design context then assessment against the measures and targets. Evaluation is not an endpoint but part of the iterative design process, which allows reflection and decision between alternatives. Furthermore, evaluation should be specific to the task and therefore tools may differ. For instance, a tool to evaluate sustainable road design and construction, such as Greenroads Rating System, will be used for this application and but building design may use BASIX as the evaluation tool.

Planning

- GreenStar Communities sustainable development principles – evaluation of initiatives against the high-level sustainability principles adopted for the sustainability framework

Design and construction

- Urban Development Institute of Australia's (UDIA) *EnviroDevelopment* – evaluation of environmental sustainability components (3.0 Foster environmental responsibility)
- VicUrban's *Sustainable Community Rating – Provincial Community 2007* – evaluation of community and design excellence components (1.0 Enhance liveability & 4.0 Embrace design excellence)
- *AEC economic evaluation tools* – TBA.

These evaluation tools will provide useful guidance on areas of environmental and community development sustainability and housing affordability. These tools are generally qualitative and act as a useful guide for designers but don't provide quantitative results. Quantitative evaluation tools, such as Kinesis' C^{CAP} Precinct, provide much more integrated and tangible results, which give greater confidence in decision making (Note, Kinesis' C^{CAP} Precinct is only available through license and is outside the scope of PB's scope of work).

Outputs

The **outputs** can be many, but for the purpose of the CGP the following outputs are recommended:

- headline opportunities – large scale sustainability strategies and infrastructure
- implementation plan
- monitoring and evaluation plan
- sustainable procurement policy
- design guidelines
- integrated green infrastructure plan.

Proposed sustainability options

To achieve a sustainable Port Hedland will require a significant transition from the status quo. This transition will need to apply to all parts of the economy and society to cope with the challenges of a resource constrained future and a developing a diversified economy and demography. The options presented here try to incorporate the steps necessary to aid this transition by promoting the 'catalysts', such as more housing, early in the process while being mindful of the need to consider long term risks, such as climate change and resource shortages.

The following table outlines the sustainability option recommendations for the Pilbara's Port CGP implementation phase.

Sustainability principle	Actions	Responsibility	Timeframe	Benefits
Water and energy efficiency strategies	Residential water and energy audit and retrofitting program	Water Corp, Horizon Power, Industry	Yr 1	> free up potable water in the short term for residential development > reduce ecological footprint
	Industry water and efficiency audit and retrofitting program	Water Corp, Horizon Power, Industry	Yr 1-5	> free up potable water in the short term for residential development > reduce ecological footprint > reduce operational costs
	Develop guidelines for TWA for placemaking and resource efficiency	ToPH, LandCorp	Yr 1	> reduce ecological footprint > integrate TWA into community
	Develop guidelines for new accommodation best practice water and energy efficiency	LandCorp	Yr 1-5	> reduce demand for new residential development > reduce ecological footprint
Diversifying economy strategies	Develop strategic investment business case for 'clean technology'	ToPH	Yr 1-5	> attract new industries that lead in design excellence
	Develop strategic higher education and research business case to support 'clean technology' industries	ToPH	Yr 1-5	> enhances liveability and life-long learning > enhances productivity of local industry > attract and retain youth
	Develop business case for localised food production	ToPH	Yr 5-10	> community health and affordable living
Essential service infrastructure	Regional power network infrastructure upgrades	Horizon Power	Yr 5-10	> aids transition to a low carbon economy through renewables
	Develop Smart Grid network infrastructure (including communications)	Horizon Power	Yr 5-10	> reduces energy load and therefore carbon emissions > reduces cost of energy in long term
	Develop energy storage network plan to support large scale renewables	Horizon Power	Yr 1-5	> enables penetration of renewables for energy security and reduced carbon footprint
	High speed broadband network	ToPH	Yr 5-10	> enables connectivity and opportunities for education > enables Smart Grids
	Expand bore water supply network	Water Corp	Yr 5-10	> water for residential growth > enables diversity and economic growth
Renewable energy strategies	Alternative energy generation feasibility study (solar, wind, energy-from-waste, etc.)	ToPH	Yr 1-5	> reduce carbon and waste footprint > enhance industry energy supply security
Strengthening communities	Preparation of education for life long learning strategy (including high school and indigenous education)	ToPH	Yr 1-5	> attract and retain youth > mental health in community
	Development of a community engagement strategy including deliberative democracy practices	ToPH	Yr 1-5	> fostering sustainable cultures and behaviours > engaged and active community
	Create 'Sustainable Living Centre' for community sustainability education	ToPH	Yr 1-5	> fostering sustainable cultures and behaviours
	Development of an Indigenous employment and economic development program	ToPH	Yr 1-5	> community cohesion and equity
	Display homes to demonstrate energy and water efficiency	LandCorp	Yr 1-5	> replication potential and experimentation
Water security strategies	District Water Management Strategy (including water balance)	Water Corp, ToPH	Yr 1	> free up potable water for development
	Options assessment for Integrated Water Cycle Management (including implementation of non-potable supply strategy)	Water Corp	Yr 1-5	> free up potable water for development
Future proofing strategies	Climate change adaptation risk assessment	ToPH	Yr 1-5	> protection of critical services > improved decision making
	Oil vulnerability risk assessment	ToPH	Yr 1-5	> enhance liveability > improve energy security for business continuity
Governance	Project Office creation in ToPH to deliver CGP	ToPH	Yr 1	> coordination between state and local agencies and integration into ToPH
	Energy & Water Taskforce	ToPH	Yr 1	> coordinate energy and water efficiency programs and support strategic
	Develop sustainable procurement policy and guidelines	ToPH	Yr 1-5	> reduce ecological footprint of council > replicable for other businesses

Sustainability assessment

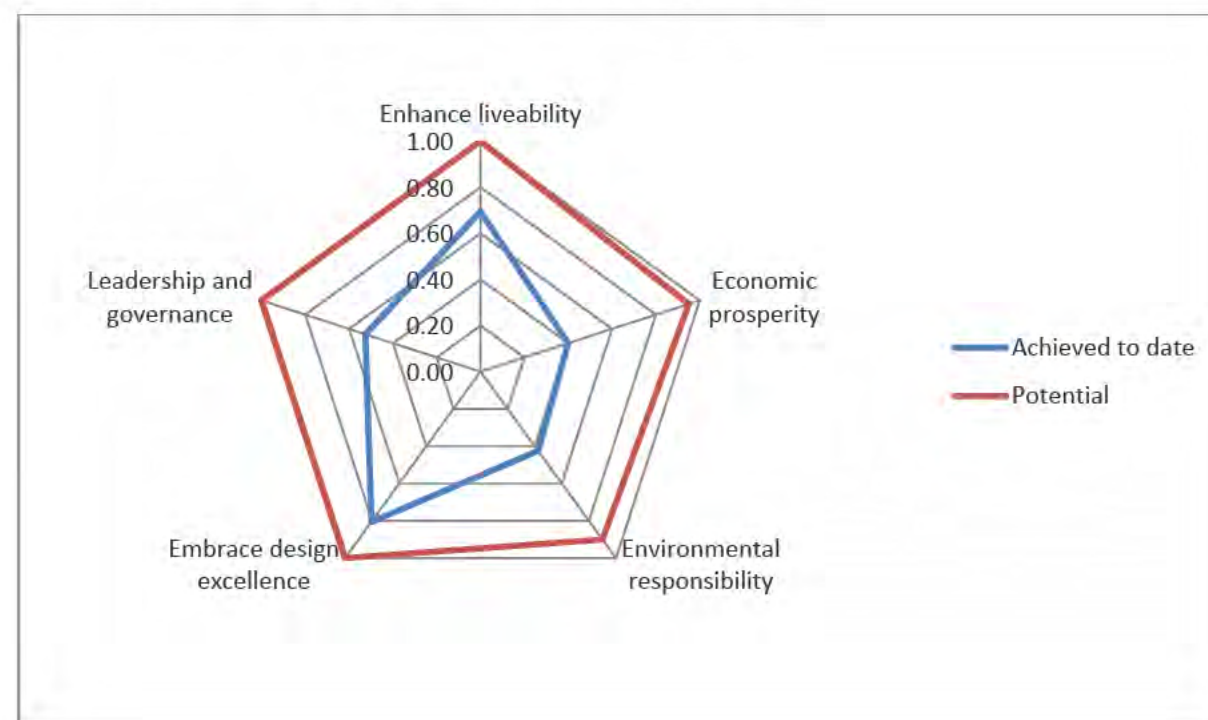
A sustainability assessment has been undertaken of the draft Pilbara's Port CGP against the principle criteria of the sustainability framework, namely:

- enhance liveability
- create opportunities for economic prosperity
- foster environmental responsibility
- demonstrate visionary leadership and strong governance
- embrace design excellence.

As the Pilbara's Port CGP is only at the early planning stage, the sustainability assessment is qualitative and subjective in analysis owing to the fact that the plan is strategic and cannot provide sufficient design detail to conduct a quantitative assessment. The qualitative assessment has been converted into a score based on the level of 'achievement' of the elements of the sub-principle. The scores themselves demonstrate the level to which the plan has 'achieved' the principle and furthermore, highlights the potential for the principle to be achieved at a later stage of the project.

The results of the sustainability assessment should not be viewed as definitive or final and should be used only as a guide for planners to test whether the project is heading in the right direction with respect to the sustainability principles. Furthermore, the sustainability assessment should be repeated through-out the project to ensure continuous improvement and refinement. Again, as the project gains more design detail it would be prudent to use more quantitative assessment tools, such as those outlined previously.

The results of the sustainability assessment are shown in the graph below. At this stage of planning, the target range for the score should be at least 0.4, which indicates that the principles have been recognised and actions have been specified that will progress the achievement of the principles.



All the sustainability principles criteria has achieved at least 0.4 for the planning with stand-out performance in 'embrace design excellence' with 0.8 and 'enhance liveability' with 0.7. The high scores in these criteria are testament to the extensive involvement of stakeholders and the community in the planning process and the continued efforts of the Town of Port Hedland to provide information to the community. Lower scores in 'economic prosperity' and 'environmental responsibility' are expected at this stage of the project, which is mostly focussed on planning and stakeholder engagement, however some additional attention could be given to these criteria in the implementation phase to ensure long term success in these areas.

The main sub-elements to consider as strategies are:

Create opportunities for economic prosperity

- encouraging the production and procurement of local goods and services
- establishing a business case, inclusive of externalities, for green infrastructure systems and jobs and providing a commitment to implementation
- enabling ongoing sustainable and ethical investment in local business opportunities
- encouraging business and community innovation through initiatives that recognise and reward local excellence
- applying lifecycle impact management approaches to encourage resource efficiency and reduced lifecycle costs

Foster environmental responsibility

- promoting environmentally efficient systems for sustainable energy generation and distribution and waste management and recycling
- reducing greenhouse gas emissions, contaminants and other pollutants to land, water and atmosphere
- educating communities on their individual and collective impacts by making resource savings and consumption data explicit within the built environment
- promoting food security and sustainable food production

Demonstrate visionary leadership and strong governance

- raising awareness among stakeholders and providing education and learning opportunities that enable more sustainable practices
- recognising and rewarding leadership in innovation and excellence
- incorporating performance evaluation, feedback and support mechanisms that provide opportunities for continual improvement
- developing practically enforceable standards of ownership, accountability and delivery

Embrace design excellence

- defining specific design outcomes which are clear and measureable

Enhance liveability

- providing opportunities for and raising the awareness of healthy activities within the community
- facilitating community cohesion by developing a shared vision, embracing diversity and tolerance, respecting each other's rights and responsibilities and reflecting these values in the built environment.

Summary

The sustainability framework and options provides a guide for planners and decision makers to ensure a sustainable Port Hedland as it journeys into revitalisation and growth. The sustainability principles of:

- enhance liveability
- create opportunities for economic prosperity
- foster environmental responsibility
- demonstrate visionary leadership and strong governance, and
- embrace design excellence

are appropriately embodied in the Pilbara's Port City Growth Plan as demonstrated in the sustainability assessment. Further refinement of strategies for each of these principles will be undertaken in the implementation phase of the project. Sustainability performance should be continuously assessed throughout the life of the project to ensure that all elements of sustainability, society, environment, economy, innovation and governance, have equal priority in the implementation and delivery. A balanced and long term approach to sustainability is vital to creating a resilient and sustainable Pilbara City.

APPENDIX



APPENDIX C: REFERENCE / SOURCE MATERIAL

The Pilbara's Port City Growth Plan team reviewed a wide variety of documents relating Port Hedland and its development. The following, including some of the technical documents prepared by the Growth Plan team for this study are referred to in the main text and listed below. Documents are listed against the relevant chapter to which they are first referenced:

Section 1.1 Pilbara's Port City

1. Australian Bureau of Statistics, 2011; ABS5206.0 National Accounts.
2. Town of Port Hedland, 2011; Media/Information Release (Various).
3. Town of Port Hedland / Urban Design Centre, 2007; Port Hedland Land Use Master Plan
4. Town of Port Hedland, 2010; Strategic Plan 2010-2015.
5. Town of Port Hedland, 2010; Hedland's Future Today.
6. Town of Port Hedland / RPS, 2011; Hedland Land Availability Plan.
7. Town of Port Hedland / Greg Rowe & Associates, 2010: Housing Capacity Study.
8. Western Australian Planning Commission, 2012; Pilbara Planning and Infrastructure Framework.

Section 1.3 Context and Role

9. Infrastructure Australia, 2011a; National Ports Strategy
10. Infrastructure Australia, 2011b; National Land Freight Strategy Discussion Paper.
11. Bureau of Infrastructure, Transport & Regional Economics (BTRE), 2010; Information Paper: Focus on Regions No. 4: Social Capital Commonwealth of Australia 2005.
12. Department of Defence, 2009; Australian Defence Force White Paper.
13. Department of Defence, 2011; Australian Defence Force Posture Review - Progress Report.
14. Department of Commerce, 2011; Marine Based Common Use Facilities: Northwest Western Australia, Prepared by AMC Management Pty Ltd 18th April 2011.
15. AEC group, 2011; City Growth Plan Property Profile.
16. Maskell, P. 2001; 'Social capital, innovation and competitiveness', in Baron, S., Field, J. & Schuller, T. (eds), Social capital: critical perspectives, Oxford University Press, Oxford.

Section 3.1 Population and Demographics

17. AEC group, 2011; City Growth Plan Socio-Economic Profile.

Section 3.4 Local Communities, Cultural Heritage and Landscape Character

18. Australian Tax Office, 2010; Statistical Tables: 2007-08 Taxation Year.
19. Australian Bureau of Statistics, 2010a; Age and Gender, Port Hedland LGA 2009.
20. Australian Bureau of Statistics, 2010b; Wages and Salaries, Port Hedland LGA, 2004 and 2008.
21. McCarthy, 1961; The Rock Engravings of Port Hedland, North Western Australia.
22. Australian Bureau of Statistics, 2007; Census of Population and Housing: Basic Community Profiles No.2033.0
23. Gallup and The Knight Foundation, 2010; Soul of the Community Survey.
24. CEOs for Cities and Joe Cortright, 2008; City Advantage.
25. FORM, 2010; Community Activation Workshop, August 2010.
26. CEOs for Cities, 2008; 36 Hours Study (conducted by Melissa Rowe).

Section 3.5 Climate and Environment

27. Bureau of Meteorology, accessed 16 March 2011; http://www.bom.gov.au/weather/wa/port_hedland/climate.shtml
28. Cardno/LandCorp, 2011: Port Hedland Coastal Vulnerability Study.
29. Department of Environment and Conservation, 2011; Request for Threatened Fauna Information (31-03-2011)
30. RPS, 2011; Pilbara's Port City Growth Plan – Environmental Report
31. RPS, 2011; DEC Contaminated Sites / Other Land Uses – South Hedland and Wedgefield
32. Thackway and Cresswell, 1995; An Interim Biogeographical Regionalisation for Australia.
33. Department of Environment & Conservation, 2002; Mangrove Habitats as Nurseries: Unique Assemblies of Juvenile Fish in Sub-Tropical Mangroves in Eastern Australia. Marine Ecology Progress Series Vol 126.
34. Laegdsgaard and Johnson, 1995; Policy Position: Acid Sulfate Soils and the Contaminated Sites Act.

35. Department of State Development, 2010; Port Hedland Air Quality and Noise Management Plan.

Section 3.6 Infrastructure

36. Port Hedland Port Authority, 2007; Port Planning Study and Ultimate Development Plan.
37. AECOM, 2011; Traffic and Transport Report.
38. Town of Port Hedland, 2010; Town of Port Hedland Community Survey 2010
39. Newman, Bilsborough, Reed and Mouritz, 2010; From Projects to Places - The 2 Challenges, 4 Themes and 10 Practices of How to Do It - Pilbara Cities.
40. Wood & Grieve Engineers, 2011; Pilbara's Port City Growth Plan Precinct Report.
41. Town of Port Hedland, 2011; Port Hedland International Airport Master Plan

Section 5.1 Framework for Growth

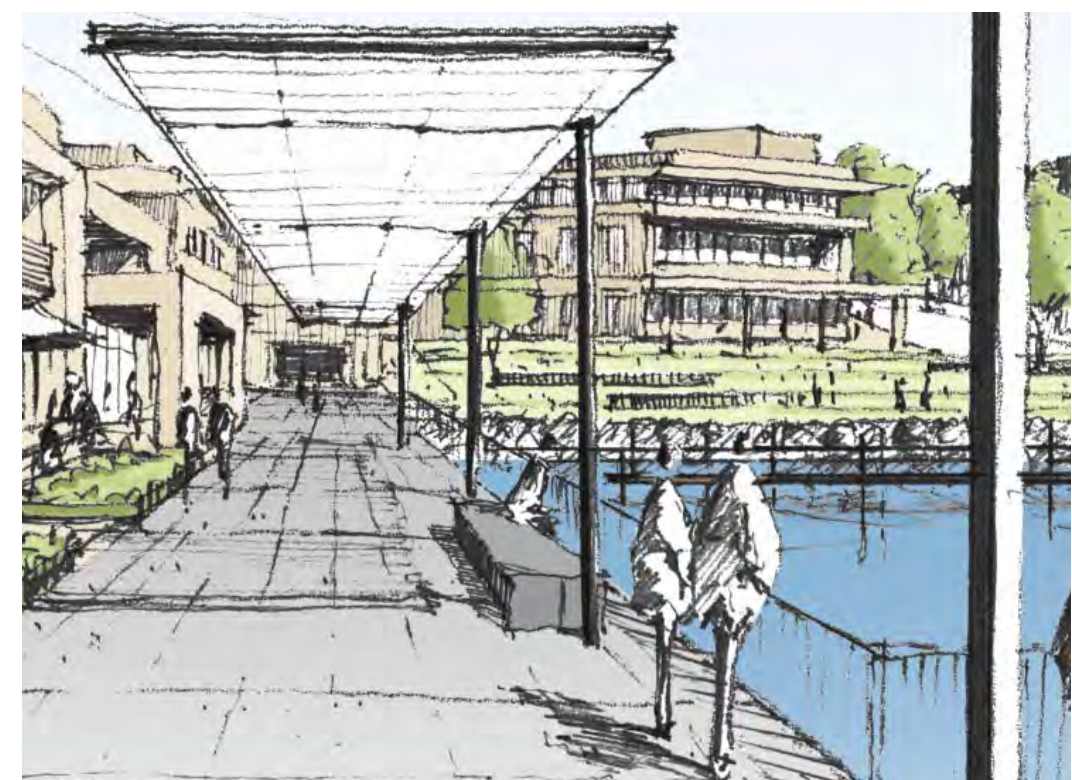
42. CCS Strategic, 2011; Active Open Space Strategy for the Town of Port Hedland.
43. Town of Port Hedland / FORM, 2012; Port Hedland: Shaping a Cosmopolitan Port City – A companion document to Pilbara's Port City Growth Plan

Section 5.3.1 and 5.3.2 Community Development

44. Western Australian Planning Commission, 2011; Pilbara Framework: Regional Profile: 2.5.3 - Population Turnover.

Section 5.5 Environmental Protection and Change Adaptation

45. Western Australian Planning Commission, 2008; Better Urban Water Management.



ALL ENQUIRIES TO:
TOWN OF PORT HEDLAND
CIVIC CENTRE, MCGREGOR STREET

PO BOX 41
PORT HEDLAND WA 6721

T: (08) 9158 9300
E: council@porthedland.wa.gov.au

