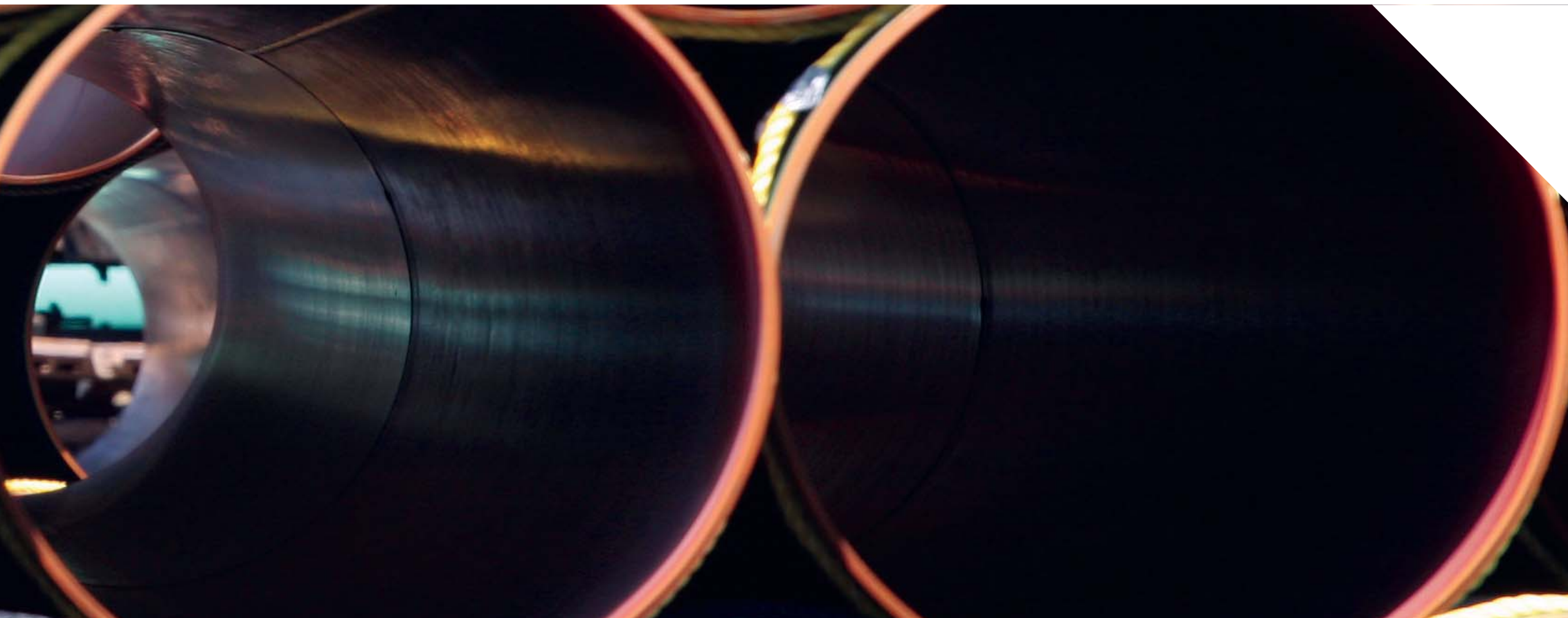


6.0 SUMMARY AND IMPLEMENTATION

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.



“A Plan to Make it Happen”

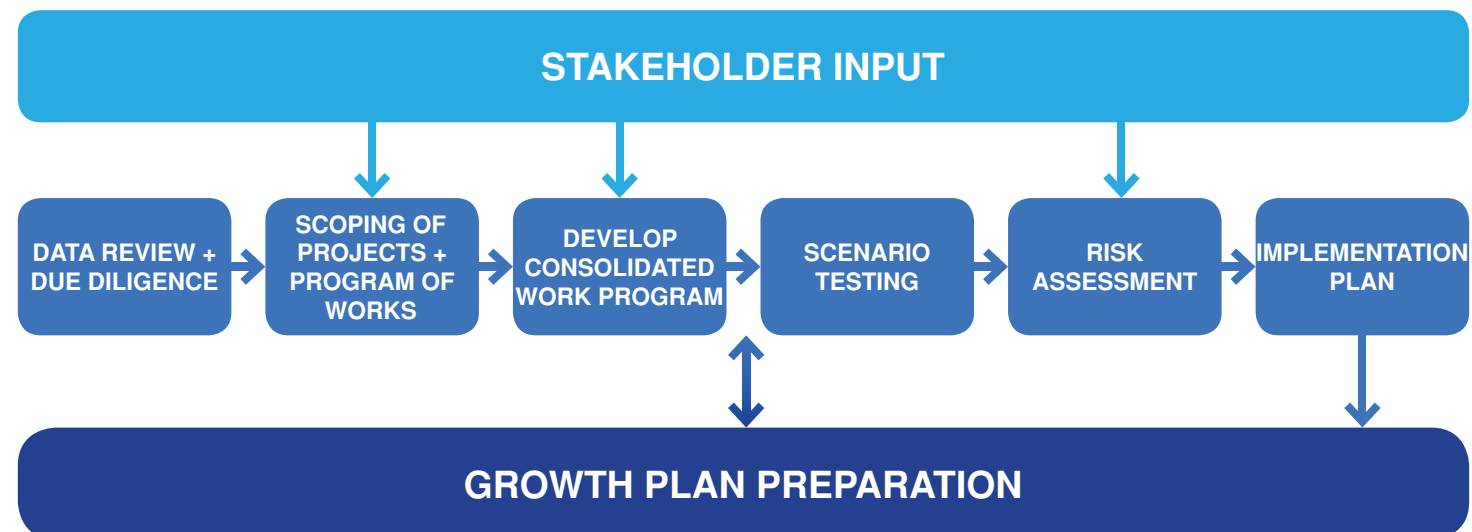


Figure 6.1: Plan to 'Make it Happen'.

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

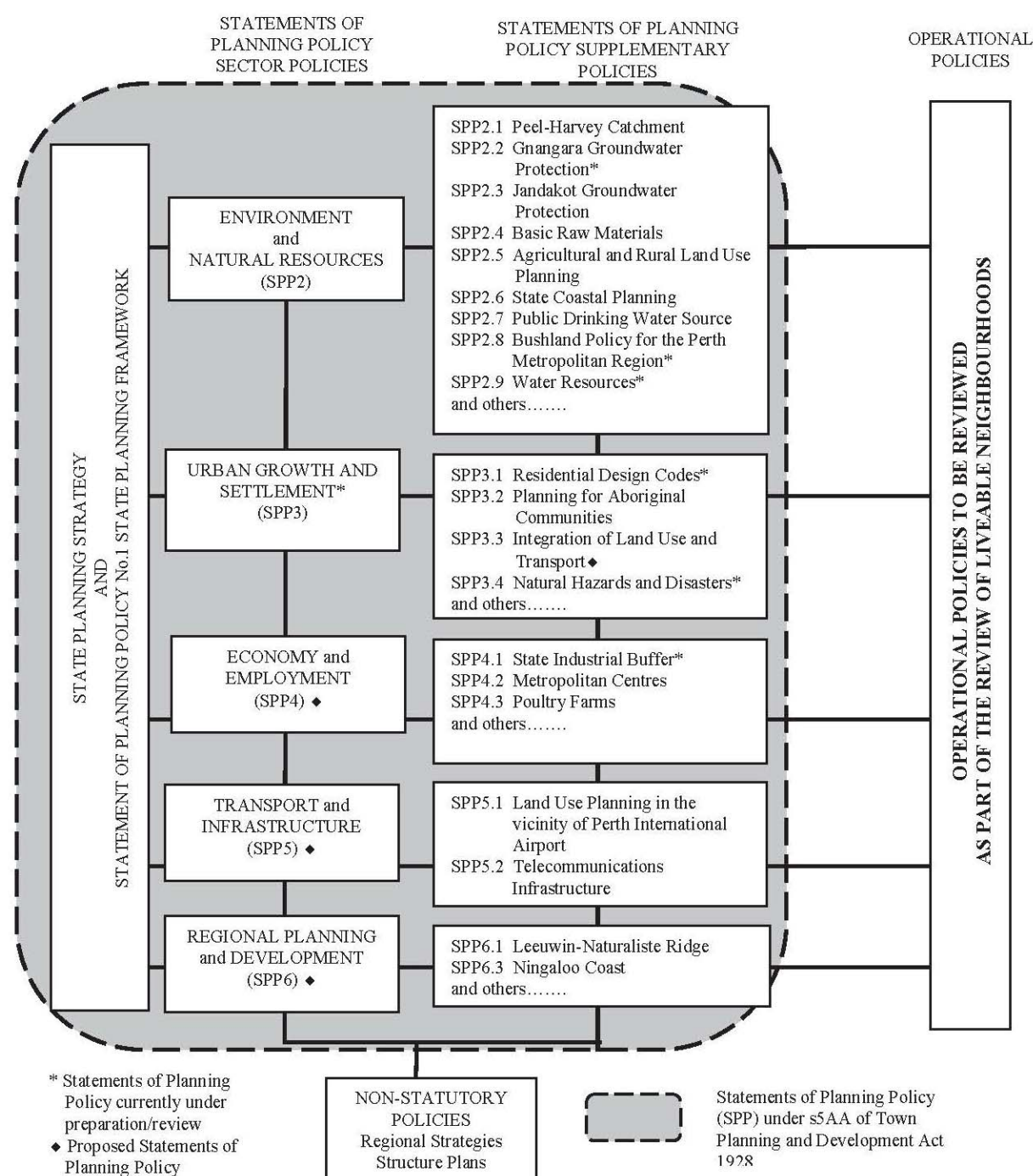
		<p>hub for minerals development and processing activity.</p> <ul style="list-style-type: none"> The need to further diversify the economic base and support a wider range of business activities is highlighted as a key objective and challenge in Sections 2 and 3 of the Growth Plan. A wide range of spatial 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).

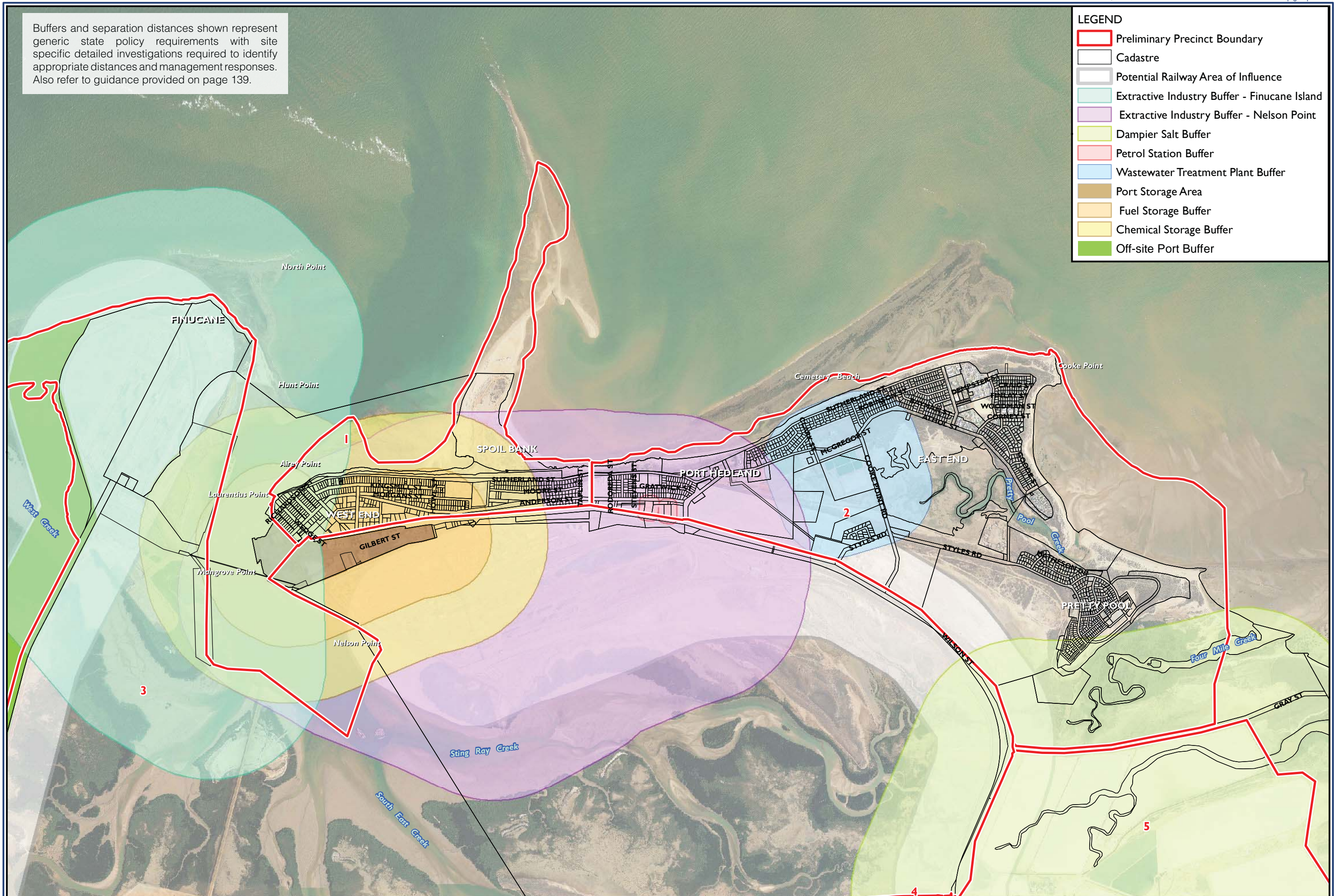
The Airport Building Height area of influence has been determined by a proposed expansion corridor of approximately 1km in width which extends northwest along the centre line of the main runway. Section 6.15.1 in TPS No. 5. governs the maximum height of buildings in areas directly surrounding the Airport 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.

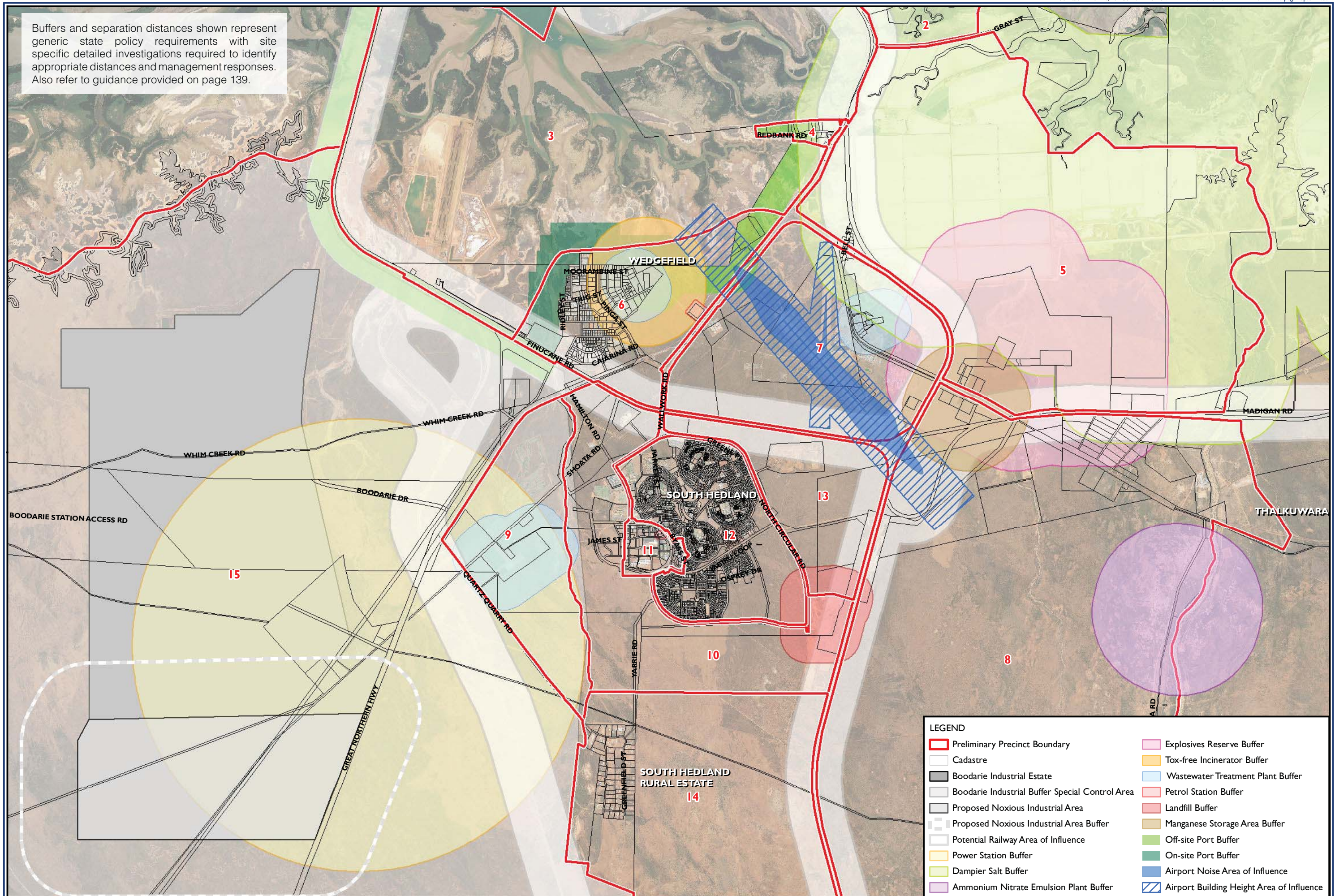


Figure 2
Separation Distances Between
Industrial and Sensitive Land Uses - South Hedland and Wedgefield

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:

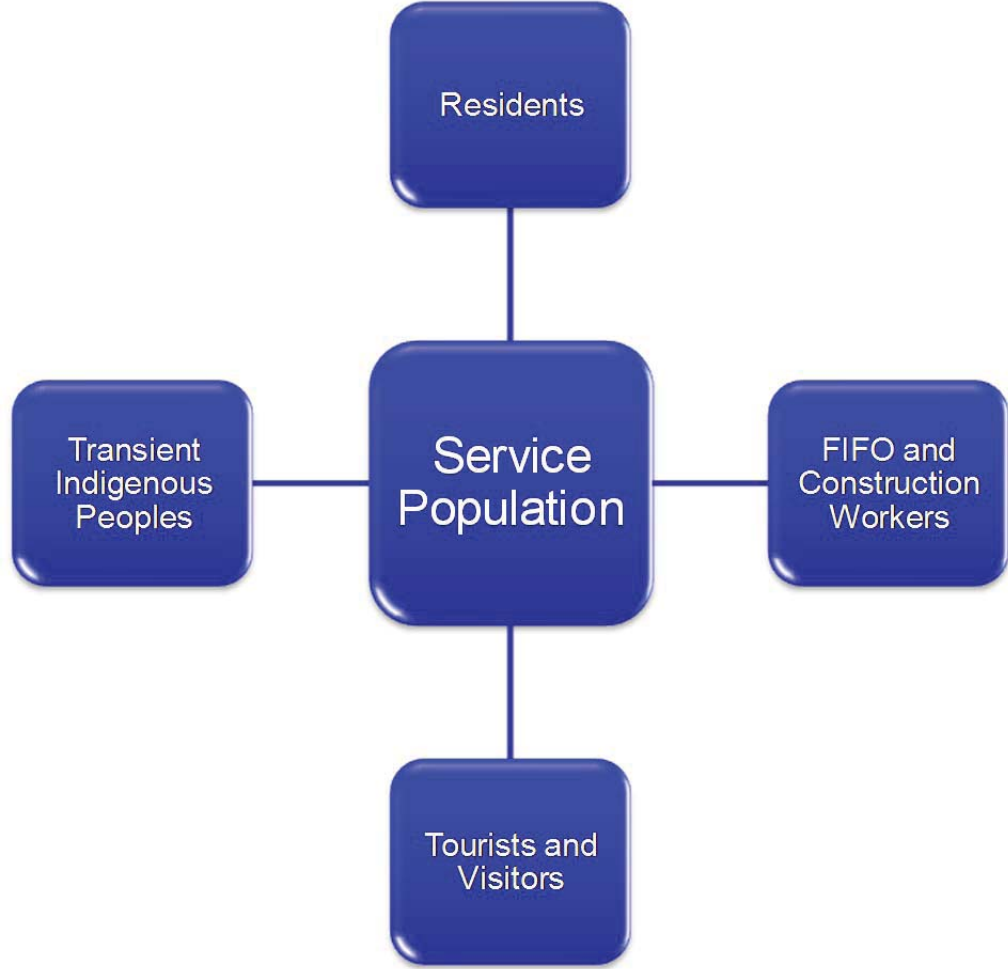
Resident & Service Population

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.

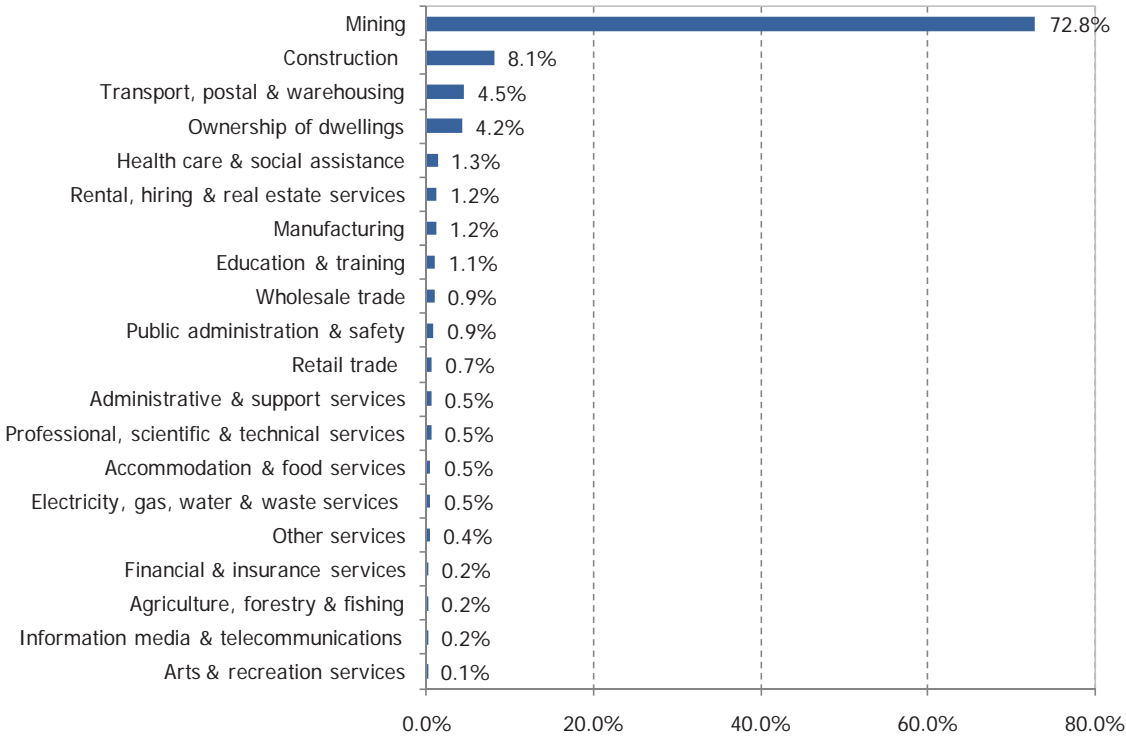
In contrast, Port Hedland also has high proportions of indigenous persons, above average levels of unemployment, high levels of crime and pockets of socio-economic disadvantage. This discrepancy highlights the large gap in the levels of economic wealth and social divide between Port Hedland's residents.

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.

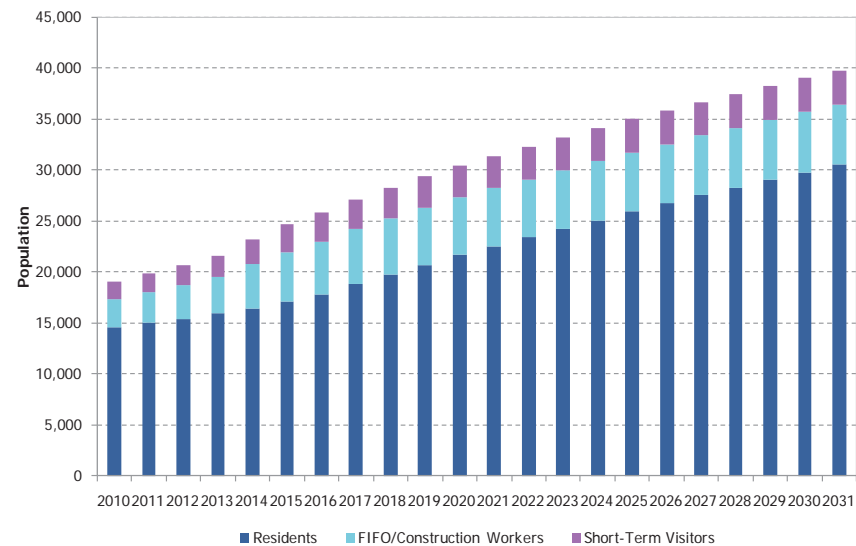
Table E.1: Estimated Population, Port Hedland, 2010

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.

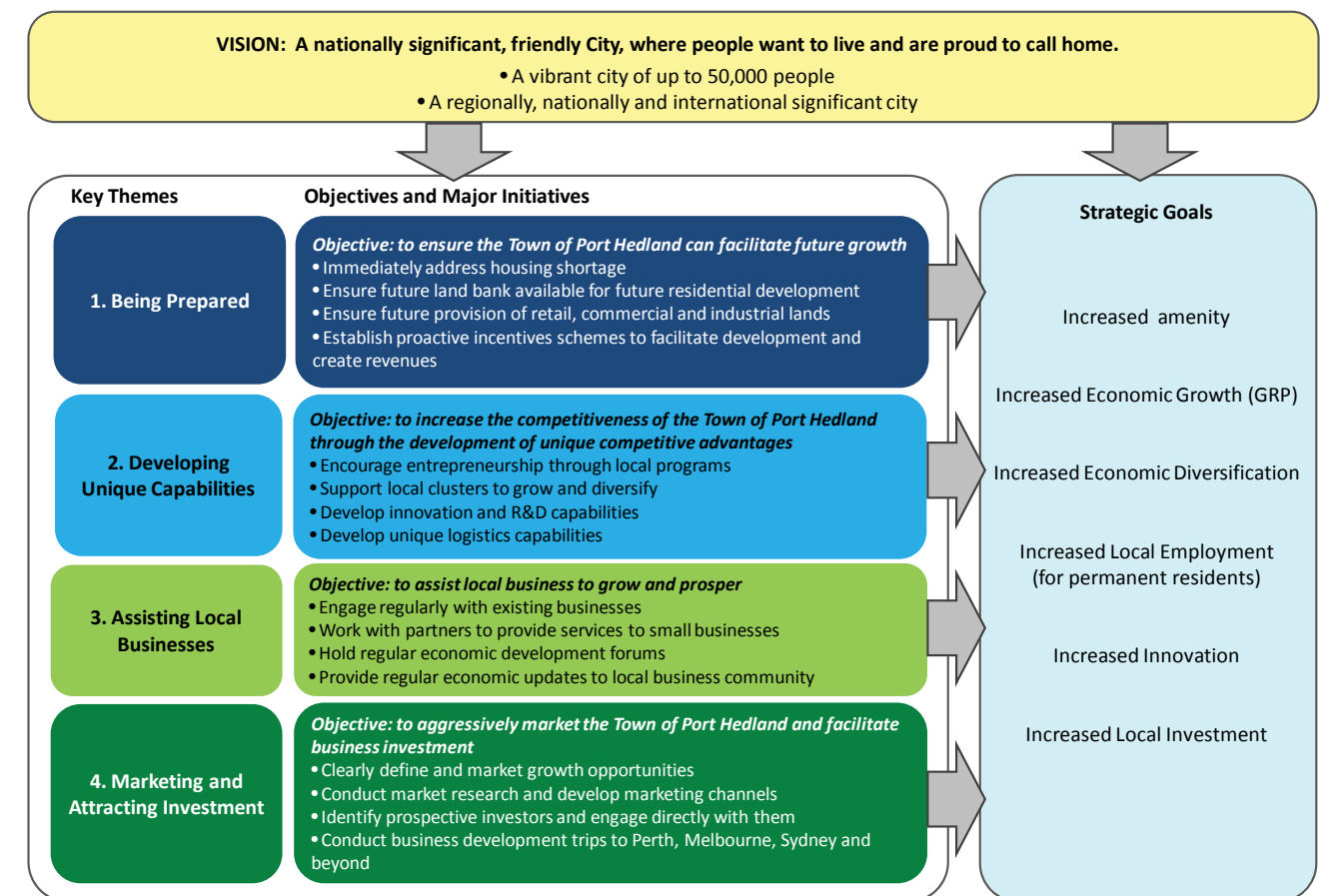
Economic Development Framework

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.

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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

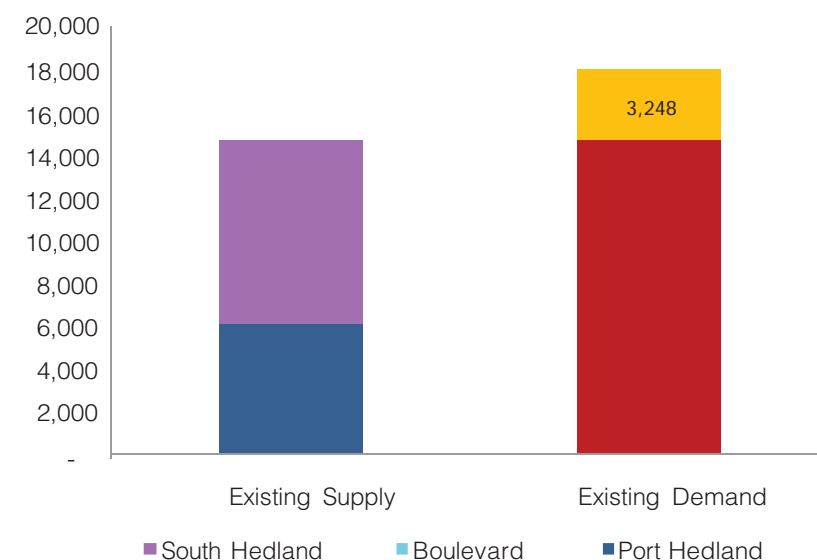
Similar to the retail market, the commercial office property market in the Town of Port Hedland is strong. Commercial office property is split between South Hedland and Port Hedland (West End).

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.

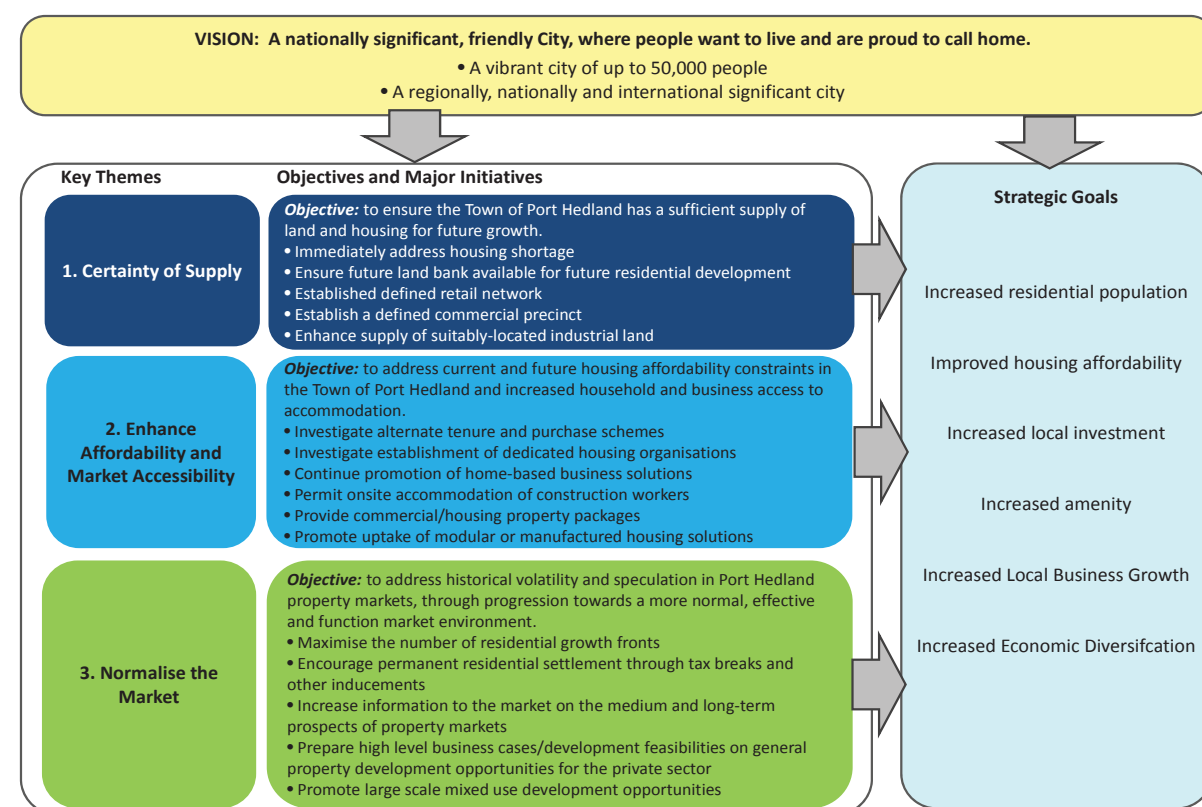
Property Framework

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.

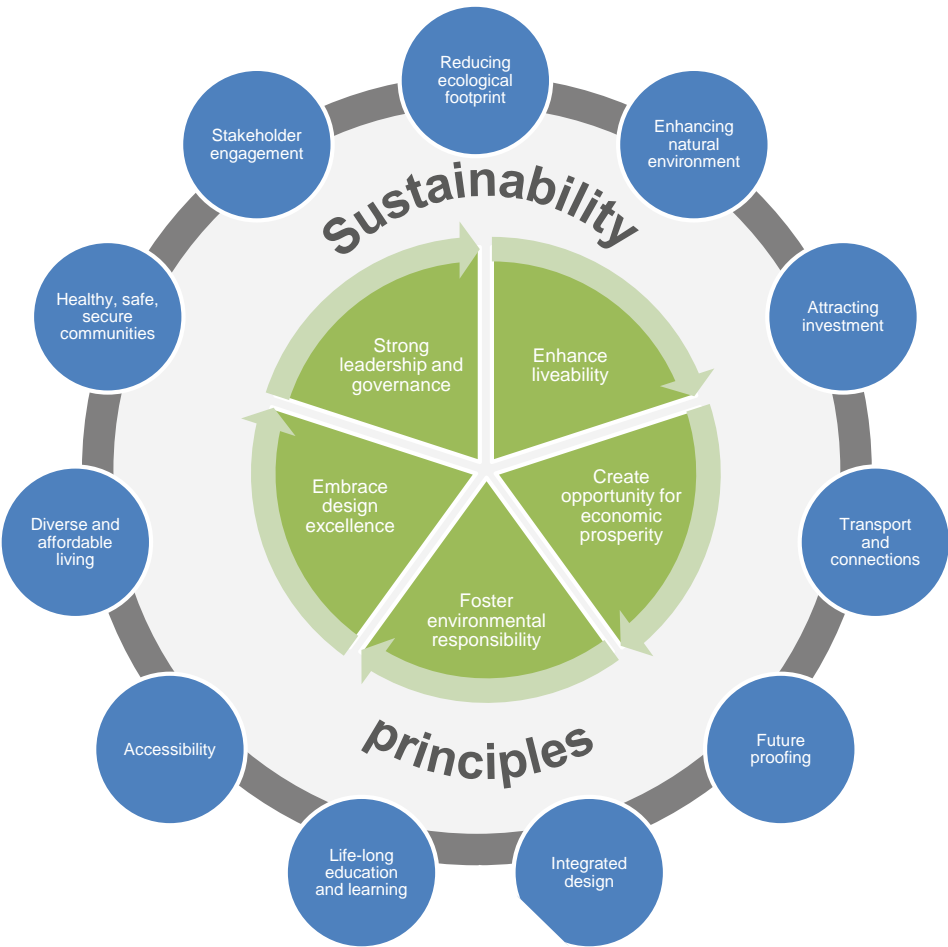
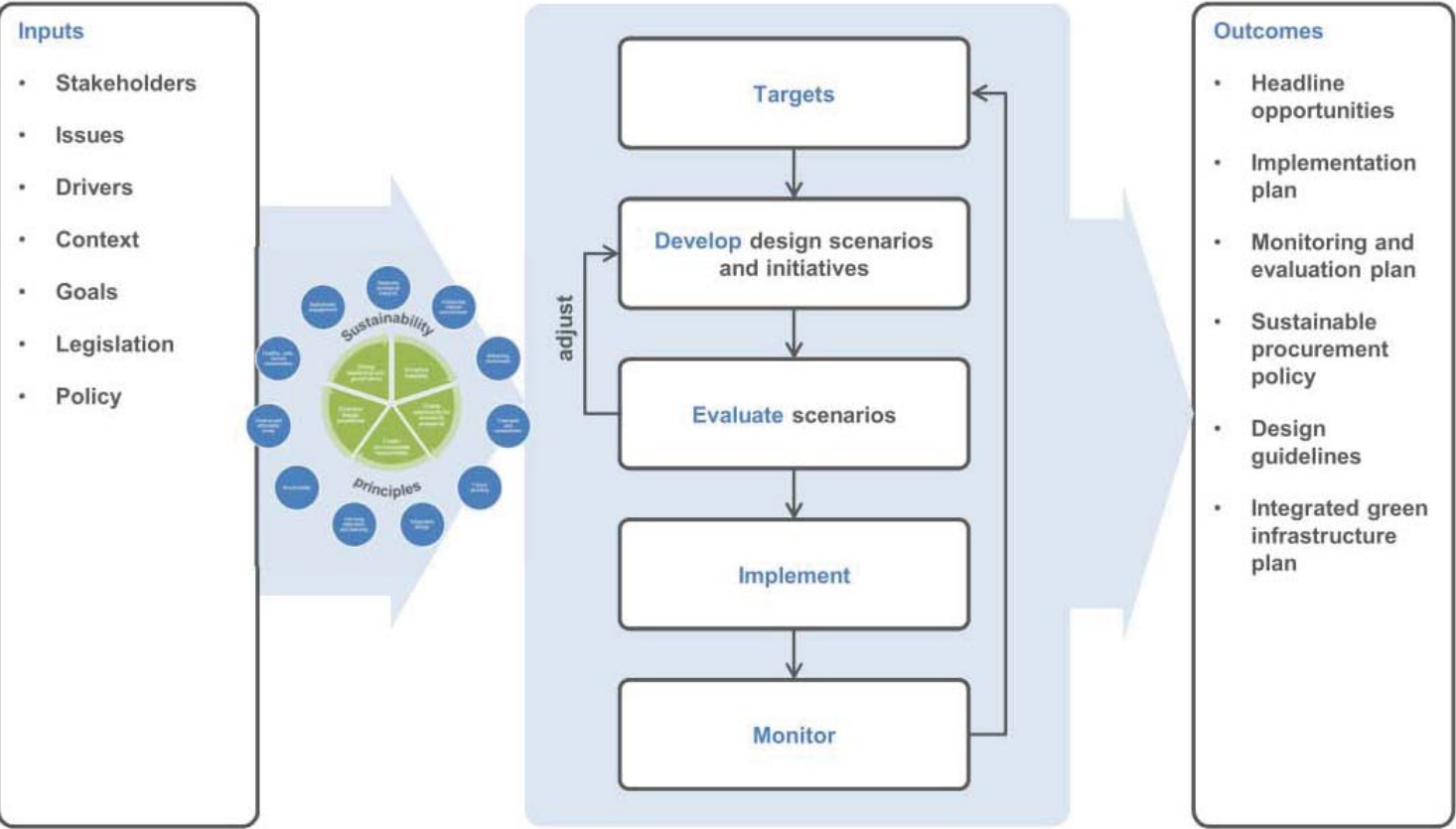
The sustainability framework is a working document that is continuously improved and updated throughout the project. The sustainability framework is currently focussed on the planning and design stages of the project and should be used as guidance for design development and evaluation of initiatives 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

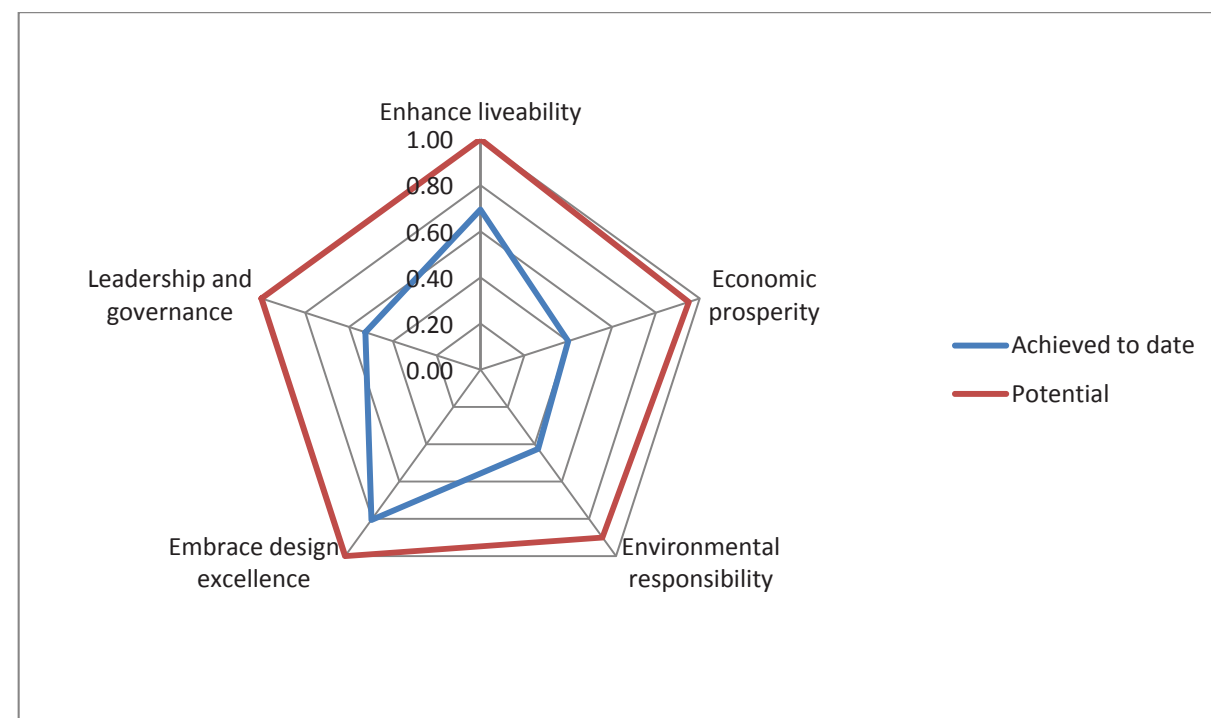
A sustainability assessment has been undertaken of the draft Pilbara's Port CGP against the principle criteria of the sustainability framework, namely:

- 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.
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Section 1.3 Context and Role

9. Infrastructure Australia, 2011a; National Ports Strategy
10. Infrastructure Australia, 2011b; National Land Freight Strategy Discussion Paper.
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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.
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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
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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

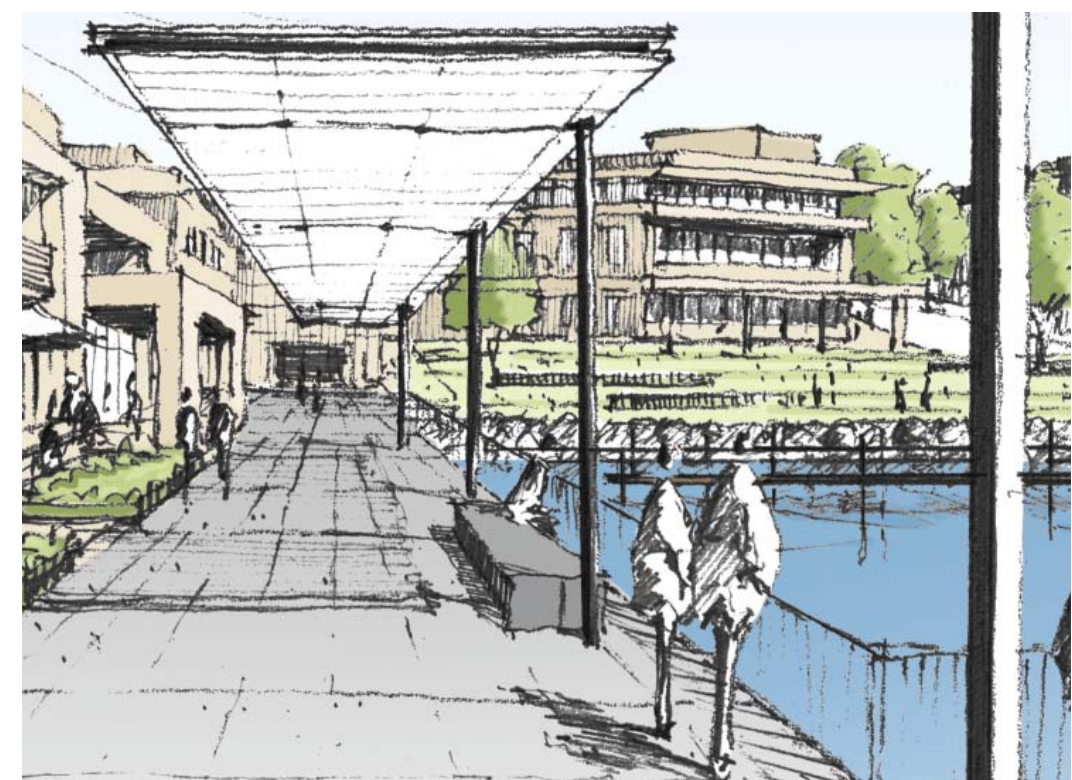
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Section 5.3.1 and 5.3.2 Community Development

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.



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