

**HORROCKS BEACH
LOCAL PLANNING STRATEGY
Vol 2 : Technical Appendix**

Shire of Northampton



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urban and strategic planning & design

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1. introduction

1.1 purpose

Horrocks Beach Townsite is located on the Mid-West coast, approximately 20 kilometres west by road of Northampton and approximately 70km from Geraldton, within the Shire of Northampton (Figure 1 : Location Plan).

The Townsite was established in the late 1800's as a coastal holiday town through the grant of the land comprising the Townsite by the then owner of the adjoining pastoral property. The land was granted to the Shire to facilitate the establishment and management of a coastal holiday destination for farm families and residents of the District.

Subsequently, Horrocks also became popular with the cray fishing fleet as a safe harbour during the season as a consequence of the protected water offered within the bay at Horrocks and the adjacent Little Bay to the north.

The majority of vacant land within the Townsite is held in freehold by the Shire. The land to the east of the Townsite which, for the most part, has been cleared for cropping and grazing purposes is held in private freehold. The Shire of Northampton Local Planning Strategy identifies Horrocks as a Major Growth Townsite accommodating future population growth within the Shire.

To date, the majority of residential expansion has been confined to the existing Townsite, particularly the southern portions. However, the bulk of future expansion opportunities lie within the former farming lands to the immediate east of the Townsite which have been identified as a Development Area under **Council's Town** Planning Scheme 8.

Clause 6.7 of the Scheme requires the preparation and approval by Council and the WA Planning Commission of a Structure Plan. Additionally, the WA Planning Commission has advised Council that it is not prepared to support recent subdivision proposals within the Expansion Area in the absence of an overall Structure Plan.

Council's Local Planning Strategy identifies the aim of the Townsite as being:

To facilitate the emergence of Horrocks into a unique place for residents centred on tourism, the fishing industry, recreational pursuits and a beach lifestyle.

The land within the Expansion Area is currently held between five different landowners. Accordingly, to achieve the Aims of the Local Planning Strategy, there is need for an overarching structure to co-ordinate subdivision and development across the Expansion Area in a sustainable manner and to ensure the provision of appropriate services and facilities.

Larry Smith Planning, in conjunction with Coffey Environments, has been engaged by the Shire of Northampton to prepare a Local Planning Strategy over the Horrocks Expansion Area to guide the future growth and development of the Horrocks Townsite and the broader Expansion Area.

It is not the purpose of the Local Planning Strategy to prepare detailed development plans as this is the responsibility of the respective landowners. Rather, the Strategy seeks to establish an overall pattern of development that respects the key physical, environmental and social issues together with the reasonable expectations of the community and facilitates economic provision of services and infrastructure.

The Local Planning Strategy has been subject of extensive community and landowner consultation and following discussions with the Department of Planning, it has been determined that the Strategy should be formalised as a Local Planning Strategy under the Town Planning Regulations 1967.

Major growth towns/aims

Northampton
To function as the administrative centre of the Shire and service centre for the surrounding rural hinterland.

Horrocks
To facilitate the emergence of this coastal settlement into a unique place for residents, centre on tourism, the fishing industry, recreational pursuits and a beach lifestyle.

Port Gregory
Encourage future development in sympathy with the relaxed and uncomplicated nature of this fishing and holiday village.

Planning precinct aims

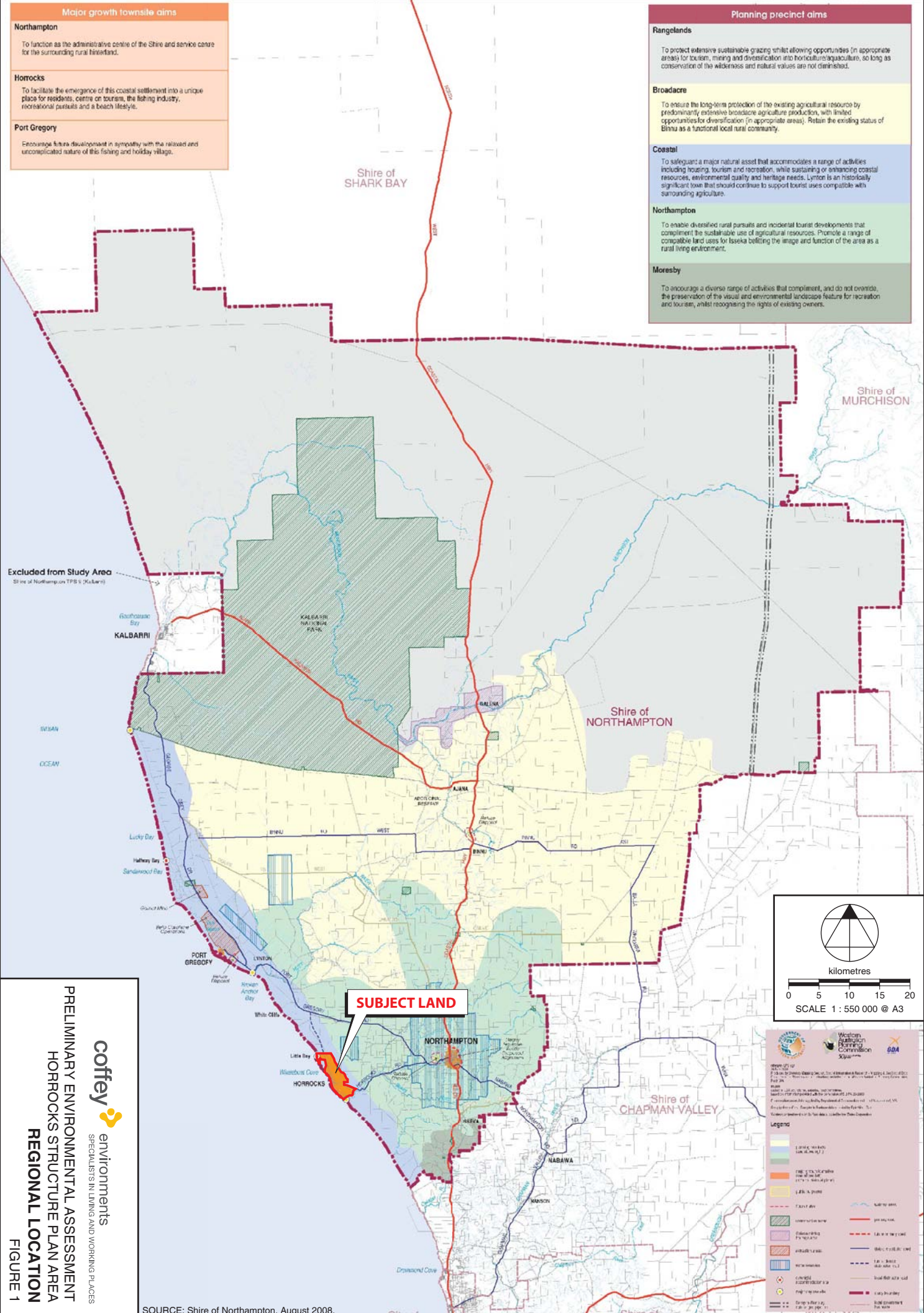
Rangelands
To protect extensive sustainable grazing whilst allowing opportunities (in appropriate areas) for tourism, mining and diversification into horticulture/aquaculture, so long as conservation of the wilderness and natural values are not diminished.

Broadacre
To ensure the long-term protection of the existing agricultural resource by predominantly extensive broadacre agriculture production, with limited opportunities for diversification (in appropriate areas). Retain the existing status of Binna as a functional local rural community.

Coastal
To safeguard a major natural asset that accommodates a range of activities including housing, tourism and recreation, while sustaining or enhancing coastal resources, environmental quality and heritage needs. Lynton is an historically significant town that should continue to support tourist uses compatible with surrounding agriculture.

Northampton
To enable diversified rural pursuits and incidental tourist developments that complement the sustainable use of agricultural resources. Promote a range of compatible land uses for Isseka befitting the image and profile of the area as a rural living environment.

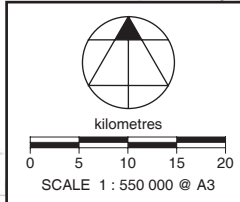
Moresby
To encourage a diverse range of activities that complement, and do not override, the preservation of the visual and environmental landscape feature for recreation and tourism, whilst recognising the rights of existing owners.



**PRELIMINARY ENVIRONMENTAL ASSESSMENT
HORROCKS STRUCTURE PLAN AREA
REGIONAL LOCATION
FIGURE 1**

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

SOURCE: Shire of Northampton, August 2008.



Legend

- Planning precincts (shaded areas)
- Major growth towns (orange boxes)
- Subject land (red outline)
- Water bodies (blue)
- Major roads (thick grey lines)
- Local roads (thin grey lines)
- Shire boundaries (dashed red lines)
- City boundaries (dashed blue lines)
- Water supply lines (dashed blue lines)
- Electricity lines (dashed black lines)
- Gas lines (dashed black lines)
- Telecommunications lines (dashed black lines)
- Other services (dashed black lines)

1.2 horrocks expansion area

The Shire of Northampton Town Planning Scheme No 8 identifies a large area of in excess of 2,400ha as Development Area Zone under the Scheme (Figure 2 : Expansion Area).

Subsequent to discussions between the Shire and WA Planning Commission, a Special Control Area was designated which reduced the area of land within the Development Area north of Horrocks Road. The eastern boundary of the Special Control Area was set on the eastern 80m contour of the Eastern Ridge, generally in the vicinity of Willi Gulli Road.

The total area of the Special Control Area east of the Township is approximately 1715ha and is comprised of:

- Seaview Farms : 705ha
- Lot 112 : 245ha
- Lot 27 : 150ha
- Lot 22 : 45ha
- Lot 20 : 570ha

Additional to the Expansion Area, there is a further 53ha designated within the Townsite and held in Freehold by the Shire for further potential expansion comprising approximately 13ha to the south of the Townsite and a further 40ha to the north of the Golf Course.

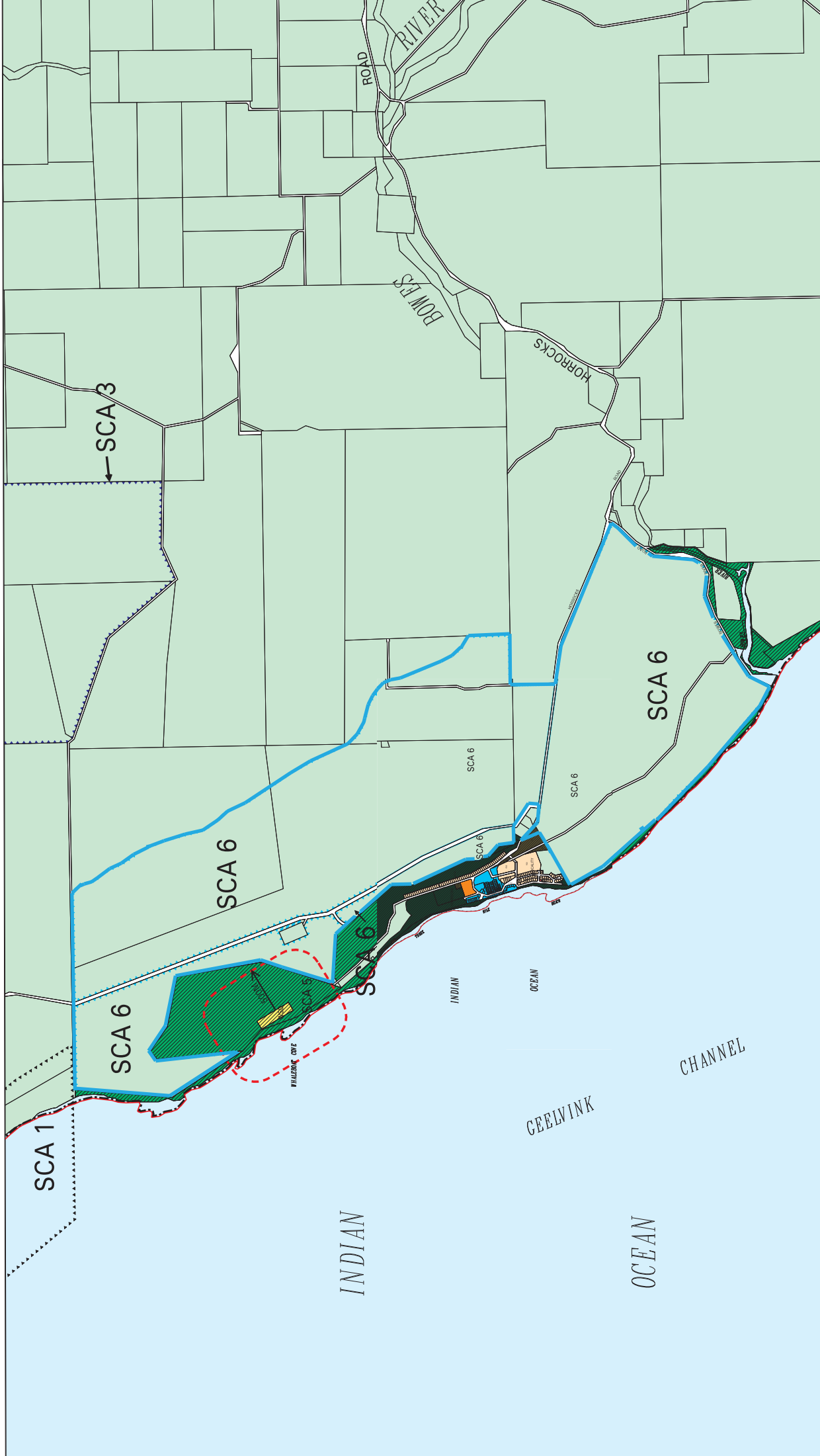


Figure 2 : Expansion Area

2. regional planning & policy context

2.1 state planning strategy 2050

The **State Planning Strategy 2050** is the Government's strategic planning response to the challenges Western Australia is likely to face. It contemplates a future in which high standards of living, improved public health and an excellent quality of life are enjoyed by present and future generations of Western Australians.

The Strategy proposes that diversity, liveability, connectedness and collaboration must be central to the vision of sustained growth and prosperity.

It envisages that by 2050 Western Australia will double its current population and will have a diverse range of well-connected and vibrant communities and regional centres that are resilient, active and respectful of cultural difference.

Six interrelated and interdependent principles underpin the Strategy:

- Community – enabling diverse, affordable, accessible and safe communities;
- Economy – facilitating trade, investment, innovation, employment and community betterment;
- Environment – **conserving the State's natural assets through sustainable development**;
- Infrastructure – ensuring infrastructure supports development;
- Regional development – building the competitive and collaborative advantages of the regions; and
- Governance – building community confidence in development processes and practices.

Realising **the Strategy's** vision requires all of Government addressing five interrelated strategic goals:

- Global competitiveness – **building on and strengthening the state's diverse economic base**;
- Strong and resilient regions – developing regional resources through economic expansion and inter-regional
- Collaboration;
- Sustainable communities – creating resilient communities enhanced by investment in infrastructure and social capital;
- Infrastructure planning and coordination – integrating infrastructure networks to achieve efficiencies and synergy in pursuit of economic growth; and
- Conservation – conserving the natural environment through sustainable development and prudent use of resources.

The strategy considers Western Australia in the context of three sectors; the Northern Sector, the Central Sector and the South West Sector.

The Central Sector, which encompasses the Mid-West, Gascoyne and Goldfields – Esperance Regions has a growing and diverse economy underpinned by mining, agriculture, fisheries and tourism and is poised to **become a significant contributor to the nation's mining, scientific, technological, research and innovation industries by 2050.**

This sector encompasses some of the most iconic landscapes and diverse climatic conditions in Australia.

Cropping in the Mid-West and Esperance and irrigated horticulture and agriculture in the Gascoyne are significant contributors to regional and export economies and food security.

The mining industry is a major contributor to the Central sector's economy and the State's gross product, with a diverse range of mineral resources.

The Oakajee Port and industry precinct is seen as having the potential **to become one of Australia's most significant industrial and resource downstream processing centres** with the effective success of this zone dependant on the provision of key utilities such as power, water, gas and rail.

The Strategy identifies a number of interrelated and interdependent State strategic directions that will influence the future development of Western Australia.

These key strategic directions of specific relevance to Horrocks are summarised as follows:

- Economic development – facilitating coordinated and sustainable economic development and diversification.
- Tourism – promoting and enhancing a range of experiences unique to the State, supported by iconic landscapes, biodiversity, culture, arts and events.
- Remote settlements – enabling remote settlements to maintain economic and community development through improved connectivity, services and cultural support.
- Land availability – ensuring the sustainable supply, use and development of land with a strong presumption in favour of the sustainability of prime agriculture land.
- Physical infrastructure – coordinating physical infrastructure with development for community betterment.
- Social infrastructure – enabling liveable, inclusive and diverse communities.
- Spaces and places – creating spaces and places that foster culture, liveability, enterprise and identity.
- Affordable living – enabling affordable living through housing diversity and compact settlements.
- Health and wellbeing – encouraging active lifestyles, community interaction and betterment.
- The environment – conserving biodiversity, achieving resilient ecosystems, protecting significant landscapes and **managing the State's natural resources in a sustainable manner.**

2.2 geraldton region plan 1999

The Geraldton Region Plan seeks to provide a framework for the future management, protection and coordination of regional planning in the Region. The purpose of the Plan is to identify planning objectives and actions necessary to achieve those objectives. A key objective is to provide a link between State and local planning and a balance between environmental, social and economic factors. The Region Plan addresses the principles outlined by the State Planning Strategy and in respect of the Horrocks Townsite seeks to:

- Promote choice and variety in lot sizes and housing choices to meet the full range of residential lifestyles needs including:
 - medium density housing (R30);
 - aged persons' accommodation; and**
 - rural-residential lifestyles.

- Ensure that residential subdivision and development utilises existing zoned land with any future rezonings being considered on the basis of:
 - need for additional land;
 - promotion of the orderly extension of servicing infrastructure;
 - access to community facilities; and
 - avoiding land with significant on-site impediments or off-site impacts.

The Region Plan further notes that Horrocks, in conjunction with Northampton Townsite, will experience growth as a consequence of development of Port and industrial activities at Oakajee, which is located a comfortable 30 minutes south of Horrocks.

2.3 batavia coast strategy 2001

This Strategy provides for an integrated approach to the planning and management of the coast and proposes a consistent regional response to land use change, subdivision and development. It is intended to compliment other regional initiatives and guide local decision-making and actions undertaken within local planning and management frameworks.

The primary policy objective of the Batavia Coast Strategy is:

"to ensure that all reasonable demands along the coast for housing, tourism, recreation, commercial, industrial and other activities are provided for, while sustaining or enhancing existing coastal resources and environmental quality at an acceptable community cost."

The Strategy recommends a hierarchy of settlement and recognised recreation sites. Kalbarri is identified as a District Centre with Horrocks and Port Gregory identified as Local Centres providing localised services to surrounding areas together with opportunities for low key tourism and recreation / holiday facilities.

2.4 mid-west regional planning & infrastructure framework

The Mid-West Regional Planning and Infrastructure Framework sets out a regional planning approach for the Mid West. It considers the Mid-West as a whole and recognises that it has three distinct components: the Batavia Coast, North Midlands and Murchison sub-regions. The Framework will be a critical driver in **adjusting the focus of priority to ensure the region's economic potential is maximised through a whole of Government approach.**

Sustained prosperity in the region will depend very much on the development of key infrastructure and diversification of local industries. Mid West Regional Planning and Infrastructure covers approximately 470,000 square and comprises 17 local governments and is divided into three sub-regions: the Batavia Coast, North Midlands and the Murchison.

The objectives of the Framework are to:

- Provide the regional context for planning in the Mid-West region;
- Provide an overview of the major regional economic, social, cultural and environmental issues;
- Identify the priority actions required to enable comprehensive regional planning; and
- Identify the priority regional infrastructure projects to facilitate economic and population growth in the Mid-West.

The Key Drivers of growth in the Mid-West are identified as:

- Economy and employment;
- Transport and infrastructure;
- Natural and cultural environment; and
- Governance

The Framework identifies a number of strategies and priorities for driving growth and development within the Mid-West. Those of relevance to Horrocks include:

Regional Infrastructure:

Oakajee Deepwater Port :This project is considered to be the driving flagship initiative for the region. Oakajee Port will initially be developed to service foundation iron ore customers prior to expanding to enable its operation as a general purpose port. Oakajee Port will predominantly be funded by the private sector and its development is currently subject to a bankable feasibility study.

Mid-West Energy Project: The Mid West Energy Project will ultimately facilitate a double circuit 330kv transmission line from Perth (Neerabup) to Geraldton (Moonyoonooka), which will significantly increase transmission capacity in the region. It will accommodate the increased load growth that is anticipated and cater for new customers within the Mid-West;

Mid-West Regional Water Planning: Water is an invaluable resource in the overwhelmingly dry Mid-West and is critical to ecosystems, industry and the population in general. Regional water planning is therefore essential to obtain a better understanding **of the Mid West's water resources in order to guide its sustainable management.**

Population Planning:

According to the 2010 Estimated Residential Population, the current Mid-West population is approximately 55,584 (Australian Bureau of Statistics, 2011), with the vast majority (39,368 or 71% living within the City of Greater Geraldton). There has been ongoing debate on the potential population for the Mid West region. It is expected that the majority of the **Mid-West's future population growth will occur in the City of Greater Geraldton**. The remainder of the growth is likely to be spread throughout the region. The rate of future population growth is dependent on a range of factors including the provision of regional infrastructure to service economic development and the development of the key industries including mining. As a result, the population growth rate is likely to vary depending on the level of economic investment and when this investment occurs. Within this context it is difficult at this time to make accurate predictions on population growth rates based on current information. It is suggested that a number of population scenarios be developed to guide future regional planning.

Natural Resource Management Planning:

The natural resources of the Mid-West **encapsulate the region's sense of place, as well as underpin its economy. To ensure the region's future sustainability, in both** economic and environmental terms, the management of these natural resources is imperative. Natural Resource Strategies include:

NR 4: Protect and manage the region's cultural heritage arts, including indigenous significant places, historic places and landscape significance.

NR 5: Determine the need for additional tourism and recreation sites to cater for an expected increase in demand.

Activity Centres:

The Framework identifies the role and function of activity centres based on current community focal points for people, services, employment and leisure. It is expected that the activities centres hierarchy proposed in Table 3 will provide the core focus of growth for the region over the next 20 years. Horrocks is identified as a Local Centre within the Table. It is important to note that the role a centre plays in the future may vary dramatically from the function it serves now, however it is anticipated that this will not significantly change without planning intervention and/or considerable investment.

Activity Centres strategies are:

AC 1: **Expand the Mid West's population in accordance** with the Activity Centres and reduce reliance on fly-in fly-out workforces.

AC 2: Local Centres offer a level of service that can deal with the daily needs of their service population but with a lower level of choice than Regional Centres.

AC 3: Often but not always serves functions including limited retail, primary school and limited health. Generally supports the agricultural and fishing sectors.

Horrocks provides a significant opportunity to develop a higher level Local Centre

2.5 shire of northampton local planning strategy 2009

The Shire of Northampton Local Planning Strategy directs future population growth to the existing townships of Northampton, Kalbarri, Horrocks and Port Gregory. The Townsites are generally able to provide a wide variety of lot sizes and housing choices and have adequate community infrastructure, employment opportunity and service infrastructure. Consolidation of urban development within these existing townsites is therefore considered to be the most appropriate settlement strategy for the Shire as it will enable better utilisation of existing infrastructure and services and generate economies of scale for further infrastructure development.

The Strategy clearly seeks to protect the primacy of Northampton as the primary Townsite and District and Service Centre for the Shire. The Northampton Townsite retains a number of significant regional services including Primary and High School, Hospital and medical, sporting and aged care services; as well as being the administrative centre for the Shire. The Town is becoming increasingly less reliant on its agricultural base and is becoming popular as an alternative residential location to Geraldton with growth in the Townsite population including from FIFO workers and their families.

In respect of Horrocks, the Strategy **seeks to develop a "partnership" where each complements the other** and Horrocks provides alternative residential choices to that available in Northampton which is, to some extent, becoming enclosed by previous rural residential / hobby farm subdivision. The Strategy notes that Horrocks is more likely to continue to be based on holiday accommodation, tourism and fishing given its distance from other developed areas and places of employment and infrastructure with the aim:

To facilitate the emergence of this coastal settlement into a unique place for residents, centred on tourism, the fishing industry, recreational pursuits and a beach lifestyle.

The Strategy identifies the following specific strategies and actions for the further development of Horrocks:

| ENVIRONMENT | Strategies | Actions |
|--------------------|---------------------------------------|---|
| | Manage and protect natural resources. | <ul style="list-style-type: none"> Identify and protect water resources in the region for future population and economic growth needs by Special Control provisions. |
| | Recognise the | <ul style="list-style-type: none"> Undertake and implement a coastal |

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| | environmental and visual importance of the coastal foredune areas. | <p>management plan – Completed 2006.</p> <ul style="list-style-type: none"> • Maintain and protect coastal and river environments with regard for dynamic coastal processes. |
| | Locate and administer land use development according to the capability of areas to sustain these uses with acceptable environmental impact. | <ul style="list-style-type: none"> • Any development along the coast should provide for appropriately managed public access to the coast. • Ensure that all future planning, including development proposals, continues to protect and enhance the natural environment and natural features that attract tourists and visitors. • Ensure protection of the limestone escarpment via the Local Planning Scheme provisions. |
| COMMUNITY | Strategies | Actions |
| | Promote and support frontal urban growth and infill development which fully utilises existing and earmarked urban areas and plan for new urban expansion around the existing edge and urban structure of the townsite. | <ul style="list-style-type: none"> • Promote choice and variety in lot sizes and housing choices to meet the diverse requirements of tourists and residential lifestyles needs including: <ul style="list-style-type: none"> – medium density housing (R30); – aged persons’ accommodation; and – rural-residential lifestyles. • Ensure that residential subdivision and development utilises existing zoned land with any future rezonings being considered on the basis of: <ul style="list-style-type: none"> – need for additional land; – promotion of the orderly extension of servicing infrastructure; – access to community facilities; and – avoiding land with significant on-site impediments or off-site impacts. • Prepare and adopt a townsite expansion plan and/or structure plans to ensure that subdivision and development of urban land only proceeds after comprehensive planning to ensure high design standards and cost effective servicing which are sensitive to the environment. • Provide for limited rural residential |

| | | |
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| | | development adjacent to the periphery of the urban expansion area of the townsite, without compromising diversified agricultural activities in the rural hinterland. |
| | Enhance the range of recreational opportunities whilst ensuring the efficient and cost effective management of recreation facilities. | <ul style="list-style-type: none"> • Develop sufficient POS areas to cater for residents needs having due regard for the dominance of the coastal foreshore areas in providing for recreational needs. • Ensure that new development protects and enhances the escarpment and make provision for public access to this area. • Consider the option of cash-in-lieu for new subdivisions. |
| | Consolidate and expand areas for commercial development within the town centre. | <ul style="list-style-type: none"> • Identify a town centre precinct and establish appropriate zoning provisions that articulate the role and function of the town centre. • Promote mixed use development by enabling compatible retail, office, residential and tourist uses to be established within the commercial town centre. • Rezone the existing southern cottages to residential in recognition of their existing and likely future function. |
| | Maintain the attraction and importance of Horrocks as a tourist destination. | <ul style="list-style-type: none"> • Allow for appropriate 'holiday home' development in residential areas. • Consider the provision of boat/trailer parking when assessing development proposals. |
| | Promote opportunities for economic development. | <ul style="list-style-type: none"> • Rationalise zones and zoning controls to encourage the establishment of a greater mix or urban land uses, such as home office/business, cottage industries and the like. • Ensure that all development of tourist services resulting from the coastal route from Horrocks to Kalbarri is focused on the town and within the community. |
| | Maintain and enhance existing tourism values by identifying and meeting new tourism needs and opportunities. | <ul style="list-style-type: none"> • Promote the development of land allocated for tourist sites within the town centre (or other identified areas) with close attention to design detail and recognise the need to provide for a range of tourism activities. • Identify the long term tourism/recreation opportunities in Horrocks and plan for their development (such as a larger caravan park site and eco-tourism associated with "Little |

| | | |
|-----------------------|--|--|
| | | <p>Bay").</p> <ul style="list-style-type: none"> • Allow for a range of accommodation types in recognition of the diverse requirements of tourists. • Develop a tourism marketing strategy for the Shire and assist with the development of a regional marketing strategy. |
| | Formalise Little Bay as a node for eco-tourism development and recreational facilities. | <ul style="list-style-type: none"> • Define development area boundaries for each node and incorporate within an appropriate zone. • Assist in the preparation of development and management plans to guide sustainable development of short stay tourist accommodation and related recreational and support facilities consistent with the Batavia Coast Strategy. |
| INFRASTRUCTURE | Strategies | Actions |
| | Upgrade and extend the local road network to meet current and future needs and to ensure a safe and efficient road system. | <ul style="list-style-type: none"> • Construct (gravel) White Cliffs Road and investigate government funding options to seal the road to Main Roads WA standards. |
| | Upgraded infrastructure. | <ul style="list-style-type: none"> • Continue working with Water Corp to improve the provision of water and sewerage infrastructure. • Continue investigations into the options for a formalised boat launching facility. • Ensure that boating facilities are adequate to meet the needs of the local fishing industry and recreational fisherman. |

The following uses are considered appropriate subject to compliance with the relevant Local Planning Scheme, Council and WA Planning Commission policies:

- Conservation
- Heritage Protection/Restoration
- Industry – Cottage
- Rural Pursuit
- Rural Residential
- Rural Smallholdings
- Tourism

- Urban

Council *may* support subdivision in the following circumstances (subject to WA Planning Commission Policy):

- (a) Boundary relocations;
- (b) Heritage places where subdivision can be shown as a mechanism to secure its conservation;
- (c) Conservation purposes;
- (d) An established project of tourist significance;
- (e) Lifestyle/hobby farm purposes (within the Special Control Area) based on a gradual increase in lot sizes, subject to detailed planning and appropriate rezoning; and
- (f) Appropriately zoned and serviced urban development.

2.6 shire of northampton local planning scheme no 10

The Shire of Northampton LPS 10 was gazetted in January 2012 and reflects the outcomes of the Shire's Local Planning Strategy.

The bulk of the Expansion Area is zoned General Rural reflecting the current grazing and cropping activities within the Area. The existing Townsite zonings similarly reflect current uses with the exception of the identification of large area as Town Centre zone encompassing the area generally south of Horrocks Street south to Drage Street including the coastal lands on the west side of Horrocks Street. (Figure 2 : Expansion Area)

Part 6 of the Scheme establishes provisions in respect of Special Control Areas and Clause 6.7 of the Scheme provides for the Horrocks Development Area, identified in the Scheme and on the Maps as SCA 6. The Scheme specifies the purpose and intent of the SCA as:

- a) To protect and enhance the environmental, cultural, recreational and/or scenic values of the area; and
- b) To ensure that the expansion of Horrocks Townsite is undertaken in a coordinated manner through structure planning.

The Scheme requires that:

A structure plan, prepared and implemented in accordance with clause 5.7 Structure Planning Areas together with any proposed variations, shall apply to the land in order to guide subdivision and development.

2.7 shire of northampton coastal strategy 2006

The broader Horrocks area is divided into three Precincts under the Shire of Northampton Coastal Strategy and specifically, from south to north:

- Bowes River [Mouth];
- Horrocks; and
- Little Bay

The recommendations of the Strategy in respect of Horrocks have been largely implemented, with the main remaining works being sealing of the southern car parks. Boat launching remains an issue at Horrocks and attempts at establishing more formal facilities have typically been unsuccessful with facilities being damaged

during winter storms. Additionally, concerns have been expressed in terms of navigating the nearshore reef from Horrocks Lagoon to the open ocean. Little Bay may provide better opportunities for limited, formal boat launching facilities.

In respect of Bowes River, the Strategy identifies it as a popular fishing and surfing location. Two gravel car parks currently exist, one near the River Mouth which is used primarily by fishermen and beach walkers and a second small, informal carpark to the near north used by surfers which is located on private property. Access to Bowes River is via a good standard gravel road from the Horrocks Northampton Road just west of the Bowes River crossing. The Department of Conservation is currently assisting the Shire with planned rehabilitation works, consolidation of parking area and a viewing platform.

The Strategy suggests retention and improvement of both car parks, the northern with the consent of the private landowner, together with appropriate fencing, walk tracks and re-vegetation of the adjacent dunal system. The Strategy also recognises the problems being generated by 4WD activity in the area and proposes the closure of existing access tracks.

The Strategy also suggests the construction of bird watching facilities just upstream of the River Mouth. It is considered that the greater problem lies with indiscriminate and use of quad-bikes and to close the beaches south of Bowes River to legitimate 4WD access for fishermen and other beach users is probably excessive.

In respect of Little Bay, the Strategy recognises the attractiveness of Little Bay and its popularity as a fishing and camping location for both day and overnight use. Access to Little Bay is currently by gravel road as far as the Wastewater Treatment Plant and then by 4WD sand track, much of which is located to the immediate east of the frontal dune system. There are no formal facilities at Little Bay.

The Strategy recommends the re-location further eastward and formalisation of access to Little Bay and the provision of day use facilities and environmentally sensitive overnight camping facilities along similar lines to that developed by the Shire of Chapman Valley at Coronation Beach. The Strategy further proposes the development of a lookout at the top of the limestone cliff overlooking Little Bay, perhaps in conjunction with kiosk / tearooms facilities. The location also has potential for eco-based, low key tourist accommodation.

3. physical environment

The following section provides a broad overview of the physical, environmental, social and servicing issues affecting the structure plan area. Coffey Environments were also engaged by the Shire of Northampton to undertake a preliminary, desktop environmental assessment of the Expansion Area in order to identify broad level issues that need to be addressed at the Structure Plan level.

3.1 climate & climate change

Horrocks and surrounding areas experience a dry Mediterranean climate, with mild and wet winters and hot, dry summers. It is particularly windy, with winter winds generally from the north-east in the morning and from the north-west and south-west in the afternoon or accompanying rain-bearing depressions. In summer, winds are from the north-east and the east in the morning, but strong southerly to south-westerly sea breezes are a feature of summer afternoons. The summer onshore wind regime affects coastal living, tourism and recreation, with beach use and diving normally constrained by these conditions, but windsurfing, sailing conditions and cooler living conditions being beneficial results.

Annual average rainfall ranges between 400 and 500mm, with most falling between May and August, though patchy falls are associated with summer thunderstorms. Marked seasonality of the rainfall and the hot, dry summers are important considerations when scheduling revegetation in the area, as applies to much of south-western WA.

Winter storms and swell activity play a major part in seasonal erosion on this part of the coast. However sand that is eroded often returns to beaches under the summer wind and swell regime.

Tropical cyclones occasionally affect the area in summer or early autumn, bringing extreme winds and heavy rain, although these occurrences are rare.

A climate change report released by CSIRO in 2007 predicts that decreases in annual average rainfall are likely, in southern Australia, to decrease along the west coast during autumn. The report indicates that rainfall projections for later in the century are dependent on greenhouse gas emissions. Under a low emission scenario in 2070, the best estimate of rainfall decrease is 7.5%. Under a high emission scenario the best estimate is a decrease of 10%. The report indicates that although there will be more dry days, when it does rain, rainfall is likely to be more intense.

3.2 geology

The geology of the Horrocks area is associated with Coastal Belt, a belt of coastal limestone and sand dunes that have developed along the coast north and south of Geraldton (Playford et al 1970). The surface geology of the Horrocks Structure Plan area was captured during the *Geological Survey of WA (former DMP, 1980)*. A narrow coastal strip comprises dune and beach sands with calcareous and quartzose sands. Moving east of the coastal strip, coastal limestone dominates with overlying podolised sands (eolianite and leached quartz sands). Further east and beyond the Tamala scarp there exists laterite with overlying quartz sand and underlying highly weathered rock. The southern portion of the proposed development area, surrounding the Bowes River, comprises aluminium, colluvium and miscellaneous soils undifferentiated under quartz sand, clay and loam.

3.3 landforms, soils and the coastal environment

In a regional setting, the site falls within the Geraldton Hills subregion of the Geraldton Sandplains. It is bounded in the east by the Tamala Scarp and on the west by the Indian Ocean. The Geraldton Hills subregion incorporates the southern end of Carnarvon Basin and northern end of the Perth Basin, with exposed areas of Permian/Silurian siltstone and Jurassic sandstones, mostly overlain by sandplains, alluvial plains, and coastal limestones.

The land forms an extensive, undulating, lateritic sandplain mantling Permian to Cretaceous strata (Wikipedia, 2009). East of Horrocks the land is located on a narrow sand plain, up to 2 km wide and sloping gently south. The sand plain extends inland to the western edge of an area that contains dissected remnants of the Victoria Plateau. Fixed limestone and sand dunes run parallel to the coast, west of the sand plain (Moncrieff, 1990). Deep sandy soils dominate the site and textured contrast soils occur further east.

The coastal dunes in this sector are composed of sands of the Quindalup System which, in their mobile state, are advancing over Tamala sand and limestone. The coastal and near coastal Quindalup sands are unconsolidated sediments which present a high to very high wind erosion hazard if cleared of vegetation. This, combined with their proximity to the coast and their function in frontal situations as a buffer against wave encroachment, generally mitigates their development for housing or their use for grazing or farming pursuits. The Tamala sands landward of the Quindalup are more stable and more fertile, rendering them more amenable to both urban development and farming and grazing (*Shire of Northampton Coastal Strategy, 2006*).

The predominantly sandy soils in the development area provide highly permeable sub-soil conditions which typically suits on-site stormwater infiltration. Alternative options for the use of stormwater are discussed in section 2.14.

The coast from the Bowes River mouth to Little Bay (which includes Horrocks) is afforded protection for most of its length by a rock platform off the beach or by nearshore reef. It features beaches of variable width, narrowing in places to only a rock platform; a frontal dune that is generally well developed and vegetated, with the exception of the area to the north of the Bowes River mouth; and secondary dunes that vary from barren faces in the south to well vegetated with a diverse assembly of flora in the north. Mobile and semi-mobile sandsheets occur between Bowes River and Horrocks, and south of Little Bay.

Coffey Environments has not completed a detailed analysis of historical aerial photos. However, based on an analysis of aerial photography available on Google Earth, dunes south of the town show some blowouts that may be slowly stabilising. There is also a large area of potentially mobile dune to the north of the town site, however a review of historical aerial photos would confirm if the area of sand is stabilising or continuing to advance. Coastal dunes appear to be covered with light low-lying coastal heath vegetation acting as a stabiliser and preventing major dune blowouts.

With respect to erosion, there have been historic problems of foreshore erosion and attendant damage to foreshore facilities. The erosion appears to be episodic rather than a long-term trend, as determined by the Department for Planning and Infrastructure.

Community concern about the coastal management issues affecting Horrocks Beach prompted Northampton Shire Council and the Department of Planning and Urban Development to develop a coastal management plan for the area (DEWHA, 1993). A community workshop was held to assist in the identification of priorities for the region. Among the major coastal issues identified in the workshop were environmental degradation, a need for improved community facilities, and maintenance of the residents' relaxed lifestyle. Public participation was a major component in securing community support for the plan.

Access to coastal recreation areas is currently a significant management issue at the site. Many recreation sites along the coast can be accessed only by four-wheel drive vehicles and, while the *Batavia Coast Strategy* (BCS) supports their use on designated tracks, it makes a distinction between their use for access as opposed to random use on coastal dunes.

▫ **conclusions and recommendations**

Areas of bare sand adjacent to foreshore areas to the south and north of the town site indicate the potential for active mobile dunes. While some portions have small areas of native vegetation that could be slowly stabilizing these areas, it is unclear whether stabilisation of these dunes is a longer term trend or a recent event. Dunes encroaching towards a development can adversely impact on local amenity. There are no specific guidelines recommending buffers to mobile dunes, however in some cases buffers to mobile dunes can be up to 300m or more.

The State Coastal Planning Policy generally specifies a minimum 100m setback to be applied in coastal areas to afford protection to developments from coastal erosion. The extent of this buffer can be reduced subject **to the completion of a coastal engineering study. A 'Foreshore and Dune Protection' Reserve is identified for the length of coastline adjacent to the town site.** The extent of this Reserve should be checked against the State Coastal Planning Policy to ensure compliance. If the reserve were to be reduced in size, it is recommended that a coastal setback study is undertaken to delineate an appropriate coastal foreshore setback.

It is recommended that historical aerial photos (e.g. at 5 year intervals) are examined to determine whether the dune system to the south and north of town are slowly stabilising naturally.

It is highly likely that the Department of Planning and Infrastructure would request that a Coastal Foreshore Management Strategy or Coastal Foreshore Management Plan be prepared to guide future management of the coastal and dune environment. A strategy would be best prepared at the Structure Plan stage, and the detailed management plans at Local Structure Plan or subdivision stages. The Management Plan would need to address coastal access, protection of native vegetation and stabilisation of possible dune blowouts. It should be prepared in the context of the *Shire of Northampton Coastal Strategy 2006* and the *Horrocks Beach Coastal Plan 1993* to ensure the coastal environment is managed in an appropriate manner.

To resolve the issue of vehicle access, the BCS supports designation of managed access tracks and of particular areas designated for off-road vehicle recreational activity to protect vulnerable coastal environments and to minimise public safety risks. It recommends that in some cases existing two-wheel drive access to recreation sites be improved, and existing off-road vehicle tracks be upgraded to accommodate two-wheel drive access. This applies particularly to locations where demand for access has increased and where current lack of access and of associated facilities (such as adequate parking) can place more pressure on other sites and tracks. The BCS recommends such upgrading for the Bowes River mouth in the study area.

3.4 surface water hydrology

The Western Australia Department of Agriculture and Food (NRM Info Website) identifies only one wetland in the area surrounding and leading up to the river mouth of the Bowes River in the southern portion of the site. The wetland (Estuary 906-Northern Agricultural Catchments Council), within the Bowes River catchment in the Greenough River basin spans an area of approximately 197km and is subject to inundation. The wetland currently has no assigned level of protection and is degraded but offers a valuable habitat for waterfowl (Northampton 2006).

The main drainage in the area is the Bowes River that flows within a deeply incised valley in the southern portion of the proposed development area. The ephemeral tributaries that rise on the Victoria Plateau flow parallel to the gentle south-westward topographic gradient and along poorly defined courses in the sand plain area. (Water Corp, 2008).

The way Bowes River functions is primarily a result of river energy. It is a wave dominated delta. This means that the estuary would have low sediment trapping efficiency; naturally low turbidity, salt wedge partially mixed circulation and there is a low risk of habitat loss due to sedimentation, (NACC website). Coffey Environments has not been able to locate flood plain mapping for the Bowes River system. Despite the absence of flood plain mapping at the time of preparing this report, Coffey Environments notes that in the **Shire's Local Planning Scheme No. 8, that the lower lying fringes associated with the Bowes River are reserved as Parks and Recreation.** Based on analysis of aerial photography and topographical information, it appears that this reservation provides sufficient protection for the Bowes River.

▫ conclusions and recommendations

Apart from Bowes River, no other wetlands have been mapped in the study area. However, this does not necessarily preclude the presence of other wetlands. It is recommended that a wetland review and assessment be undertaken as part of the vegetation and flora survey of the study area.

If wetlands are identified then there is a presumption against approving any activity likely to impact on priority management wetlands (i.e. management category of Conservation or Resource Enhancement) , including developments that are likely to require, cause, or result in the following: filling, clearing, mining, drainage into or out of, effluent discharge into, pollution of, and degradation to the wetland. Adequate buffers should be applied, designed to protect wetlands from potential deleterious impacts while helping safeguard and maintain ecological processes and functions within the wetland and, wherever possible, in the buffer. Buffers can also act to protect the community from potential impacts such as nuisance midge problems. Buffer distances are measured from the outside extent of wetland dependant vegetation to the outside edge of any proposed development or activity. The required buffer distances for wetlands depend on the (proposed) adjacent land use with 50m being the most commonly applied buffer distance.

Consideration will need to be given to potential flooding of the Bowes River area. It appears that 1 in 100yr floodplain mapping has not been carried out by DEC so information regarding the extent of a potential flood is not available. If development is proposed to occur near to the Bowes River it is recommended that investigation be carried out into flood modelling to determine the extent of the likely flood affected area.

3.5 groundwater hydrology

Horrocks lies in the northern most part of the Perth Basin where Silurian to recent sedimentary rocks overlap the western margin of the Northampton Complex, Moncrieff (1992).

The Kwinana Group aquifer and Tumblagooda Sandstone aquifer are the main aquifers in the area. They are in hydraulic connection along the coast but are separated by a confining bed formed by the Kockatea Shale inland. The Kwinana Group aquifer contains mainly brackish groundwater, particularly where it is recharged by brackish stream flow, which originates from areas of Kockatea Shale outcrop east of Horrocks. Fresh groundwater may occur in the Kwinana Group aquifer beneath drainage divides where there is groundwater recharge from direct infiltration of rainfall.

The Tumblagooda Sandstone is the oldest sedimentary rock unit in the Carnarvon Artesian Basin. It is separated from the Kopke Sandstone by the relatively impermeable Dirk Hartog Group, and outcrops along the Murchison River. The aquifer is found at depths of 1,000m or more, is up to 3,500m thick, and overlies granite basement (Wills and Dogramaci, 2000). Not many bores are drilled into the Tumblagooda Sandstone due to the depth. Storage is unknown; however, the aquifer is likely to hold a large amount of water due to its thickness (DoW, 2007).

Groundwater flow is towards the south-west where discharge occurs to the Kwinana Group aquifer near the coast and the Bowes River. The Bowes River discharges to the Indian Ocean.

4. terrestrial environment

4.1 flora and vegetation

Resting within the South-western Botanical Province Greenough Region (Irwin Botanical District) is the highly diverse Geraldton Sand Plain region. Within this region is the Geraldton Hills subregion in which lies the site. This subregion incorporates sand heaths with emergent *Banksia* and *Actinostrobus*, York Gum woodlands on alluvial plains, proteaceous heath and *Acacia* scrubs on limestones depending on depth of coastal-sand mantle.

The *Batavia Coastal Strategy* indicates that coastal dune vegetation of the area includes *Spinifex longifolius*, *Olearia axillaris*, *Atriplex isatidea*, *Scaevola crassifolia* and *Scirpus nodosa*, with *Acacia-Banksia* scrub on sand over limestone, and *Acacia rostellifera* and *Melaleuca cardiophylla* thickets on limestone ridges.

Frontal dunes are generally dominated by *Spinifex longifolius*, *Atriplex isatidea*, *Tetragonia decumbens* and, in places, *Angianthus cunninghamiana*, with the shrub *Olearia axillaris* often prominent towards and on the frontal crest. Other species on the frontal dune include *Carpobrotus virescens*, *Cakile maritima*, *Atriplex cinerea*, *Senecio lautus*, *Isolepis nodosa*, *Arctotheca calendula*, *Salsola kali* and, on the crest and rear slopes, *Zygophyllum sp.*, *Threlkeldia diffusa*, *Enchylaena tomentosa*, and the shrubs *Acacia rostellifera*, *Scaevola crassifolia*, *Nitraria billardieri*, *Myoporum acuminatum* and *Rhagodia preissii*.

In well vegetated swales and secondary dunes behind the frontal dune, *Acacia rostellifera* and *Olearia axillaris* are the most widespread species, with *Rhagodia preissii*, *Scaevola crassifolia*, *Myoporum acuminatum*, *Melaleuca cardiophylla*, *Isolepis nodosa* and *Acanthocarpus preissii* also prominent in some locations. Other species scattered in vegetated dunes and swales include those mentioned on the frontal dune above together with the groundcovers and climbers *Cassytha racemosa*, *Clematis pubescens* and *Kennedia prostrata*, and the shrubs *Acacia xanthina*, *A. lasiocarpa*, *Anthocercis littorea*, *Exocarpus sparteus*, *Frankenia pauciflora*, *Guichenotia ledifolia*, *Phyllanthus calycinus*, *Templetonia retusa*, *Stylobasium spathulatum* and *Melaleuca lanceolata*.

On revegetating sandsheets, *Acacia rostellifera*, *Olearia axillaris* and *Spinifex longifolius* occur, while in revegetating deflation basins below these sandsheets *Angianthus cunninghamiana*, *Isolepis nodosa*, *Scaevola crassifolia* and, in places, *Sporobolus virginicus* are prominent.

In certain areas invasive weeds such as wild oats and brome, Geraldton carnation weed, (*Euphorbia terracina*) and ice plant (*Mesembryanthemum crystallinum*) are evident. African Boxthorn (*Lycium ferocissimum*) is an invader in many areas in the region, notably around, and south of Bowes River.

Also included within the region is the Pinjarra Orogen which is an area of Hill country supporting proteaceous shrublands and mallees while valleys support York Gum and Jam.

Coffey Environments has undertaken a search of the DEC's *Declared Rare and Priority Flora* database as well as reviewing the Western Australian Herbarium Specimen database for priority species opportunistically collected in the area of interest. Based on these searches, Table 3.1 outlines the conservation significant species that potentially occur in and around the Horrocks town site:

TABLE 3.1: SIGNIFICANT FLORA THAT MAY POTENTIALLY OCCUR IN THE SURVEY AREA

| Species | Conservation (DEC) | Status | Conservation Status (EPBC Act) |
|--|--------------------|--------|--------------------------------|
| <i>Acacia pelophila</i> | P1 | | |
| <i>Acacia latipes</i> subsp. <i>Licina</i> | P3 | | |

| Species | Conservation (DEC) | Status | Conservation Status (EPBC Act) |
|---|--------------------|--------|--------------------------------|
| <i>Anthotroche myoporoides</i> | P2 | | |
| <i>Baeckea sp. Nolba</i> | P1 | | |
| <i>Blackallia nudiflora</i> | P3 | | |
| <i>Caladenia bryceana subsp. cracens</i> | R | | Vulnerable |
| <i>Caladenia elegans</i> | R | | Endangered |
| <i>Caladenia hoffmanii</i> | R | | Endangered |
| <i>Diuris recurva</i> | P4 | | |
| <i>Eremophila brevifolia</i> | P2 | | |
| <i>Eucalyptus blaxelli</i> | | | Vulnerable |
| <i>Eucalyptus cuprea</i> | R | | |
| <i>Gastrolobium propinquum</i> | P1 | | Endangered |
| <i>Geleznovia verrucosa</i> | P3 | | |
| <i>Grevillea leptopoda</i> | P3 | | |
| <i>Hypocalymma longifolium</i> | | | Endangered |
| <i>Melaleuca huttensis</i> | P1 | | |
| <i>Philothea wonganensis</i> | R | | |
| <i>Pterostylis sp. Northampton (S.D. Hopper 3349)</i> | R | | Endangered |
| <i>Scaevola oldfieldii</i> | P3 | | |
| <i>Serichonus gracilipes</i> | P3 | | |
| <i>Scaevola oldfieldii</i> | P3 | | |
| <i>Verticordia densiflora</i> | P3 | | |
| <i>Vittadinia cervicalis</i> | P1 | | |
| <i>Verticordia chrysostachys var. pallida</i> | P3 | | |

Note: Conservation Status Codes

Declared Rare: R

Poorly known: 1, 2 or 3

Require monitoring: 4

Coffey Environments has undertaken searches of the DEC's Threatened Ecological Communities (TECs) and Priority Ecological Communities databases. It was found there are no known occurrences of TECs recorded within the study area.

However, an occurrence of the following ecological community was identified within approximately 10km of the proposed development area:

The 'Priority 1 ecological community – 'Shrublands of the Northampton Area - dominated by *Melaleuca* Species over-exposed Kockatea Shale'

The above information supplied should be regarded as an indication only of the rare and priority flora species that may potentially be present and may be used as a target list in any surveys undertaken.

▫ **conclusions and recommendations**

Large portions of the study area are considered completely degraded due to the clearing of native vegetation for past and current land use practices. Some areas along the coast (north and south of town) are well vegetated. No recent flora and vegetation surveys have been carried out in the study area.

Coffey Environments recommends undertaking field investigations for the accurate determination of significant flora, TECs and PECs at the site. Similarly, should the study area (including access roads or associated infrastructure) be extended outside of the site, the above Priority 1 TEC should be considered.

Should any populations of rare flora be encountered during development works in the area, it is advised that these be retained in conservation areas, with a conservation management plan prepared.

The results of the flora and vegetation assessment should be incorporated into strategic plans for the expansion of the Horrocks town site. Vegetation retention can be achieved through the provision of open space (including conservation reserves), or through the creation of larger lots with building envelopes being identified.

4.2 fauna

Coffey Environments has undertaken searches of the Department of Environment, Water, Heritage and the Arts (DEWHA) *Environment Protection and Biodiversity Conservation (EPBC) Act 1999 Protected Matters database* and the DEC's Threatened and Priority Fauna database.

Based on these searches, Table 3.2 lists conservation significant species that potentially occur within a 20km radius (not including marine species) of the study area.

TABLE 3.2: SPECIES LISTED AS BEING SIGNIFICANT VERTEBRATE FAUNA BY THE COMMONWEALTH OR STATE GOVERNMENTS AND RECORDED WITHIN OR POTENTIALLY OCCURRING WITHIN THE HORROCKS BEACH AREA (PLUS ~20KM BUFFER)

| Species | Conservation Status (Wildlife Conservation Act) | Conservation Status (EPBC Act) | Habitat |
|----------------|--|-----------------------------------|---|
| Mammals | | | |
| Tammar Wallaby | Priority 5 | | Thickets of Melaleuca, Sheoak or other large shrubs associated with |

| Species | Conservation Status (Wildlife Conservation Act) | Conservation Status (EPBC Act) | Habitat |
|--|--|---|---|
| <i>Macropus eugenii derbianus</i> | | | grassland |
| Birds | | | |
| Australian Lesser Noddy <i>Anous tenuirostris melanops</i> | | Vulnerable | |
| Great Egret, White Egret <i>Ardea alba</i> | | Migratory | |
| Cattle Egret <i>Ardea ibis</i> | | Migratory | |
| Bush Stone-curlew <i>Burthinus gralaruis</i> | Priority 4 | | Lightly timbered open woodlands |
| Carnaby's Black-Cockatoo <i>Calyptorhynchus latirostris</i> | Schedule 1 | Endangered | Proteaceous scrubs and heaths and eucalypt woodlands as well as pine plantations |
| Great Skue <i>Catharacta skua</i> | | Listed | |
| Tristan Albatros <i>Diomedea dabbenena</i> | | Endangered | |
| Peregrine Falcon <i>Falco peregrinus</i> | Schedule 4 | | Areas with rocky ledges, cliffs, watercourses, open woodland or margins with cleared land |
| White-bellied Sea-Eagle <i>Haliaeetus leucogaster</i> | | Migratory | |
| Southern Giant-Petrel <i>Macronectes giganteus</i> | | Endangered | |
| Northern Giant-Petrel <i>Macronectus halli</i> | | Vulnerable | |

| Species | Conservation Status (Wildlife Conservation Act) | Conservation Status (EPBC Act) | Habitat |
|---|--|---|---|
| Rainbow Bee-eater <i>Merops ornatus</i> | | Migratory | |
| White-browed Babbler <i>Pomatostomus superciliosus ashbyi</i> | Priority 4 | | Eucalypt forests and woodlands, on or near the ground |
| Soft-plumaged Petrel <i>Pterogramma Mollis</i> | | Vulnerable | |
| Indian Yellow-nosed Albatros <i>Thalassarche carteri</i> | | Vulnerable | |
| Shy Albatros, Tasmanian Shy Albatros <i>Thalassarche cauta (sensu stricto)</i> | | Vulnerable | |
| Other | | | |
| Shield-backed Trapdoor Spider <i>Idiosoma nigrum</i> | Schedule 4 | | |

Note: Status under Wildlife Protection Act 1950

Schedule 1: being fauna that is rare or likely to become extinct, are declared to be fauna that is in need of special protection

Schedule 4: being fauna that is presumed to be extinct, are declared to be fauna that is in need of special protection

DEC Priority Fauna Categories

Priority 4: Taxa in need of monitoring

Priority 5: Taxa in need of monitoring (conservation dependent)

It should be noted that other species are predicted to occur within the site listed as Migratory Marine Birds under the Commonwealth *EPBC Act 1999*. However, these are unlikely to rely on the study area for their survival.

Not all of the species listed above would be present in the study area due to the absence of specific habitat requirements. However, some of the migratory bird species may occur due to the presence of Bowes River located to the south.

Large portions of the study area are degraded due to previous and current land use. However, some well vegetated areas exist along the coast (south and north of Horrocks town) and to the north of the study area. These areas are likely to provide habitat for fauna. However, farmland in the study area would provide limited habitat value for fauna.

▫ **conclusions and recommendations**

It is recommended that a Level 2 fauna survey (desktop study, habitat assessment and trapping) is conducted to characterise fauna habitats present in (and adjacent to) the study area, and to identify the faunal assemblage present. In particular, the survey is important to determine the presence of any conservation significant fauna species. A Level 1 survey (desktop study and reconnaissance survey of habitats) could be undertaken as a precursor to the Level 2 to provide preliminary advice.

If any of the species listed under the *EPBC Act 1999* as having national environmental significance are present within the site, and future development of Horrocks has the potential to have a significant impact on these species, the development proposal may need to be referred to the DEWHA under the *EPBC Act*.

It is recommended that consideration be given to retaining areas containing good quality habitat with a view to preserving or re-establishing ecological linkages. Ecological corridors enable the protection of fauna habitats, and maintain connectivity between conservation areas reducing fragmentation and assisting fauna movement and dispersal. The viability and robustness of ecological corridors increases with the width of the corridor, i.e. wider corridors are more viable in the long-term.

4.3 acid sulphate soils

Acid Sulphate Soils (ASS) are wetland soils and unconsolidated sediments that contain iron sulphides which, when exposed to atmospheric oxygen in the presence of water, form sulphuric acid. ASS form in protected low energy environments such as barrier estuaries and coastal lakes, and commonly occur in low-lying coastal lands such as Holocene marine muds and sands. When disturbed, these soils are prone to produce sulphuric acid and mobilise arsenic, iron, aluminium, manganese and other heavy metals. The release of these reaction products can be detrimental to biota, human health and built infrastructure.

The presence of ASS has been a recognised issue of concern in Western Australia since 2003. The DoE and the WAPC have released guidance notes on ASS, covering the requirement for assessing sites and its management where ASS is identified. ASS investigations are commonly required as part of the conditions of subdivision or as a requirement for a dewatering license application.

Proponents of developments that involve the disturbance of soil or the change of groundwater levels in areas susceptible to ASS are required to conduct desktop and field based investigations. The objective of these investigations is to determine the extent and magnitude of ASS at the site. Adequate investigations are required prior to soil disturbance to determine the potential risks and to allow for the formulation of appropriate management strategies.

A review of CSIRO's ASS mapping, as shown in Australian Soil Resource Information System (<http://www.asris.csiro.au/mapping>) found there to be an extremely low probability of ASS throughout the proposed development site. **In comparison, the WAPC's Planning Bulletin 64, identifies the area surrounding the Bowes River as having a low-moderate risk of ASS.** WAPC mapping only covers a small portion of the study area. However, with consideration of geological mapping, the risk of ASS being present over much of the study area is considered very low due to the likelihood of soils being alkaline.

▫ **conclusions and recommendations**

On the basis of the information derived from the CSIRO's and WAPC's mapping of ASS, Coffey Environments considers that ASS is unlikely to be a constraint on development.

It should be noted that the issue of ASS and its management at the site could be condition of development (e.g. subdivision condition) and it has been Coffey Environments' experience that if this issue is not

managed early in the project it has the potential to cause considerable project delays. It should also be noted that even if ASS is not raised as a concern during the environmental approvals phase of a project the application for dewatering license can trigger regulatory focus on the issue and delays as a license will not be given unless the ASS issue has been assessed to their satisfaction. That said, given the low risk of ASS occurring at the site, Coffey Environments does not see the need to conduct a detailed ASS investigation at the site.

4.4 contamination

Previous land uses appear to have been restricted to low density residential or low intensity agricultural activities such as stock grazing. These types of land use have a very low potential to cause soil or groundwater contamination.

One site which poses a moderate risk of contamination is the area beneath and surrounding the waste water treatment plant (WWTP) north of Horrocks town.

Additionally, there are two landfill waste disposal sites adjacent to the existing Townsite to the north which are no longer in use.

A search of the DEC's Contaminated Sites database has not identified any contaminated sites and considerations of past and present land uses support the conclusion that there is an extremely low risk of significant soil or groundwater contamination being present.

▫ conclusion and recommendation

It is Coffey Environments assessment that the issue of soil and ground water contamination appears to be at low to no risk/constraint to development of the study area. However, no historical aerial photos were obtained for this preliminary environmental assessment. A detailed review of previous historical aerial photos would gain a better understanding of previous land uses and hence determine the risk of contamination in relation to these activities.

4.5 unexploded ordnance (uxo)

The Australian Department of Defence is actively engaged in identifying areas where UXO are likely to be present. Coffey Environments conducted a **search of the Australian Defence Department's UXO section of its website** for Horrocks and surrounds. No evidence has been found that the study area has previously been used by the armed services as a gunnery range or munitions store.

Confirmation was sought from the Department (Mr David Thomas 23 - david.thomas23@defence.gov.au) that it has no record of UXO issues for study area. Mr Thomas advised that Defence has no information regarding potential UXO contamination in the area. Further information from the Western Australian Fire and Emergency Services' UXO Unit (Mr Andrew Arnold, UXO Advisor) has been requested by Coffey Environments, though confirmation had not been received at the time of finalising this letter report.

▫ conclusions and recommendations

The risk of UXO being present on the subject land is considered low but in view of the historical practice of using remote coastal areas for gunnery ranges during the World Wars, it is recommended a specific request is lodged in relation to the subject land.

For further information, or should, throughout developments, a person have any information that may be of assistance please contact UXO@defence.gov.au via email.

4.6 environmental approvals and process

4.6.1 western australian environmental protection act 1986 - section 48

Besides the Horrocks town centre and its surrounding Residential zoning, the land surrounding Horrocks is zoned Rural or is protected as Reserve land (**Figure 2 : Expansion Area**). It is presumed that a scheme amendment will be required to enable development to proceed in the study area. In accordance with the Planning and Development Act 2005, all scheme amendments are to be referred to the Environmental Protection Authority (EPA). Under Section 48 of the *Environmental Protection Act 1986*, provides the EPA with the power to consider scheme amendments. On receiving a proposed amendment, the EPA may choose to:

- Formally assess the scheme amendment;
- Not assess the scheme amendment (but could provide advice); or
- Determine the proposal is incapable of being made environmentally acceptable.

While a formal environmental impact assessment cannot be discounted entirely, Coffey Environments believes that with further investigations and development of a suitable environmental management framework, that the environmental issues can be adequately managed in a way that is consistent with the **EPA's objectives for environmental protection. In this instance, the EPA** would most likely decide to not assess the scheme amendment, though it may provide advice on the management of relevant environmental factors.

Based on the desktop assessment conducted by Coffey Environments, the primary environmental issue likely to affect the extent of development in the study area will be access to sufficient quantities of potable water. One possible solution may be to seek an increase in an allocation from the Tumblagooda aquifer. As strategic planning for the expansion of Horrocks commences, it is advisable to commence discussions with the Water Corporation to explore the opportunities for an increase in allocation. In parallel with these discussions, it would be valuable to consider alternative water supplies as discussed in this report.

It is Coffey Environments' opinion that the other environmental issues addressed in the letter report can be adequately managed to meet the EPA's objectives.

4.6.2 department of environment, water, heritage and the arts (dewha) – epbc act 1999

A search of the DEWHA's Protected Matters Search tool identified numerous conservation significant flora and fauna species that are considered to be of national environmental significance which may potentially be in the study area. These significant species are afforded protection under the *EPBC Act 1999*. Under the **Act, any 'action' (e.g. a development) which has a significant impact** on a matter of national environmental significance should be referred to DEWHA for consideration.

Without further investigations, concept planning and preparation of management strategies, it is not clear if the development of the subject land would be viewed by DEWHA as a significant impact.

4.7 planning units

The combination of landform, vegetation and view sheds results in the Expansion Area falling into eleven well defined and reasonably homogenous, broad Planning Units and specifically (Refer Figure 3 – Landscape Units):

- Unit 1 – Northern Bushland;
- Unit 2 – Northern Re-Growth;

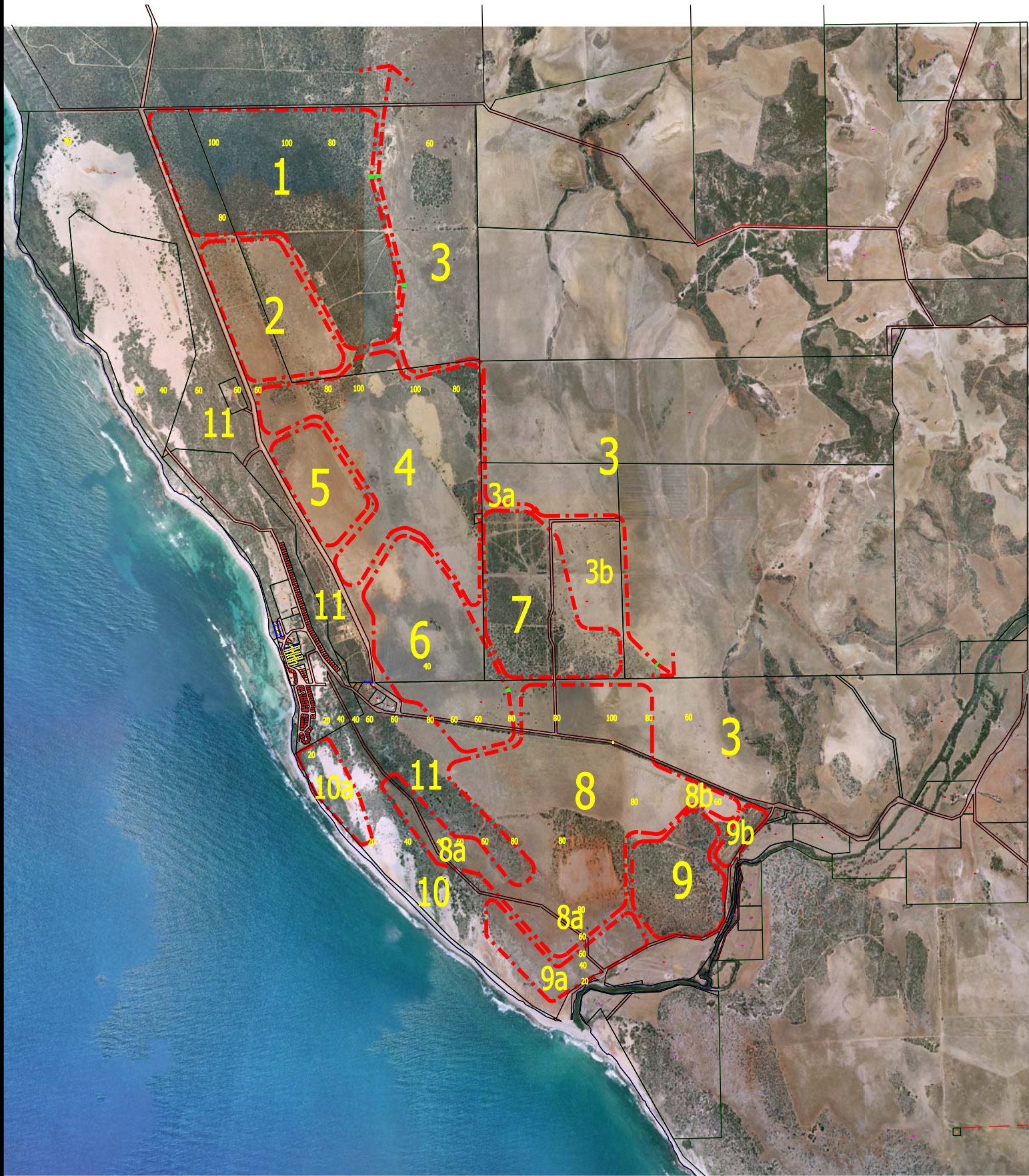


Figure 3 : Landscape Units

- Unit 3 – Active Farmlands;
- Unit 4 – Central Highlands;
- Unit 5 – Central Plateau;
- Unit 6 – Central Lowlands;
- Unit 7 – Eastern Ridgelines;
- Unit 8 - Southern Highlands;
- Unit 9 – Southern Slopes;
- Unit 10 – Southern Coastal; and
- Unit 11 – Western Clifflands.

4.7.1 unit 1 – northern bushland

Covering approximately 245ha, the Northern Bushland Unit wholly comprises Acacia / Banksia vegetation. It is understood that the vegetation comprises substantive re-growth following cessation of grazing activity many years ago. The vegetation is generally in good to very good condition. The extent and quality of re-growth is significant in the context of the regenerative capabilities of the land following removal of grazing activities. The land is well elevated being between 80mAHD and 100m AHD in the west being a broad, gentle slope to the south and rising to a vegetated ridge along the east.

The location provides very attractive coastal views as well as extensive long range views to the south over the Expansion Area and southern coast. The eastern portion beyond the ridgeline is similarly well vegetated with extensive inland views of the active farmlands and distant ridgelines.

The portion of the Unit below the eastern 80m contour while within the TPS8 Development Area has been excluded from the subsequent Special Control Area. Given the homogeneity and condition of the vegetation complex through this Unit, it would be more logical to include this portion within the broader Expansion Area rather than as part of the adjacent farmlands.

Subdivision of this area should seek to achieve a high level of conservation of the remnant vegetation with dwelling construction being sympathetic in its design and finishes to the location.

4.7.2 unit 2 – northern re- growth

Situated south of Unit 1 and adjacent to White Cliffs Road, the Northern Re-Growth Unit covers approximately 100ha. The western portion comprises former farming / grazing which has extensively re-vegetated, primarily with Melaluca species. The eastern portion was subject to light grazing but is experiencing some level of re-vegetation, partly assisted by plantings by the owners of the eastern portion of the Unit.

From west to east, views from this Unit vary from southerly views and somewhat limited western views to more extensive western and southerly views in the eastern portions. The owners of the eastern portion have **expressed the desire to retain that portion in “parkland cleared” form rather than allow extensive re-growth.** The retention of a semi – re-growth / parkland form provides a more varied and attractive “foreground” to the views available from the eastern portions.

Subdivision of this area should seek to retain and build on the re-growth that has occurred in a manner that respects and enhances existing views. There is a need to encourage greater diversity in the flora species represented through specific planting guidelines for developed properties.

4.7.3 unit 3 – active farmlands

Unit 3 comprises the active farmlands to the east of the Expansion Area. This Unit forms the eastern boundary to the Expansion Area and is not considered for any subdivision or development potential.

As with Unit 1, there is a case for modifying the boundaries of the Special Control Area within Lot 27. The north-eastern portion of Lot 27 is currently excluded from the Expansion Area, based on the line of the 80m contour. However, the portion of Lot 27 north of the gravel track – Unit 3a – is currently part of the primary farming area of the overall property and should remain within the farming operation. Conversely, the eastern portion south of the gravel track – Unit 3b – is isolated from the farming operation by fencing and the soils of this portion are of poorer quality with little conventional agricultural values. The location also provides extensive inland views of the active farmlands and distant ridgelines.

It seems logical to modify the Special Control Area boundaries within Lot 27 Willi Gulli Road to exclude Unit 3a and include Unit 3b.

4.7.4 unit 4 – central highlands

Covering approximately 210ha, the Central Highlands comprises existing farmlands that, for the most part, have been cleared for agricultural purposes. From west to east, views from this Unit vary from southerly views and somewhat limited western views to more extensive western and southerly views in the higher, eastern portions.

Other than for its views, the Unit offers no specific characteristics that guide potential development forms and, as a consequence of the degraded nature of the area, would be suitable for more intensive development than Units 1 and 2.

4.7.5 unit 5 – central plateau

Unit 5 – Central Plateau covers approximately 50ha and comprises existing farmlands that, for the most part, **have been cleared for agricultural purposes. The Unit is marked by a somewhat elevated “plateau” formation** offering closer range, extensive western views, partly also as a consequence of marginally lower dunal formations to the west of White Cliffs Road.

Other than for the western and southern margins of the Expansion Area, the views from this location are of a high quality and warrant a higher density than that applicable to the surrounding Central Highlands Unit.

4.7.6 unit 6 – central lowlands

Covering approximately 130ha, the Central Lowlands comprises existing farmlands that have been cleared for agricultural purposes. The Unit generally sits north of the Horrocks Northampton Road and below the 80m contour, below which there are no external views of any significance.

Additionally, the Unit is particularly exposed from the Horrocks / Northampton and White Cliffs Roads and from the higher lands of the Expansion Area surrounding the Unit on all sides. Care is needed in the treatment of this Unit to ensure that subdivision and development of the area does not result in uses that detract from the visual amenity of the Townsite approach and surrounding development area. Ideally, uses identified for this Unit should seek to enhance the visual amenity of the location.

4.7.7 unit 7 – eastern ridgeland

Unit 7 covers approximately 120ha and abuts Unit 3b which is proposed for inclusion in the Special Control Area. The Unit comprises remnant Acacia / Banksia vegetation which through previous grazing and clearing activities is in average condition but progressively re-generating.

Extensive western and southern views are available from the western portion of the Unit while the eastern portion, including Unit 3b, provides extensive inland views.

Subdivision and development of the western portion of this Unit can sustain densities higher than Unit 1, the other Unit within the expansion area comprising remnant vegetation and should seek to encourage additional re-planting.

4.7.8 unit 8 – southern highlands

Comprising approximately 300ha, the majority of Southern Highlands sits within Lot 20 and offers extensive views. For the most part the Unit is existing farmlands that, for the most part, have been cleared for agricultural purposes but, within Lot 20, have not been cropped or grazed in recent years.

The substantive northern portion of Unit 8 offers long range eastern, northern and western views and forms a large amphitheatre facing to the north, typically with moderate to high exposure to Horrocks / Northampton Road. The southern most area of this portion contains some remnant vegetation and affords expansive southern and western views.

Two sub-Units are identified being Unit 8a which sits in the southern portions of Unit 8 and comprises a west and south facing "plateau" with expansive, high quality coastal views to the west and south. Sub-Unit 8b is a small portion within the north-east corner of the Unit that falls to the east and is generally well screened from the road and other locations within the Expansion Area.

Subdivision and development forms for the Southern Highlands should reflect those of the Unit 4 – Central Highlands. Additionally, the owners of Lot 20 have expressed an interest in developing the substantive central and northern portions of the Unit as a "larger lot" resort based subdivision.

4.7.9 unit 9 – southern slopes

Covering approximately 115ha, the Southern Slopes form the southern margins of the Southern Highlands and fall relatively sharply to the south towards the Bowes River and the Ocean in the west. Extensive south-easterly, southerly, and westerly views are available variously within the Unit.

The Unit comprises three Sub-Units with the main central portion Unit 9 falling to the Bowes River and comprising 65ha of remnant Acacia vegetation in fair to good condition. Sub-Unit 9a falls towards the Bowes River and Ocean and is largely denuded from previous grazing activities. Sub-Unit 9b is situated in the far north-eastern corner, is currently fenced and contains a large rock outcrop with a number of Aboriginal rock paintings.

Other than for Sub-Unit 9b which requires preservation, Unit 9 is best suited to large lot residential opportunities incorporating the southerly and westerly slopes. Protection and enhancement of the remnant vegetation should be encouraged together with substantial re-planting of the slopes in Unit 9a.

4.7.10 unit 10 – southern coastal

Comprising the immediate coastal dunes within Lot 20, the Southern Coastal Unit covers approximately 100ha and includes two Sub-Units.

The main Unit 10 area comprises a mix of partially stabilised dune formation and a broad, unstabilised deflation basin. It is possible that the deflation basin is stabilising as there is evidence of vegetation cover. However, the activity of off-road vehicles and particularly motor bikes is impacting on the dune cover vegetation and requires early control.

Unit 10a comprises approximately 25ha of higher secondary dunes and is similar in its form and characteristics to the dunal area within the Townsite which has been successfully subdivided for residential purposes. Quality Ocean views are available from most portions of the Sub-Unit.

There is a need to confirm an appropriate Coastal Reserve through the main portion of Unit 10. Sub-Unit 10b is capable of conventional residential subdivision and development as an extension of the existing Townsite.

A coastal road through Unit 10 linking the existing Townsite with Bowes River mouth is not a desirable option as it would place considerable additional traffic pressures on the Townsite and particularly on Glance Street / Horrocks Street.

4.7.11 unit 11 – western clifflands

Forming a narrow belt through Lot 20 and Seaview Farm, the accessible areas of the Western Clifflands cover approximately 130ha with expansive, high quality ocean and coastal views from the western margins of the Unit. The eastern margins typically offer expansive inland views.

The Unit is relatively flat and adjacent to the Townsite within the Seaview Farms holding is separated from the cliffs by a broad reserve held by Council. The portion of the Unit within Lot 20 is not bordered by a major cliff line. The unit is for the most part vegetated with low scrub generally in good condition and it is understood may contain some rare flora species. Detailed flora surveys will be required to confirm the presence of any rare species.

The Unit is arguably the “dress circle” to the Expansion Area and capable of conventional residential subdivision. It would be desirable to encourage a range of densities and living opportunities so that the benefits of this location are offered to the largest possible cross-section of future residents. Further, there is a need to ensure suitable public access to key locations in a manner that is consistent with an overall residential environment.

5. social & built environment

5.1 population, housing & people services

The population of Horrocks Townsite is relatively stable at around 140 persons, almost half of whom are 55 years of age or over. As a consequence, single person households and households without children constitute a significant proportion of all households within the Townsite. Only one third of the population is employed with approximately half being employed full time.

Horrocks status as a beachside location is evidenced in the high proportion of un-occupied dwellings with approximately two thirds of dwellings being un-occupied, except presumably during holiday periods. The potential holiday population of Horrocks, including tourist accommodation is estimated in the order of 750+ persons.

There is no school within the Townsite with pre, primary and high school children attending schools in Northampton Townsite or elsewhere. Retail services are limited to a large general store, including fuel, and there are a limited number of food establishments in Town.

For its size, Horrocks enjoys a good level of community facilities including tennis courts, half ball court, 9 hole, dry golf course and beachside BBQ / picnic facilities. A substantial Community Centre and Tavern is proposed for the Townsite with construction expected to commence in the near future. An Ambulance and Fire Service operated by volunteers is also available.

Higher order educational, medical, retail and recreational facilities are provided at Northampton which is less **than 15 minutes' drive to the east.**

Tourist services within the Town are limited. There is a Caravan Park, a significant proportion of which is occupied by permanents and semi-permanents, cottages, private rental homes and B&B accommodation.

While Horrocks has traditionally been a beachside / fishing Town, there is evidence of it becoming a serious alternative residential location to the larger Townsites of Northampton and Geraldton. Some Fly in / Fly out families have taken residence in the Town as have families working in Geraldton but who are seeking an alternative and more pleasant residential location than Geraldton.

The impending development of Oakajee will provide a significant catalyst to the immediate region and to the Townsites of Northampton and Horrocks. Horrocks, as a pleasant, seaside location with a very temperate climate, is ideally positioned to capitalise on the population and employment growth that Oakajee will bring as it is within 30 minutes commuting time.

5.2 heritage

Coffey Environments has searched listings of heritage places including those maintained by the Heritage Council of Western Australia (the State Register), Australian Heritage Commission (the Register of the National Estate), the National Trust of Australia (WA), the Department for Indigenous Affairs (Register of Aboriginal Sites) and the Office of Native Title.

5.2.1 aboriginal heritage

Various Aboriginal archaeological and ethnographic investigations have been carried out at the site in previous years.

Coffey Environments conducted a search of the Department of Indigenous Affairs *Aboriginal Heritage Inquiry System* in January 2009. A total of 13 sites were found within the study area (Attachment 1). Specifically,

there are several sites located in the vicinity of the Bowes River mouth, a couple on the coast immediately north of Three Mile Beach and a few in the north east portion of the site. There is also one nearby existing Aboriginal Community, Barrel Well.

5.2.2 european heritage

A search of the Australian Government's Department of the Environment, Water, Heritage and the Arts' *Australian Heritage Database* did not reveal any sites of heritage significance within the proposed development area. However, one historic site listed on the Register of National Estate, Willow Gully Area is located on Horrocks Beach Road roughly 5.5km east-south-east of Horrocks, outside of the study area. **Willow Gully is also listed as No. 1914 on the Heritage Council of Western Australia's database, has a National Trust Classification and is listed in the Shire of Northampton Planning Scheme under Schedule 6.**

▫ **conclusions and recommendations**

Based on the desktop review, European heritage issues are not likely to present any constraint to development of the site.

In light of the number of Aboriginal Heritage sites identified in (or adjacent to) the study area, should further archaeological or ethnographic investigations be undertaken it is possible that additional sites may be identified. Future development in the study area should aim to avoid disturbance to identified sites. Where disturbance to a site is unavoidable, approval under Section 18 of the *Aboriginal Heritage Act 1972* will be required.

5.3 community consultation outcomes

5.3.1 consultation programme

Community consultation has been an integral component of the preparation of the Expansion Strategy with the objective of ensuring that:

- All viewpoints, related issues and community values and aspirations in respect of the Shire are identified early in and addressed through the planning process; and
 - **The Strategy enjoys the most broad, practical and achievable support within the "Community of Interest".**

The principles underlying the approach to the consultation process have been:

- A clearly defined and transparent consultation process;
- A process that provides opportunities for all stakeholders to participate and provide feedback; and
- Respect for all viewpoints expressed.

The Phases of consultation comprised:

- Phase 1 – Visioning Workshop : with the object of developing a longer term Vision for the Shire as the foundation for the development of the Local Planning Strategy; and
- Phase 2 – Objectives : development of the Strategic Vision and Objectives based on the outcomes of the Visioning Workshop
- Phase 3 – Strategy Proofing : **with the object of "proofing" a broad based Draft Strategy with the Community and Landowners prior to finalisation and adoption by Council of a final Startegy.**

5.3.2 phase 1 : visioning workshop

Phase 1 Consultation comprised meetings with Shire Councillors and Senior Officers, relevant State Government Agencies, representatives of local community organisations and a "Visioning" Workshop which was advised to the Community through :

- Letters to major landowners within the proposed expansion area;
- Press releases in local newspapers to announce the Strategy development and invite submissions and registrations for future Workshops; and
- The placement of invitations in local newspapers to the Phase 1 Community Workshop.

The Phase 1 Community Workshop was held on the afternoon of the 10th December, 2008 at the Northampton RSL Hall and, with the earlier meetings with representatives of local community organisations, proved to be particularly valuable in gaining an appreciation of the community issues and views that need to be addressed in the preparation of the Strategy.

Significantly, it became clearly evident early in the consultation process that there was a need to distinguish between the existing Townsite – "Old Horrocks" – and the expansion area – "New Horrocks".

The Community "Visioning" Workshop, which was conducted in small working groups, was attended by 13 people and sought to address, in the context of "Old" and "New" Horrocks, three primary questions:

- What is unique about the Horrocks and what does the community value about the way it has developed?
- What does the community dislike about Horrocks and the way it has developed?
- How does the community wish to see the Horrocks expand?

Additionally, participants were requested to address their responses in the context of four key Outcome Areas for the Strategy:

- Character & Lifestyle
- Housing
- Environment
- Employment
- Services and Facilities

The Values, Issues and Directions of a "spatial" nature directly impacting on the planning and expansion of Horrocks are discussed further in this section.

5.3.2.1 phase 1 outcomes - community values

The Key Values identified by the community typically represent those of the character of Horrocks and the coastal environment that serve to distinguish "Old Horrocks" from any new development:

- The unique character and relaxed and friendly lifestyle opportunities presented by one of the few remaining "traditional" beachside, holiday Towns.
- A small, caring and safe family oriented community with little crime or vandalism.

- The historical values and un-commercialised character of Old Horrocks as represented by the cottages, range of housing styles, corner store, traditional, low cost holiday opportunities and high level of walkability within the Townsite.
- The recreational and environmental values of Horrocks Bay and the beaches.
- The broader landscape of the location, the retention of bushland areas in close visual proximity, the views and enclosure offered by the cliffs to the east and the easy access to clean and pristine areas of coastline and wildflowers.
- The recreational and community services available within the Townsite.
- The proximity and relative ease of access to employment opportunities within the Region, notably at Northampton and Geraldton.
- The proximity and relative ease of access to higher level services and facilities at Northampton and Geraldton.

5.3.2.2 *phase 1 outcomes - community issues*

The following are the principal Issues identified by the community:

- Limited availability and affordability of land and housing within Old Horrocks and the need to ensure that new subdivisions are of an appropriate standard and provide for relatively easy construction of housing.
- Lack of convenience facilities and notably local grocery and household shopping, café / restaurant facilities, tavern and community hall / functions area.
- The poor standard of maintenance of houses and lots of rental properties and absentee land owners.
- Limited availability and lack of variety in tourist accommodation choices including the limited size of the current Caravan Park.
- Lack of a services / trades area and area for the fishing industry.
- The impact of increasing traffic on the enjoyment of the primary foreshore area and the need for an alternative access road with appropriate entry statements to the Town.
- The need to upgrade public beach facilities along South Horrocks and notably Whiting Pool.
- Lack of day use and camping facilities at Little Bay and the need for improved and safer road access to the location.
- Lack of medical and emergency services.
- Need to reticulate the Golf Course.
- The need to better manage and control off-road vehicle use of the beaches and particularly motorbikes.
- Lack of proper boat launching and mooring / storage facilities for recreational boats.

5.3.2.3 phase 1 outcomes - community directions

The Community, as represented not only at the Workshop but at other meetings with local community members, was very clear in the need to maintain a distinction between Old and New Horrocks. The preservation and enhancement where possible of the unique character and lifestyle of Old Horrocks is critical to broad acceptance and ownership of the Expansion Strategy.

Key Directions emanating from the Workshop discussion are:

- The need to retain the character, lifestyle and compactness of Old Horrocks and direct most new development to the Expansion Area.
- Provision of improved shopping, food / café / restaurant facilities and tourist commercial.
- Requiring all future development to achieve high levels of compatibility with the environment and sustainability in their design, construction and consumption of water and energy.
- Provision of greater choice and affordable housing.
- Provision of expanded range of tourist accommodation including an additional caravan park.
- Protection of the broader environmental values of the location including the provision of open spaces throughout the development area and the retention of the dunal system south of Horrocks to Bowes River.
- Appropriate building height controls including the exclusion of multi-storey / high rise development.
- Provision of a walkway and seating / viewing areas within open space along the cliff top with no road being allowed between the western most lots and the cliff edge.
- Minimisation of the visual impact of new housing from Old Horrocks.
- Provision of a combined community hall / function / tavern facility.
- Retention of the Golf Course in its current location with the addition of a mini-putt course.
- Sealing of White Cliffs and Bowes River Roads.

5.3.3 phase 2 : strategy proofing

5.3.3.1 june 2009 draft

In June 2009, Council adopted a **Draft Strategy for the Horrocks Expansion Area and the "old" Horrocks Townsite** to facilitate community consultation.

The Draft Strategy was advertised for community and landowner comment for a period of eight weeks closing on the 28th August, 2009. The Draft was also forwarded to relevant Government Agencies for comment.

During the advertising period, a Landowners Forum was held at the Shire Offices on the 21st August and a Community Information Day was held at the Horrocks General Store on the 22nd August.

On the 24th November, 2009, a meeting was held with Council Officers, Officers of the Department of Planning, Department of Water, Water Corporation and some landowners to discuss the issue of provision of adequate water supplies to Horrocks which is a major constraint on development.

Subsequent to re-structuring of the Department of Planning and the Geraldton Office, the Shire's Manger of Planning and the Shire's Consultant, Larry smith, met with Regional Directors and Senior Officers to discuss the broad Strategy directions relative to shift in planning outcomes in the Mid-West Region. The Officers were broadly comfortable with the Strategy proposals.

During the discussions, the Officers noted that the Batavia Strategy is in need of review and that the Commission will be considering a timetable for that process. They considered that the Horrocks Strategy, in conjunction with the recently adopted Kalbarri Townsite Strategy, were significant inputs to that process. More importantly, they foreshadowed for Council's consideration the possibility of considering Horrocks as a more strategic Townsite given the proximity of Oakajee; which the Strategy recognises as a major future catalyst to the growth and development of Horrocks.

On the 28th October, 2010, the WA Planning Commission considered and approved a Structure Plan over essentially the western portions of Seaview Farm subject to conditions including limiting Stage 1 to a maximum of 30 lots (to be identified).

In response to the submissions received during the advertising period and discussions with Department of Planning Officers, a further Draft was prepared and considered by Council at its December 2010 meeting.

5.3.3.2 december 2010 revised draft – eco-cluster

In December 2010, Council considered a report addressing submissions received by the principal land owners within the Expansion Area, east of White Cliffs Road. The report addressed the primary issues raised by the landowners in the initial submission period and proposed three Strategy Options which were re-advertised for comment.

Specifically, and in response to submissions received and discussions with Department of Planning Officers, the December 2010 proposed three revised Strategy options as follows:

Option 1 : Conventional

Option 1 followed a "conventional" subdivisional approach and incorporated modifications arising from submissions received from the landowners.

Option 2 : Eco - Cluster

Option 2 arose from discussions at the Landowners Forum in relation to larger lot sizes originally within the Low Density Residential Living R2.5 Precinct and the risk, at least with some owners, of the progressive collection of junk and the impact on the visual amenity of the area. In the ensuing discussion, the Shire's Consultant suggested an approach based on a "cluster" subdivision approach for the Precinct and extending the concept to the other Low Density Living precincts.

Option 3 : Strategic Eco-Townsite

Option 3 arose from the discussions with WA Planning Commission Officers in relation to the review of the Batavia Coast Strategy and the potential for Horrocks to become a more strategic Townsite given its proximity and accessibility to Oakajee. Option 3 adopts Option 2 as the base and identifies higher density opportunities in appropriate locations.

6. utilities & infrastructure

6.1 potable water supplies

The Northampton coast is situated in the Gascoyne Groundwater Management Area where groundwater is contained within weathered granite, dykes or fractures, and where quantity, quality and rate of recharge are highly variable.

The public drinking water supply for Horrocks is obtained from the Water Corporation's well field located approximately 5 km north-north east of the town (Figure 4 : . Horrocks Beach Water Reserve). The current utilisation of the aquifer is 50,000-60,000kL/year. Jo Miotti (2009) from the Water Corporation confirmed that the capacity of the aquifer extends beyond this utilisation but the quality outside of the currently used brackish water is likely to deteriorate and be saline.

No management priority classification as assigned by Department of Water is identified for this well field, but it is managed at a Priority 2 (P2) level of protection. P2 source protection areas are managed in accordance with the principle of risk minimisation. The source protection objective for P2 areas is to maintain existing water quality. Land is generally in private ownership and typically supports low intensity rural and rural lifestyle uses. Urban and industrial land uses are precluded in P2 source protection areas.

The well field is developed in the Tumblagooda Sandstone aquifer, a confined aquifer system with both primary and fracture permeability. The aquifer is mainly recharged by direct infiltration of rainfall north east of the Horrocks well field near the margin of the Northampton Complex. Recharge to the aquifer may also occur locally by groundwater flow from the Kwinana Group aquifer where the Kockatea Shale is thin or absent. Groundwater salinity increases in the direction of groundwater flow towards the south-west.

The quality of water from the Horrocks production bores is monitored by the Water Corporation in accordance their *Water Resource Management Operation Strategy* for Horrocks and the Australian Drinking Water Guidelines (ADWG). The water is regularly monitored for microbiological contamination, health related chemicals and aesthetic chemicals and parameters. ADWG gives guidance on the quality of water that should be provided to consumers at the point of use.

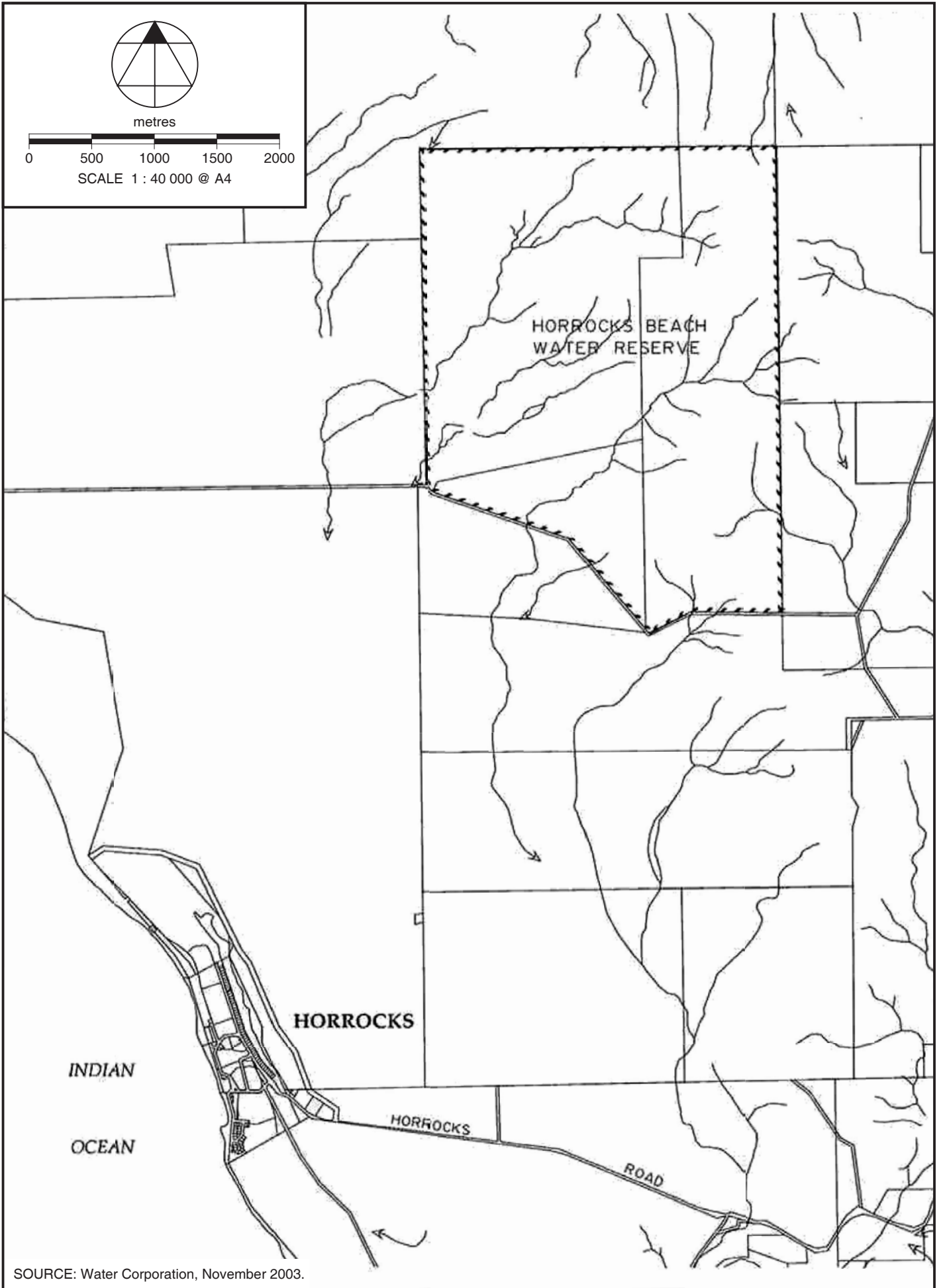
The water quality sample results from the Horrocks production bores show the raw water to be of poor quality with low pH, and high total dissolved solids (TDS), iron, manganese and turbidity concentrations. Elevated turbidity readings result when iron and manganese precipitate in the samples. High levels of these minerals in the groundwater result from dissolution of traces of them in the aquifer. Following treatment to reduce these contaminant levels the drinking water supplied to Horrocks complies with the ADWG for microbiological, health and aesthetic parameters with the exception of TDS and pH levels.

The Water Corporation's well field consists of three production bores. Water abstracted from the well field is pumped to a water treatment plant, located about 2km from the town. Treated water is then transferred to a 1000 m³ storage tank for gravity supply to the distribution system.

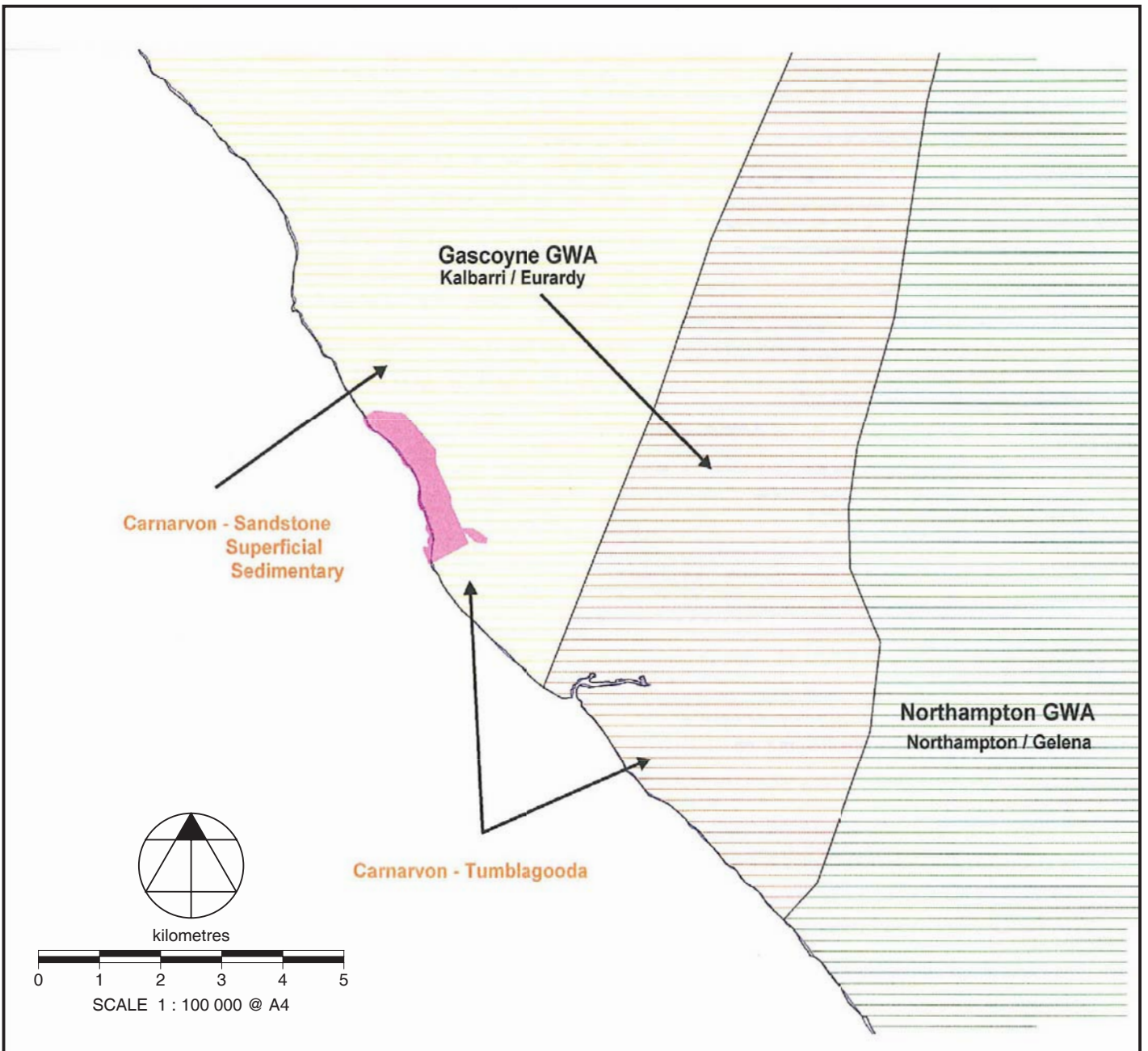
Raw water is treated to reduce iron, manganese and turbidity levels through chlorination to oxidise and precipitate these minerals, followed by filtration through a single Dynasand continuous moving sand bed filter before being supplied to the town.

Along the coastline generally, small supplies of potable water can be found in unconfined aquifers in the Tamala limestone and in unconsolidated coastal sands but it is unlikely that these will be reliable source of potable water for future populations.

As outlined in the DoW's *Rights in Water and Irrigation Act 1914* the locality of Horrocks falls within the proclaimed Kalbarri/Eurardy sub-area of the Gascoyne Groundwater Area. There are a number of aquifers located within the Kalbarri/Eurardy subarea, with four potentially located in the subject area. These aquifers are known as the (Figure 5 : Aquifer Locations):



SOURCE: Water Corporation, November 2003.



LEGEND

Cadastre - DLI

- Freehold
- Alluvium
- Crown Reserve
- State Forest / Timber Reserve
- Marine Park
- Crown Lease
- Lease / Reserve
- Lease on State Forest / Timber Reserve
- Public Roads
- Unallocated Crown Land
- Water

**WA Coastline - DoE
DWAID Groundwater Resource - DOW_1**

- Combined - Fractured Rock West - Alluvium
- Collie - Muja.
- Perth - Parmelia.
- Pilbara - Coastal Saline
- Combined - Fractured Rock Central
- Ord - Victoria
- Perth - Lower Leederville.

- Officer - Surficial
- Bremer West - Sedimentary
- Palaeochannel - Calcrete
- Saline Resource
- Palaeochannel - Palaeochannel
- Carnarvon - Cape Range Limestone
- Officer - Sedimentary
- Eucla - Surficial
- Perth - Lower Leederville
- Bonaparte - Limestone
- Bonaparte - Fractured Rock
- City of Fremantle - Coastal Saline
- Canning - Wallal.
- Combined - Fractured Rock West - Calcrete
- Collie - Stockton.
- Perth - Cattamarra Coal Measures North.
- Perth - Leederville - Parmelia.
- Perth - Surficial
- Lesauwin - Fractured Rock
- Carnarvon - Sandstone
- Canning - Broome
- Collie - Lower Collie Group.

- Perth - Cockleshell Gully
- Bremer East - Fractured Rock
- Carnarvon - Superficial
- Carnarvon - Alluvium
- Carnarvon - Windaia
- Undefined
- Hamersley - Fortescue
- Canning - Wallal
- Bremer West - Fractured Rock
- Collie Group
- Carnarvon - Birdroing
- Northampton - Sedimentary
- Perth - Surficial (North)
- Bremer East - Superficial
- Perth - Superficial Swan
- Perth - Fractured Rock
- Combined - Fractured Rock West - Palaeochannel
- Carnarvon - Sedimentary
- Perth - Superficial
- Perth - Rockingham Sand
- Canning - Erskine
- Perth - Upper Leederville.
- Bremer West - Superficial

- Carnarvon - Birdroing.
- Carnarvon - Tumblagooda
- Perth - Superficial Swan & Rockingham Sand
- Carnarvon - Surficial
- Palaeochannel - Fractured Rock
- Perth - Upper Leederville
- Collie - Surficial
- Eucla - Hampton
- Canning - Liveringa
- Bremer East - Sedimentary
- Combined - Fractured Rock West - Fractured Rock
- Perth - Lower Collie Group (Dewater).
- Perth - Polson Hill
- Perth - Otorowiri.
- Perth - Yarragadee South.
- Eucla - Loongara
- Perth - Leederville
- Northampton - Fractured Rock
- Perth - Sue Coal Measures South.
- Hamersley - Fractured Rock
- Wiltnoom - Wiltnoom
- Pilbara - Alluvial

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

Prepared by: macaled
Prepared for:
Date: 5/02/2009 10:29:08 AM

Information derived from this map should be confirmed with the data custodian acknowledged by the agency acronym in the legend.



Government of Western Australia
Department of Water

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SOURCE: Department of Water, February 2009.

- Carnarvon - Sandstone - 5.10% Allocated, Committed & Requested
- Carnarvon - Sedimentary - 1.45% Allocated, Committed & Requested
- Carnarvon – Surficial - 16.50% Allocated, Committed & Requested
- Carnarvon - Tumblagooda - 37.16% Allocated, Committed & Requested

(Allocation data as of the 5 February 2009).

▫ **conclusions and recommendations**

Potable water supply is likely to be a constraint to future development, which will be largely governed by the availability and accessibility of water sources, and the quality of those water sources. Due to the significant distance of Horrocks to the nearest supply towns, utilising local sources is likely to be more feasible. However, some form of treatment will be required to ensure compliance with relevant guidelines.

Based on standard growth projections and associated future developments, it is likely that the Water Corporation's licensed allocation of 100,000kL of groundwater from the well field will be exceeded in the nearer term. If additional water requirements beyond the approved allocation are required, an increase in allocation for the existing source will be needed. Alternatively, other sources need to be secured.

Whilst there may be capacity to increase the water supplied from the Horrocks Water Reserve, the quality of this water is likely to be low. Potable water sourced from aquifers can become saline if water is abstracted at a volume greater than the aquifers recharge capacity. This can have implications for on-site bores for future residences, and needs to be considered due to the low-variable rate of groundwater recharge at the site.

Potential water sources closer to the Tumblagooda Sandstone aquifer recharge area further north-north east as identified Water Corporation and listed above are the most likely sites for future investigations. The Tumblagooda Sandstone aquifer is a large system extending north to the Murchison River and east of the North West Coastal Highway. Broad scale estimates for the aquifer suggest a capacity of at least 29GL/annum, with less than half currently allocated.

Depending on the quality of water from these potential sources, the provision of a reverse osmosis unit to provide high quality drinking water may be required.

The opportunity also exists to source water supply from Northampton. Preliminary discussions with Officers of the Water Corporation indicate that there is capacity in the Geraldton / Northampton main to provide a water supply to Horrocks. It is not known at this point the number of additional services that could be provided through this source. However, the primary constraint with this option is likely to be the cost of extending supply to Horrocks. "Ball Park" guesstimates indicate that the cost of extending supply from Northampton is likely to be in the order of \$5-10million and would most likely need to be pre-funded by the developer/s. The feasibility of this option is highly questionable.

Clearly, an investigation into alternative water supplies is required and the results of this study to be integrated into strategic planning for the study area.

Irrespective of the ultimate supply option exercised, it is evident that there is a pressing need to institute active water demand reduction practices including capturing and storing rainwater, grey water re-use and site and climate specific landscaping guidelines.

Development of the site also needs to consider the potential impacts on water quality and quantity. The aim should be to maintain existing pre-development groundwater conditions. It is likely that there will be a requirement for the preparation of a District Water Management Strategy, followed by Local Water Management Strategies and Urban Water Management Plans. This hierarchy of documents will be required to address the total water cycle management for the expansion of Horrocks.

6.2 effluent disposal

Although Horrocks is currently serviced by a small, lagoon based, wastewater treatment facility located to the north of the town site, only part of the Townsite is connected to sewer. The wastewater treatment facility comprises a Facultative Pond system and has capacity to expand at its current location. Expansion of the facility is likely to be to the north so as to not impact on potential future northerly expansion of the Townsite. Future development in the study area will need to address connection of the balance of the Townsite and provide a buffer to the treatment facility.

EPA (2005) Guidance Statement No. 3 *Separation Distances between Industrial and Sensitive Land Uses* specifies that a site specific odour study be undertaken to accurately delineate an appropriate buffer. The Guidance Statement recommends a minimum 700m buffer for Facultative Pond systems servicing 5,000 persons or less. However, the Water Corporation have indicated a buffer of 500m as adequate and this latter figure has been adopted given the predominant prevailing winds.

The current wastewater treatment facility appears to have some capacity to service future expansion of the Horrocks Townsite. It is not clear to what extent the development could expand to, without requiring an upgrade to the facility.

If special rural or rural residential development were proposed in parts of the study area, on-site effluent disposal may be required. Due to the sensitivity of the receiving environment and particularly the need to protect groundwater quality, it is recommended that effluent disposal systems that treat sewerage to a high standard (e.g. Biolytix, Biomax, etc) are used. Disposal areas should be located as far away from Bowes River as possible to minimise risks associated with nutrient export.

Further site investigation will be required to determine the capability of the site to accommodate effluent disposal. Key factors for consideration include depth to groundwater to provide sufficient separation between the disposal area and groundwater and the Phosphorus Retention Index testing to determine nutrient holding capacity of soils and whether soil amendments may be needed.

▫ **conclusions and recommendations**

The following actions are recommended:

- Investigate expansion capacity of existing wastewater treatment facility.
- Investigate connection of the balance of the existing Townsite to sewer.
- Provide for a minimum 500m buffer to the existing wastewater treatment facility pending detailed investigations into site specific odour buffer requirements.
- Once planning has been further refined to a point where special rural or rural-residential areas are known, undertake on-site effluent disposal investigations to calculate PRI values for disposal areas in order to determine the requirement for soil amendment to improve nutrient-binding capacity of the local soils.
- Where on-site disposal is proposed, use effluent disposal systems that treat wastewater to a high standard.
- Consider on-site treatment systems that re-use grey and black water.

6.3 energy

Horrocks is reliant upon electricity for its energy requirements as there is no natural gas feed to the Town. The power grid that services Horrocks forms part of a larger system from Northampton feeding west and north to include Horrocks, Port Gregory, and Kalbarri.

Notwithstanding recent improvements, capacity within the system is severely limited. It is understood that Western Power are currently unable to supply more than 20 additional and no new major users such as a resort. Additional development would require the installation of a regulator to increase the voltage feed to Horrocks which would provide for up to 50 additional houses and a moderate resort development.

Western Power has commenced a series of major upgrades to overall power supply and generation within the Mid-West including supply on the Northampton / Horrocks / Port Gregory / Kalbarri line. The proposed improvements are:

The proposed improvements to the system include:

- Connection of the Mid-West Grid to the Perth Grid;
- Additional generating capacity in the northern Perth Grid;
- Upgrading of supply to Northampton including a new sub-station and additional generating power within Oakajee when commenced; and
- Further line upgrades to Northampton / Kalbarri line.

The proposed improvements are contingent upon connection of the Mid-West and Perth Grids to increase overall generating capacity including connections to new power stations at Eneabba and Dongara.

While the extent of upgrading will considerably increase the overall power supply within the system, the requirements of intervening customers will significantly impact on Kalbarri, a major tourist destination, which is situated at the end of the same power system. A major expansion of Horrocks will further exacerbate the impact on Kalbarri.

Irrespective of the proposed upgrade in supply, if there is to be significant expansion of Horrocks, then it is evident that there is a pressing need to institute active power demand reduction practices through localised self-generation options such as wind power and domestic level generation.

Further, there is need for Council to engage with Western Power / Verve to secure longer term reliable power supply in the Northampton / Kalbarri system within the context of Townsite Strategies for both Horrocks and Kalbarri, including expanded use of renewable energy sources to supplement the incoming supply.

6.4 sustainability opportunities

The principles of sustainability, while easy in concept, can be difficult to define and implement. Implementing best practice, or beyond best practice, often incurs additional upfront costs, but can deliver other tangible and non-tangible environmental, economic or social benefits.

The following identifies some opportunities for implementing best practice (or beyond best practice) activities as part of development at Horrocks. The remoteness of Horrocks in terms of key infrastructure may assist with the economic feasibility of implementing alternative technologies.

6.4.1 water

It is recommended that a total water cycle approach to water and wastewater management be adopted **when developing solutions. A 'fit for purpose' philosophy ensures that water quality requirements match the needs of the use.** Two considerations with this philosophy are the protection of the environment and the protection of public health.

At a minimum, implementing water sustainable urban design (WSUD) principles is advised to ensure water efficiency at a development scale. In addition, water efficiency measures at a more local scale, i.e. in-house efficiency measures are recommended to maximise efficient use and re-use of water.

The overall goal for water management should be to minimise the volume of potable water required to be imported to the area, and maximise re-use opportunities. To achieve this goal, the following are considered possible opportunities:

- Wastewater treatment using package treatment plant(s) that achieve a class A+ standard of treated wastewater suitable for re-use (particularly for irrigation). Such package plants can be staged to accommodate a growing population and require minimal footprint including minimal odour buffers when compared with other more conventional methods of wastewater treatment.
- Integrated water cycles/cyclic systems for larger properties, such as making use of the nutrient cycle by quality treatment of grey/black water on site for use on gardens. An integrated system could be developed for on-site effluent disposal for special rural type blocks.
- At the lot scale, consideration of integrated rainwater tanks (i.e. plumbed into the home for toilet flushing, clothes washing) as a means to capture and use rainwater. While rainwater tanks for irrigation purposes are typically not feasible as large volumes are required to be stored and rainfall patterns generally do not align with high demand periods, scope still exists to reduce in-house and some out-house water requirements.
- Designing private and public open space areas to be water efficient by capturing stormwater, using flood irrigation methods, and use of water efficient plants.

As a result of CSIRO's climate projections storage for rainfall will require large tanks or high capacity retaining stormwater catchment areas. Lot sizes within much of the proposed development area are likely to be large enough to support this infrastructure.

The WA State Water Strategy sets a target of 155 kilolitres per person per year by 2012. This target will be due for review in the coming years. Through implementing some or all of the above options for improving water efficiency, new developments in the subject area could achieve a lower average than the state target, such as 100 to 120 kL/person/annum or less depending on water efficiency initiatives to be implemented. It is recommended that further investigations into total water cycle management options for Horrocks are carried out to determine realistic water use targets.

6.4.2 energy

Electricity production is a high greenhouse gas producing activity. Alternative sources for electricity generally include solar power, wind energy, tidal/wave generated power, and biomass plants. With forecasted price rises in electricity charges, the economic feasibility of using alternative power sources will improve with reduced payback periods.

Several alternative technology options may be suitable for implementation in the study area, and therefore warrant further investigation. In particular wind and solar power may be options worthy of further investigation. To improve reliability for peak/non-peak supply an integrated system (or hybrid system) that uses conventional and non-conventional technologies may be appropriate.

At an individual level lot scale, self-sufficiency may be an ambitious goal, however on-site power generation has the potential to reduce requirements for importing energy. Opportunities may exist for collaborative purchasing to secure reduced prices for solar and wind technologies.

At a domestic level, heating and cooling is responsible for the largest portion of domestic energy use. The simplest and most cost effective strategy to reduce domestic energy use is to design buildings that incorporate solar passive design principles.

At a development scale, the following considerations may be included throughout the design and implement process to deliver energy savings:

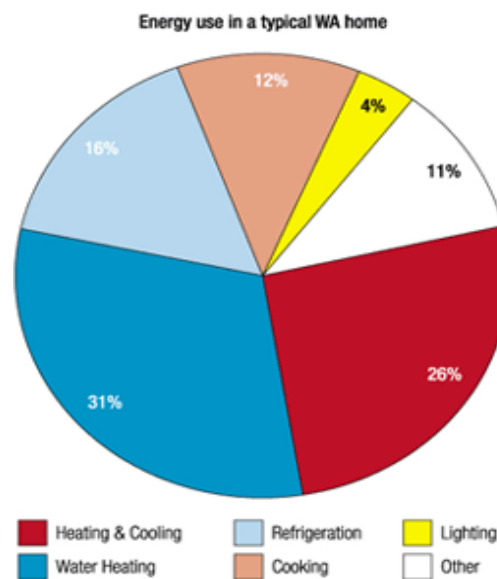
- Designed road network that encourages walk ability and efficient vehicle movements;

- Consideration of lot design to encourage solar passive design. It should be noted that solar passive design can generally be accommodated on most building lots as it is a built form response.
- Reduce hard surfaces, or use open-grid pavement options and maximise shading opportunities in public spaces.
- Provision of street lighting to suit needs/standards for relevant areas. Selection of energy efficient street lights (e.g. compact fluorescents, solar powered etc).

Coffey Environments has not been able to identify whether energy targets for Western Australian households have been established or not. However, with more efficient housing design, using energy efficient appliances and applying the principles and technologies outlined above, energy use of the proposed development could be significantly reduced.

For example, in reference to the chart below (sourced from SEDO – <http://www.sedo.energy.wa.gov.au>), water heating and heating/cooling account for 57% of energy use in the typical WA home. With solar hot water systems and efficient housing design (insulation, aspect, etc.) this figure could be dramatically reduced. Further to this, according to a DEWHA study titled *Energy use in the Australian Residential Sector: 1986-2020*, by 2020 energy use by electrical appliances is forecast to almost match space heating as the largest single energy end use in the average Australian household.

Hence it is advised that regulations and incentives be in place to ensure new developments and dwellings utilise energy efficient materials and products.



6.4.3 ecosystems

With respect to the protection of ecosystems and local biodiversity, future development at Horrocks should aim to protect and enhance existing native ecosystems. This can be achieved through protection of potential conservation areas, or through the rehabilitation of degraded areas. Specific opportunities include:

- Protect habitats and maintain/re-establish connectivity to reduce fragmentation and assist fauna movement and dispersal.
- Encouraging the maintenance (during and after construction) of native vegetation where existing, and rehabilitation of degraded areas of native vegetation. The management of native vegetation and rehabilitation activities could incorporate community involvement to raise biodiversity awareness.

- Minimise disruption to landform and natural ecosystems by encouraging the construction of terrain-responsive buildings.
- Encourage development on previously developed or degraded sites.
- Planting of native species in open space areas and encourage community adoption of water wise landscaping.
- Establishment of community-based nursery that grows endemic species for using in rehabilitation projects.

6.4.4 social sustainability

Opportunities for advancement of social sustainability elements include:

- Appropriate preservation and / or recognition of indigenous and post-European cultural heritage.
- Community consultation and active participation in the design phase, including consultation with local indigenous groups.
- Encourage community cohesiveness through provision of facilities and networks.
- Facilitate community participation in the management, protection and rehabilitation of local conservation areas, for example formation of a coastal management group.