Oakajee Industrial Estate
Structure Plan

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LANDCORP

RPS

Government of Western Australia
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Document Status

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1.0 INTRODUCTION

1.1 Background

Oakajee was selected by the Western Australian State Government in 1992 as a site for future processing industry and a deep water port. From 1997 to 2009, the State, through LandCorp, acquired and rezoned approximately 6,400ha of land for this purpose.

Existing and proposed iron ore mining projects in the Mid-West are not able to develop to desired levels unless a rail link and deep water port are developed. The State Government acknowledged this need by appointing Oakajee Port and Rail (OPR) in March 2009 as the infrastructure provider for the project. OPR is currently undertaking a Bankable Feasibility Study into the construction of the port and rail project.

Construction of the port and rail and their future expansion, will present a major opportunity for LandCorp and the Department of State Development to develop the Strategic Industry Area for heavy industry, the General Industry Areas for support industry and the Buffer Area for a range of compatible uses. The port and rail will make it possible to attract industry to the estate by providing a gateway to overseas markets and access to resources for value adding. This major investment in infrastructure will also bring water, power and potentially gas to the area which can be upgraded and extended into the industrial estate when required.

Development of the port, rail and industrial estate can not proceed until a Structure Plan for the area is completed in accordance with the Shire of Chapman Valley Town Planning Scheme No 1, Amendment 18. The Structure Plan will guide the future development of the Strategic Industry Area (SIA), General Industry Areas (GIA) and Buffer Area and will ensure the industrial estate integrates, over the long-term, with the port and rail developments. The Geraldton Port Authority has also completed the Oakajee Port Master Plan to guide the potential expansion of the Port and related facilities into the future.

1.2 Vision

The Oakajee Industrial Estate (OIE) is globally competitive with access to excellent local, national and international transport links by road, rail and sea.

Efficiencies are offered through the transfer of by-products between industries which are linked by service corridors. These linkages also facilitate the recycling and distribution of feedwater.

Renewable energy helps industry to manage carbon emissions and further contributes to the Mid West's growing reputation as a renewable energy hub.

The community is proud of the OIE and provides the training facilities and skilled labour to ensure its ongoing competitiveness.

1.3 Objectives

Preparation of the Structure Plan for the OIE has been guided by the following objectives:

a) To develop a structure plan that will facilitate the provision of land to meet the needs of internationally competitive heavy industry over the long-term;

b) To provide a multidisciplinary structure planning framework that achieves an appropriate balance between planning, engineering, environmental, sustainability, heritage and landscape factors;

c) To provide a planning framework which gives proponents clear direction and confidence to undertake feasibility studies into investing in the OIE;

d) To provide a productive Buffer (compatible use area) which designates land for its highest and best use without compromising the Strategic Industry Area;

e) To plan for a fully integrated and flexible transport system linking the OIE and the Port to State and National destinations via a road and rail network;

f) To plan for the efficient and coordinated provision of services based on an adaptable industrial ecology strategy;

g) To provide a spatial framework that maximises the potential for industrial ecology in terms of resource sharing and water management;

h) To ensure development recognises and protects, where possible, environmental, heritage and community values;

i) To identify opportunities for controlled public access, including Buller River to the south, and the coastline to the west;

j) To recognise and work with existing landscape values and identify opportunities for retaining and enhancing amenity through landscape design and revegetation; and

k) To provide a planning framework to assist with the management of carbon through renewable energy generation and commercial plantations.

1.4 Role of the Structure Plan

The Oakajee Industrial Estate Structure Plan (OIE-SP) gives effect to the strategic planning of the State Government for a major industrial development area and deep water port facility at Oakajee. At a regional level, the Structure Plan also provides a framework to implement the strategic intentions for the greater Geraldton region, including consolidation and expansion of economic activity and associated investments that facilitate the growth and development of the region as a whole.

The Structure Plan and associated appendices recognise the strategic planning context and further explains the means to achieve a successful estate by setting out:

- objectives for the industrial estate and the form of intended development;
- principles for the integration of planning, engineering, sustainability, heritage and landscape factors;
- a spatial framework to optimise industrial development opportunities; and
- mechanisms that will provide for the protection of environmental, heritage and community values.

The nature of heavy industrial developments is such that estates are driven by the special needs of activities in terms of land area, buffer requirements, servicing needs and the like. Recognising this characteristic, the OIE-SP provides a broad planning framework, setting the planning and management context within which major development initiatives may respond.

A further level of investigation is carried out during the development of subdivision and development proposals. Under the guidance of the OIE-SP, such initiatives will address the full range of planning, environmental, servicing, transport and other relevant considerations as necessary to achieve the required statutory approvals.

1.5 Process

1.5.1 *Best Practice*

In order to fulfil the vision and objectives for the OIE, LandCorp was committed to best practice in the formulation of the OIE-SP. To this end, the formulation of the OIE-SP has been strongly influenced by *Guidelines for Industrial Development May 2010* ('the Guidelines') prepared jointly by the Federal and State Government. The Guidelines acknowledge and promote greater consideration of the principles of industrial ecology and sustainability in the planning and development of industrial estates. In particular the Guidelines promote a multidisciplinary approach to industrial planning that meaningfully incorporates these fields.

Sustainability and the related field of industrial ecology have been important considerations in the development of the OIE-SP. The Sustainability Report and Industrial Ecology Strategy accompanying the OIE-SP explain their role in its development. The approach adopted is outlined diagrammatically below:

1.5.2 *Consultant Team*

Consistent with a multi-disciplinary approach, the following consultants have assisted in the preparation of the OIE-SP:

a) Planning – RPS;

b) Engineering – GHD;

c) Sustainability – Parsons Brinckerhoff/Curtin University/Ferart Design;

d) Environmental – Parsons Brinckerhoff;

e) Landscape – Hassell/Strategen;

f) Aboriginal Heritage – Rory O'Connor;

g) European Heritage – Laura Gray;

h) Unexploded Ordinance – Milsearch;

i) Air Quality – Air Assessments;

j) Noise – Herring Storer and Lloyd George Acoustics; and

k) Risk – Environmental Risk Solutions.

1.5.3 *Project Phases*

The project phases for preparation of the OIE-SP can be summarised as follows:

a) Phase 1: Review and Preliminary Planning

b) Phase 2: Structure Plan Investigations

c) Phase 3: Preparation of Structure Plan

d) Phase 4: Documentation and Submission

e) Phase 5: Consultation and Endorsement

A key component of the OIE-SP investigation phase was a site specific analysis of opportunities and constraints. A half day opportunities and constraints workshop was held in November 2009 at which time all project consultants provided their appreciation of the technical matters relevant to preparing the OIE-SP. The workshop culminated in the production of an opportunities and constraints report representing the disciplines of the project team.

In August and September 2010, as part of Phase 3, a preliminary draft of the OIE-SP was 'workshopped' with key stakeholders including government agencies, local community groups and the Mid West Iron Ore Alliance.

In October 2010 the draft OIE-SP was reviewed by a Design Review Panel ('the Panel'). The Panel's membership included Professor Richard Weller (UWA), Patric de Villiers (UWA), Chris Oughton (Kwinana Industries Council) and Derwent Southern (LandCorp). Feedback from the Panel was instrumental in refining the OIE-SP.

In late October 2010 a Technical Advisory Group Workshop was held in Geraldton to 'workshop' the draft OIE-SP. The outcomes of the workshop were critical to the refinement of the project.

1.6 Best Practice Estates

Prior to preparing the OIE-SP, the project team sought to identify examples of best practice industrial estates in order to inform the development of the OIE-SP. Based upon a literature review and the knowledge and experience of the project team members, the following estates were reviewed:

Estate	Key Characteristics
• Kwinana • Gladstone, Queensland • Kalundborg, Denmark • Moerdijk, The Netherlands • Forth Valley, Scotland • Khalifa Port, United Arab Emirates	• Integrated multi – modal transport systems which include freight rail and port access • Industrial ecology – industrial clustering, common user infrastructure including integrated service corridors • Use of renewable energy including provision of transition to greater reliance on such sources • Government ownership / involvement • Sophisticated governance structures which represent industrial users and involve the community

1.7 Related Initiatives

Currently, there are three infrastructure initiatives directly related to the Oakajee Industrial Estate:

1.7.1 *Oakajee Narngulu Infrastructure Corridor*

The Department of Planning is currently coordinating the Oakajee-Narngulu Infrastructure Corridor (ONIC) study. The ONIC is proposed to be a single corridor linking the OIE and Port to Narngulu. The corridor is proposed to include road, rail and services.

1.7.2 *Oakajee Port and Rail*

OPR is proposing to develop a new deepwater port at Oakajee. Initially the Port is expected to have capacity to export approximately 45 million tonnes of iron ore per annum. The port will be supported by a rail network linked to iron ore deposits located up to 570 kilometres north-east of Geraldton.

1.7.3 *Oakajee Port Master Plan*

The Oakajee Port Master Plan (OPMP) released in June 2011 has been developed by the Geraldton Port Authority as a working document to guide the development of the Oakajee Port over the next 30 years. It provides context and a vision for how the port will be developed in stages and describes how Oakajee Port is connected to the overall development of the Mid West. The OPMP will be regularly reviewed and updated to ensure it reflects the evolving infrastructure needs of industry and constantly changing trade and market conditions.

Whilst these initiatives are separate proposals, their integration with the OIE-SP has been a critical consideration. The initiatives are discussed in further detail in Section 8.

1.8 Role of LandCorp

LandCorp is the land owner, planner, developer and estate manager for the OIE. The role of LandCorp and others is discussed in further detail in Section 13.

2.0 THE SITE

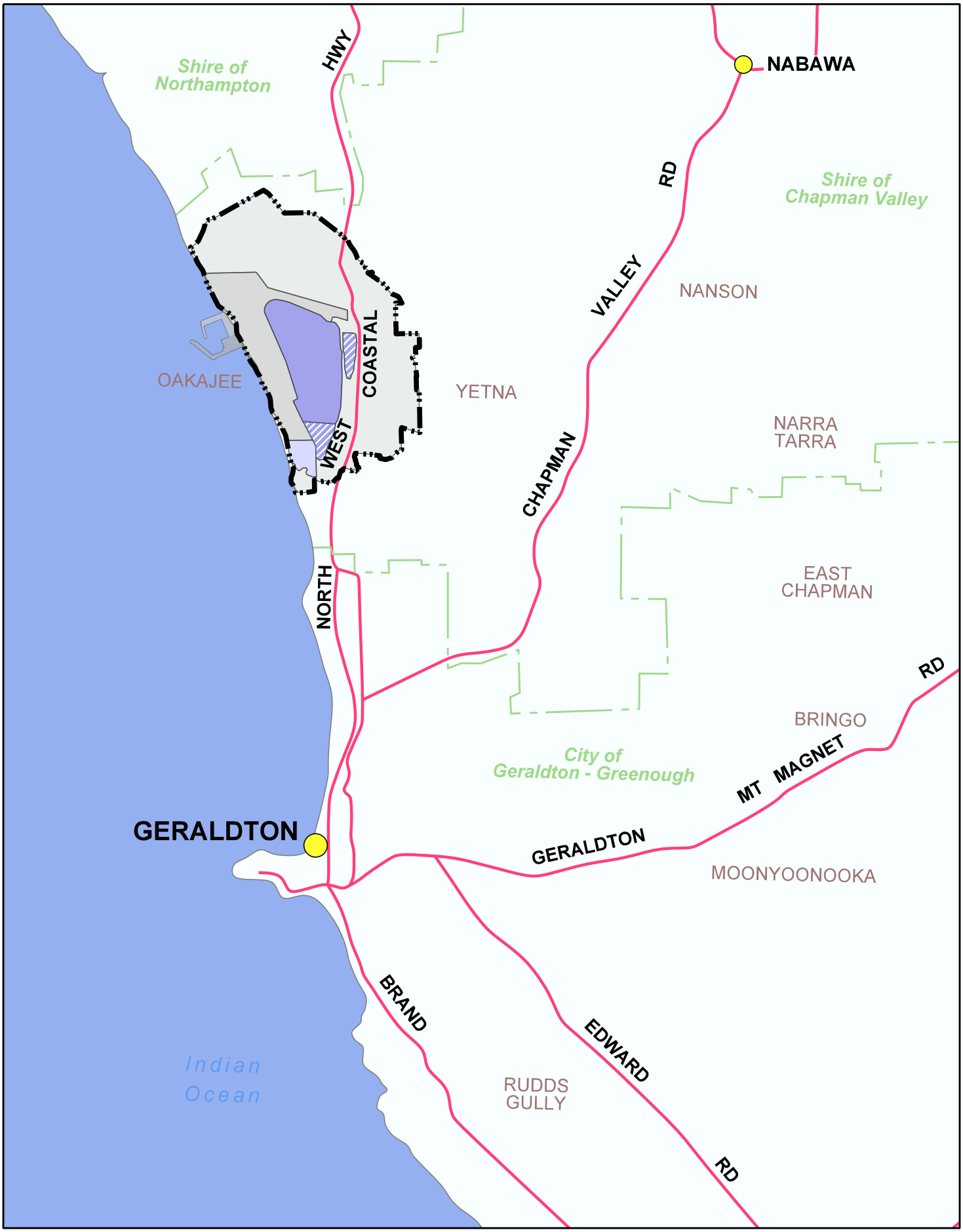
The OIE is located approximately 23km north of the Geraldton CBD (refer **Figure 1 Location Plan**). The OIE is generally bound by the Buller River to the south, Indian Ocean to the west, Coronation Beach Road to the north, and the Moresby Ranges to the east. The OIE occupies 6,404.4 hectares comprising the following components:

Component	Sub Area	Area (hectares)
Industrial Area	Strategic Industry Area	1134.6
	Coastal Area	1002.2
	General Industry Area (s)	196
	Sub Total	2332.8
Buffer		4071.6
	Total	**6404.4**

With the exception of the following land holdings, approximately 99% of the OIE is owned by LandCorp:

Location	Owner	Area (hectares)
Lot 9 North West Coastal Highway (cnr Lacey Road) Oakajee	City of Geraldton	16.0845
Lot 7240 North West Coastal Highway, Howatharra	Department of Water	17.0676
Lot 1 (South of Buller River Mouth) Buller River	Private owner(s)	56.7377
Lot 10786 North West Coastal Highway, White Peak	Private owner	0.4100
	Total	**90.2998**

The majority of the OIE has been cleared for broadacre agriculture. The Environmental Review Report (**Appendix 2**) provides an outline of the natural characteristics of the site (refer **Figure 2 Aerial Photograph**).



LEGEND

Subject Site

FIGURE 1

LOCATION PLAN

Oakajee Industrial Estate

NORTH

0 2 4 6 8 10km

1:200,000@A4 | 3570-5-008.dgn | 18 November 2010

Base Provided by Travellers Atlas 2006 Checked : N.T.

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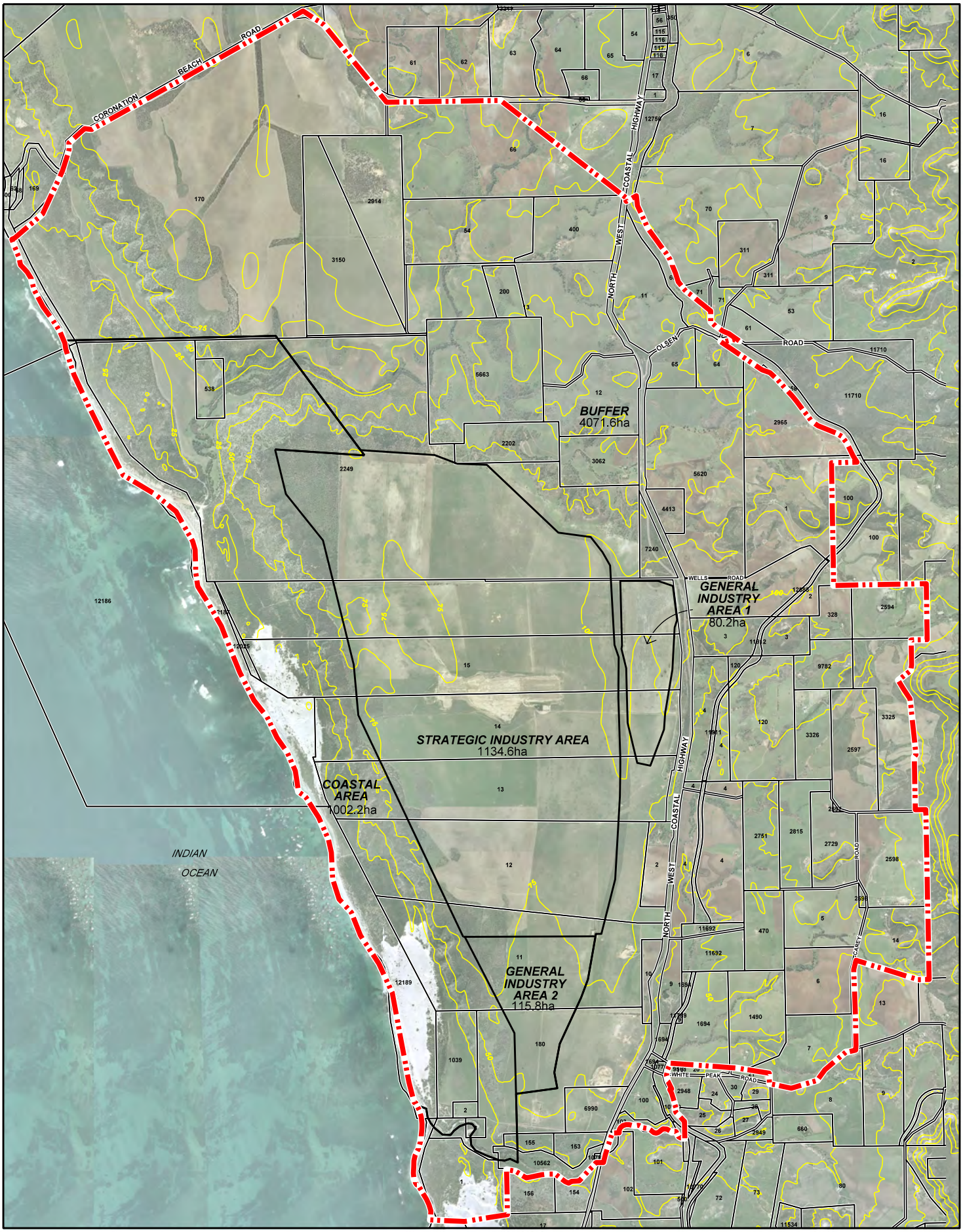

LEGEND

Subject Site

FIGURE 2

AERIAL PHOTO

Oakajee Industrial Estate, OAKAJEE

NORTH

0 0.5 1 1.5 2.0 2.5km

1:5,000@A4 3570-5-002b.dgn January 2011

Source: Landgate Photo June 2001 Checked : N.T.

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3.0 CONTEXT

The development of the OIE-SP will facilitate enhanced connections and linkages between the Geraldton / Mid West region and international, national, state and local destinations. The importance of such connections is discussed in the Mid West Infrastructure Analysis (2008) discussed below. The various spatial contexts are briefly discussed in turn.

3.1 International

The ultimate port development at Oakajee will cater for 'Cape' and 'Panamax' class vessels and will be instrumental in enhancing linkages between the Mid West and international destinations. The Mid West Infrastructure Analysis (2008) identified a deep water port and supporting infrastructure as critical to realising the potential of a number of resource sector projects in the Mid West region. This is also the case for the OIE which will require an efficient link to key international markets.

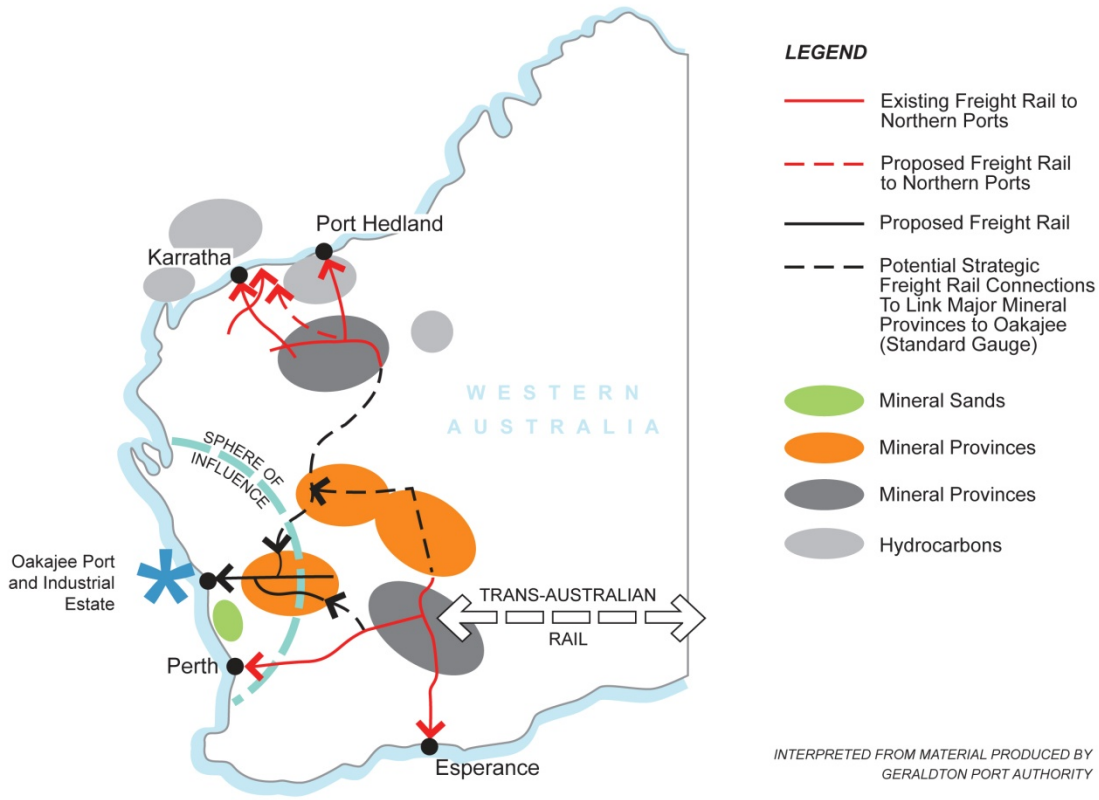
The link from the Port to international destinations must be supported by road and rail. The OIE-SP will play an important role in facilitating integration of such infrastructure as detailed in this report. This requirement is also central to fulfilling the objectives of the State Heavy Industry Policy (1998) as outlined in Section 4.1.1 of this report.

3.2 National & State

The Port is also expected to facilitate connections between the Mid West, State and National destinations.

The OIE-SP will integrate with key road initiatives such as the Geraldton Bypass (which forms part of the Oakajee Narngulu Infrastructure Corridor) and various upgrades to North West Coastal Highway (NWCH). The Bypass and NWCH are important in terms of connecting the OIE with the broader state and national heavy haulage road network.

The proposed Oakajee Narngulu Infrastructure Corridor (ONIC) and/or the rail corridor linking Jack Hills and Weld Range could ultimately link the OIE with the State and National rail networks.

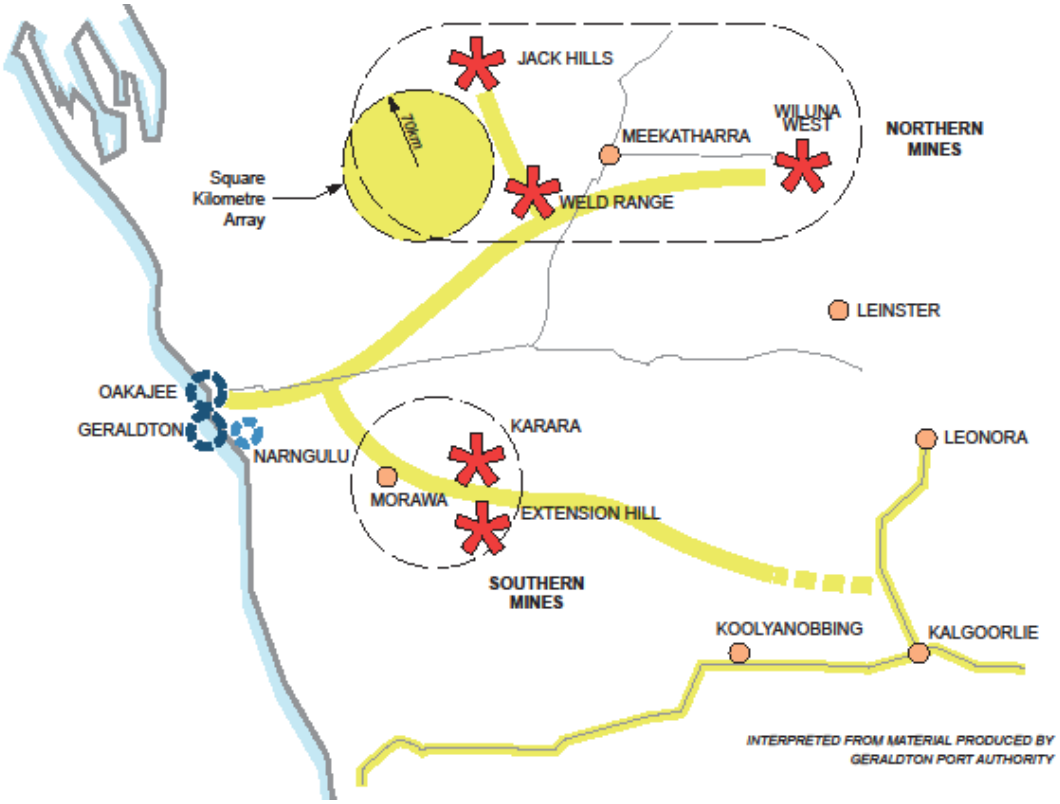


3.3 District & Local

A key component of the OIE-SP is integration with the planned ONIC. The ONIC will be instrumental in linking the OIE and Port with the Narngulu Industrial Estate and Geraldton to the south. Prior to a land-backed Panamax berth being available at Oakajee, the ONIC will be essential in linking the OIE with the Geraldton Port.

As explained in Section 4.1.3, the linking of the OIE with Narngulu, via an integrated service corridor, is a key initiative of the Geraldton Region Plan.

At a local level, industry within the OIE will be linked to each other, the Port, utilities, road and rail via infrastructure and service corridors. The two main infrastructure corridors servicing the Strategic Industry Area will have a width of 210 metres ensuring the efficient transport of by-products, utilities, materials and products can be achieved even when the industrial estate reaches full capacity.



Geraldton City is the premier activity centre for the Mid-West, and will play an essential support role for the OIE. There is significant potential for growth within the Greater Geraldton region, with estimated capacity to accommodate more than 100,000 people. Situated approximately 23 kilometres to the south of Oakajee, Geraldton provides labour force accommodation and major services including cultural, sporting, entertainment, shopping, commercial and government agencies.

4.0 PLANNING AND ENVIRONMENTAL CONTEXT

4.1 Strategic Planning

The rezoning of the site in 2004, which is discussed in 4.3.2 of this report, has already verified the strategic suitability of Oakajee as a site for heavy industry. Nevertheless, for the purposes of providing background information, the relevant strategic planning documents are briefly discussed below.

4.1.1 *State Heavy Industry Policy 1998*

The State Heavy Industry Policy (SHIP) outlines a number of policy areas for the planning of future industrial estates. The following are relevant to the OIE:

a) Preference for locations which can address environmental and social factors

b) Preference for site specific buffers incorporated in town planning schemes and preferably owned by the State

c) Preference for 'gateway' locations incorporating a port with connection to multi modal transport opportunities

d) Governance of Strategic Industrial Areas

The objectives pertaining to each policy area have largely been addressed via Amendment No.18 of the Shire of Chapman Valley TPS No. 1 which established:

a) That the land could be developed for heavy industry and meet environmental standards

b) A site specific buffer incorporated in the local Town Planning Scheme

c) A future management framework which will be instrumental in implementing initiatives outlined in the OIE-SP

Preparation of the OIE-SP will serve to integrate the OIE with the port and the proposed ONIC. The Sustainability Report (**Appendix 1**) accompanying the OIE-SP provides an outline of a potential governance structure consistent with the SHIP.

4.1.2 *State Planning Strategy 1998*

The State Planning Strategy provides a strategic guide to land use planning for the regions of the State. Specifically the following actions are relevant to Oakajee:

a) Investigate the area of land needed for the expansion of the Narngulu industrial site, or the development of a new industry and port site at Oakajee, including buffer areas that should not be subdivided

b) Protect Narngulu expansion areas and the OIE until the State Government decides whether they are required for future development

c) Investigate improving transport links between Oakajee and the port of Geraldton

These actions have largely been addressed via Amendment No.18. In relation to c), the OIE-SP seeks to enable enhanced connection to Geraldton Port and the Narngulu Industrial Estate via the proposed ONIC.

4.1.3 *Geraldton Region Plan 1999*

A key feature of the Geraldton Region Plan (GRP) is provision of a strategic heavy industrial estate at Oakajee. The GRP reflected a long line of strategic planning initiatives by successive State Governments dating from the 1970s which have envisaged industrial development at Oakajee.

The GRP and accompanying Structure Plan also identified the following factors or considerations in the planning and development of heavy industry at Oakajee:

a) Need for the estate to be well integrated with an adjoining deep water port

b) Potential integration with the Narngulu Industrial Estate to the south via rail

c) Possible waste water treatment plant in the southern buffer

Preparation of the OIE-SP will facilitate the development of heavy industry as foreshadowed by the GRP. The OIE-SP will also be instrumental in addressing the above factors and others as identified in this report.

4.1.4 *Greater Geraldton Structure Plan 2011*

The Greater Geraldton Structure Plan (GGSP) released in 2011 by the Western Australian Planning Commission is an update to the existing Greater Geraldton Structure Plan (1999), which forms Part 3 of the Geraldton Region Plan (1999) document.

The GGSP focuses on urban areas and areas likely to experience pressure for development within the City of Greater Geraldton and the Shire of Chapman Valley. It will be used to guide amendments and reviews to the the existing local planning strategies and schemes.

The GGSP reflects a number of land uses changes that have occurred since the release of the previous structure plan in 1999. It recognises Oakajee as the primary strategic industry area, noting that LandCorp is currently undertaking structure planning as part of the future development of the Oakajee Industrial Estate.

4.1.5 *State Sustainability Strategy 2003*

The State Sustainability Strategy recommends a significant number of actions, across government, to promote sustainability broadly applicable to the OIE including:

a) Consideration of ‘ecology principles’ in urban and regional planning

b) Carbon sequestration

c) Promotion of renewable energy

d) Waste reduction and recycling

e) Creation of sustainable settlements

f) Promotion of integrated multi-modal freight transport systems which includes rail

g) Promotion of air and water quality

The sustainability and related industrial ecology considerations are important to achieving LandCorp's vision of creating a globally competitive industrial estate. A full discussion on the sustainability aspects of the OIE-SP are provided for in the Sustainability Report and Industrial Ecology Strategy available at **Appendices 1** and **3**.

4.1.6 *Draft State Planning Policy 4.1 – State Industrial Buffer Policy (Amended) 2009*

The requirements of the Draft State Planning Policy 4.1 (SPP 4.1) have largely been met via Amendment No.18 which, among other things, introduced a statutory buffer for the OIE in the Shire of Chapman Valley District Town Planning Scheme No. 1 (TPS 1). Amendment No.18 also introduced a suite of provisions which encourage compatible land use within the Buffer consistent with the objectives of SPP 4.1. The OIE-SP will further clarify and define Buffer use and management by:

a) Clarifying the range and type of uses permitted in the Buffer

b) Promoting 'productive' and compatible land use within the Buffer such as a waste water treatment plant and options for renewable energy

c) Supplementary provisions to guide the development of certain land use categories within the Buffer

Given that it is delineated in TPS 1 and the majority of land is owned by LandCorp, the Buffer framework is considered best practice.

Since the approval of Amendment No. 18, SPP 4.1 was revised to provide an updated definition of sensitive land uses. The definition has been broadened and specifically includes the following uses:

- Residential development
- Hotels, motels, hostels and caravan parks
- Hospitals and nursing homes
- Schools and education establishments
- Childcare facilities
- Indoor sporting venues or constructed playing areas
- Outdoor and bulky goods showrooms
- Shopping centres
- Sporting facilities
- Restaurants
- Tourist facilities
- Cinemas and theatres
- Community and cultural centres
- Churches and places of worship
- Some public buildings

The implications of the revised definition are discussed further in Section 4.3.2.2.

4.2 Local Plans and Strategies

4.2.1 *Moresby Range Management Strategy 2009*

The Moresby Range Management Strategy (MRMS) provides a land use management framework for the Moresby Range north east of Geraldton. The portion of the Buffer east of the North West Coastal Highway (NWCH) is included within the MRMS area. The MRMS includes the following initiatives relevant to the OIE-SP:

a) Potential re-use of the Geraldton-Northampton Railway line as a walk trail

b) Potential areas for conservation of remnant vegetation

c) Identification of declared rare and endangered flora

In response to the above:

a) The accompanying Landscape Report (**Appendix 5**) and Environmental Review Report (**Appendix 2**) identify areas for potential revegetation consistent with the objectives of the MRMS

b) According to the Heritage Impact Statement - Geraldton-Northampton Railway (**Appendix 6**) the reserve within the bounds of the OIE has little or no heritage value

c) Public access to the rail corridor is, in any event, not considered feasible for the following reasons:

   i) It will be severed by multiple infrastructure corridors included in the OIE-SP

   ii) Its use as a formal public walk trail may compromise the potential for the future location of industries with a risk profile in the adjacent Strategic Industry Area

   iii) In relation to ii), the Health Department does not support a walking trail within the Buffer

4.2.2 *Mid-West Infrastructure Analysis 2008*

The Mid-West Infrastructure Analysis (MWIA) is largely concerned with identifying future servicing infrastructure requirements in response to a range of mineral resource proposals mooted for the Mid-West. The MWIA reinforces the importance of a future deepwater port at Oakajee and the connection of the OIE and Port to Narngulu via the proposed ONIC.

As previously explained, integration with the Port and ONIC were key considerations in the development of the OIE-SP.

4.2.3 *Shire of Chapman Valley Coastal Management Strategy 2007*

The Shire of Chapman Valley Coastal Management Strategy makes a number of recommendations for the 'Bombies' and for Buller River situated within the southern margins of the OIE-SP. Recommendations include:

a) Four wheel drive access from Buller River mouth to the 'Bombies'

b) Day use area including car park at the Buller River mouth

c) A camping area on the lower reaches of the Buller River

In relation to access to the 'Bombies', this area is under the control of the Geraldton Port Authority (GPA). Access to this area is indicated in the Landscape Report at **Appendix 5**, but will need to be more fully addressed by the GPA.

Recommendations b) & c) are reflected in the OIE-SP. Further negotiation is required with the Department of Environment and Conservation to determine the nature of occupancy of the camping area. LandCorp will work with the Shire of Chapman Valley to address this matter.

4.2.4 *Northern Geraldton District Structure Plan 2004*

The Northern Geraldton District Structure Plan (NGDSP) does not include Oakajee, but it does reflect Main Roads Western Australia's (MRWA) initiative to relocate NWCH east of Drummonds Cove. This deviation of NWCH falls within the south eastern margins of the OIE Buffer near Buller River and White Peak Road.

The OIE-SP reflects the realignment of NWCH as provided in the NGDSP.

4.3 Environment and Statutory Planning Framework

The OIE is currently zoned to permit the development of a strategic heavy industrial estate as envisaged by the GRP. In addition, the zoning encompasses a significant level of environmental assessment and investigation undertaken since the early 1990's. The environmental and town planning framework for the OIE has largely been determined through the following key documents:

a) Environmental Protection Authority Bulletin 848

b) Amendment No. 18 to TPS 1

The above documents are significant in directing the development potential of the site. Their key elements are summarised as follows.

4.3.1 *Environmental Protection Authority Bulletin 848 – April 1997*

The environmental factors associated with the OIE were assessed by the Environmental Protection Authority (EPA) in 1997 (Bulletin 848), with the EPA recommendations incorporated in Scheme Amendment 18 (Shire of Chapman Valley, 2001) and the Environmental Review (Quilty Environmental, 2000) to facilitate the rezoning of the site for industrial uses.

Implications of the environmental factors are outlined in Section 6 and are explained in greater detail in the Environmental Review Report at **Appendix 2**.

4.3.2 *Amendment No. 18 to Shire of Chapman Valley TPS No. 1*

In June 2004, the Minister for Planning and Infrastructure approved Amendment No. 18 to TPS 1. The amendment placed the OIE within a Special Control Area (SCA). Within the SCA:

a) A portion of the land was rezoned from 'General Farming' and 'Recreation' to 'Industrial Investigation Zone'

b) The balance of the SCA was retained in the 'General Farming Zone' (refer **Figure 3 Zoning Plan**). This area represents the buffer to the Oakajee Industrial Estate

The SCA also includes a suite of specific provisions relating to the OIE:

a) Requirement for structure planning to precede development

b) Environmental requirements including monitoring

c) Requirement to prepare heritage and landscape management plans

d) Development assessment procedures

e) Provision for an Estate Manager

4.3.2.1 Industrial Investigation Zone

The Industrial Investigation Zone provides for three sub areas detailed as follows:

Area A: General Industry

Area A will provide opportunities for the development of ancillary industries, supporting those industries located in Area C. There are two 'Area A' precincts located on the periphery of the Strategic Industry Area, with one located on the eastern side of Area C and the other on the southern side of Area C. Both areas will be well served by key road transport routes. The following land use classes may be approved:

- Radio and TV Installation
- Warehouse
- Service Station
- Temporary and Permanent Storage
- Convenience Store
- Industry – Light
- Power Generation
- Motor Vehicle Repair Station
- Builders Storage Yard
- Public Utility
- Industry – General
- Fuel Depot
- Factory Showrooms
- Office

Area B: Coastal

Area B, given its proximity to the planned port, will provide opportunities for marine service land uses that assist in the operation of the port. Area B will largely facilitate the development of the terrestrial aspects of the port including rail, road, stockpiling and service corridors. Area B will provide limited recreational opportunities due to its proximity to an operational port and the SIA. The following uses may be approved:

- Public Recreation
- Harbour Installations
- Public Utility
- Marine Filling Station
- Fuel Depot
- Marine Collectors Yard
- Marina

Area C: Strategic Industry

Within Area C, the potential exists to develop heavy industry of strategic significance. There is a strong likelihood that the types of heavy industry attracted to Area C will be reliant on port access. These future industries will benefit from the planned port, road and rail infrastructure and will present opportunities for support industries located within Area A of the OIE. The following uses may be approved:

- Industry – Noxious
- Industry – Hazardous
- Fuel Depot
- Industry – Extractive
- Industry – Resource Processing
- Power Generation
- Public Utility

4.3.2.2 Buffer

The Buffer is referred to as the 'Oakajee Industrial Buffer' in TPS 1 and represents the area of the SCA zoned 'General Farming'. Guided by Bulletin 848, the Buffer area was determined on the basis of site specific modelling, factoring noise, dust, gaseous emissions and public risk. As explained in Section 6.0, the modelling was recently reviewed by LandCorp which confirmed the adequacy of the Buffer.

Whilst the underlying land is zoned 'General Farming', the exception provision contained in the SCA (clause 2.7.3.3 [c]) prevents the development of incompatible residential uses which otherwise could be considered within the 'General Farming' zone. Accordingly the Scheme only allows the following uses to be considered:

- Abattoir
- Cattery
- Civic Use
- Club Premises
- Dog Kennels
- Drive – In Theatre
- Education Establishment
- Forestry
- Health Studio
- Horse Stables
- Industry – Cottage
- Industry – Extractive
- Industry – Rural
- Intensive Agriculture
- Medical Centre
- Nursery, an premises for the sale of Domestic Garden Plants
- Open Air Display
- Piggery
- Places of natural beauty with managed public access
- Power Generation
- Poultry Farm
- Produce Store
- Public Utility
- Public Worship, Place of
- Stockyards
- Storage
- Radio & TV Studio Installation
- Railway station, sidings and marshalling yards
- Roadhouse
- Rural Pursuit
- Temporary storage of engineering equipment, including earthmoving equipment
- Transport Depot
- Veterinary hospital and consulting rooms
- Water supply, Sewerage and Drainage Headworks

Nevertheless, as explained in 4.1.6, the definition of sensitive use has been reviewed in a way which expands the range of uses considered incompatible with industry. There is an opportunity to review the permissibility of the above uses in light of SPP 4.1. On this basis it is recommended that the following uses are not to be permitted within the Buffer:

- Cattery
- Civic Use
- Club Premises
- Dog Kennels
- Drive – In Theatre
- Education Establishment
- Health Studio
- Horse Stables
- Industry – Cottage
- Medical Centre
- Nursery, and premises for the sale of Domestic Garden Plants
- Open Air Display
- Produce Store
- Public Worship, Place of
- Roadhouse
- Rural Pursuit
- Veterinary hospital and consulting rooms

In addition, it is no longer considered best practice to allow for food production uses within heavy industry buffers. Accordingly the following is recommended:

a) 'Intensive Agriculture' should be limited specifically to non-food production

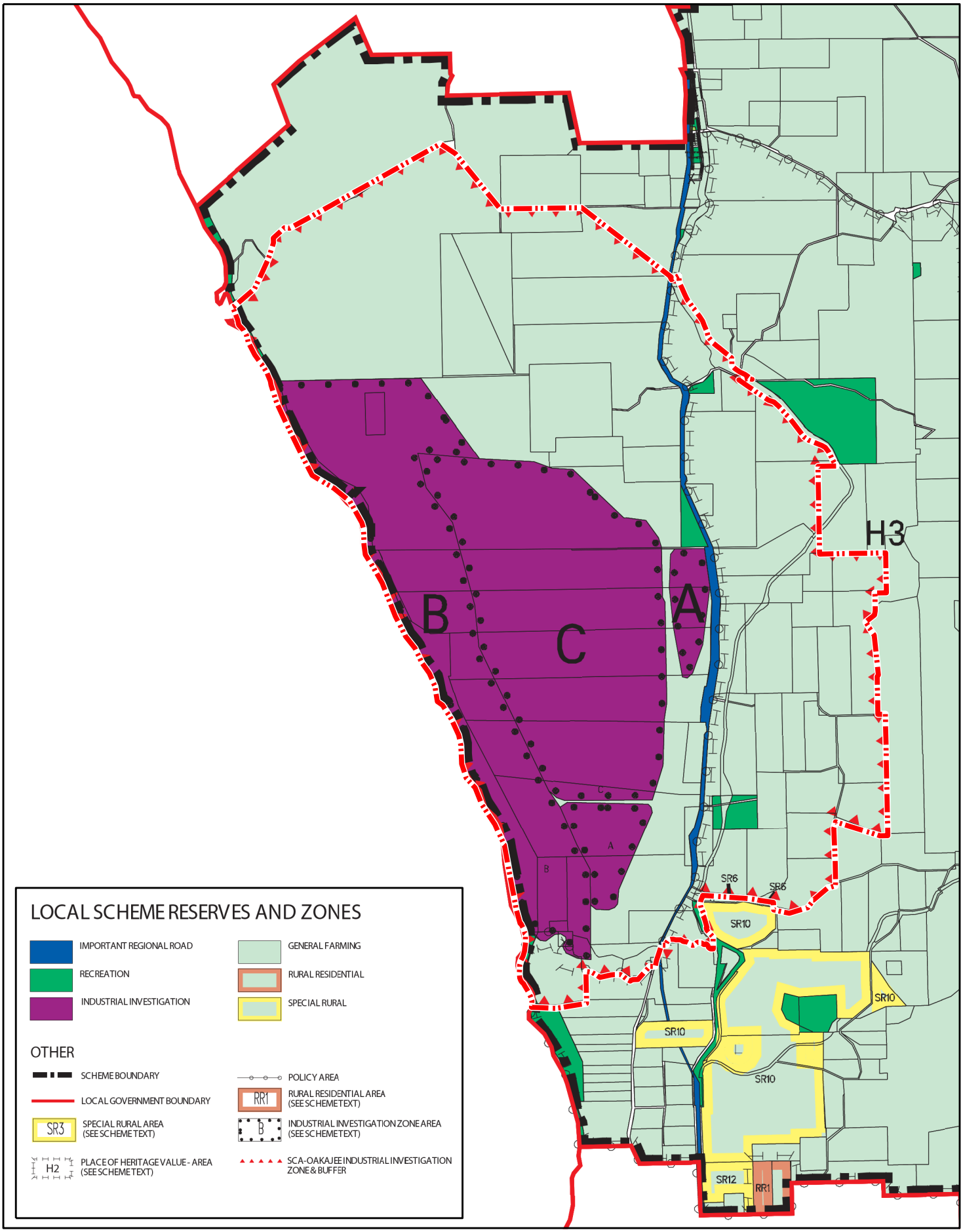
b) 'Abattoir', 'Poultry Farm' & 'Piggery' should not be permitted for health reasons

Furthermore, consideration needs to be given to uses that generate emissions which may compromise the Buffer. Use classes such as: 'Public Utility', 'Stockyards', some forms of 'Storage', 'Industry – Extractive' & 'Water Supply, Sewerage and Drainage Headworks' should only be permitted subject to their emission profiles not compromising the integrity of the Buffer and, therefore the ability for the Strategic Industry Area to reach full capacity.

Section 11.6.1 of the report outlines the provisions proposed for inclusion in the OIE-SP.

4.3.3 *Shire of Chapman Valley Local Planning Scheme No. 2*

At the time of preparing the OIE-SP, the Shire was in the process of preparing a new Scheme. The new Scheme incorporates the same or similar provisions contained in TPS 1 introduced via Amendment No.18.



LEGEND

Subject Site

NORTH

0 1 2 3 4km

N.T.S@A4

Source: W.A.P.C.

3570-5-004b.dgn 21 January 2011

Checked : NT

FIGURE 3

ZONING MAP

Shire of Chapman Valley Town Planning Scheme No. 1

RPS

5.0 SUSTAINABILITY

5.1 Overview

LandCorp commissioned Parsons Brinckerhoff (PB) to prepare a Sustainability Report (**Appendix 1**) with recommendations to support the development of the OIE-SP. The Sustainability Report was prepared in partnership with Ferart Design, with strategic advice from the Curtin University Sustainability Policy (CUSP) Institute.

The Sustainability Report has also influenced other disciplines involved in the development of the OIE-SP. In this context, the Sustainability Report has set the sustainability framework for the OIE-SP, whilst recognising that the future estate development phase will play an important role in the implementation of a much broader sustainability agenda.

The Sustainability Report develops the following key themes:

a) Industrial ecology
b) Renewable energy and carbon management
c) Community
d) Environment
e) Regional development

5.2 Summary

The Report has identified the following initiatives which relate directly and indirectly to the OIE-SP:

a) *Creating a strategy for Industrial Ecology* – this has been progressed as a separate technical report for the OIE-SP and is discussed in Section 7

b) *Developing an industry attraction strategy* – this is an opportunity to develop a marketing strategy which promotes the features and benefits of the OIE, Geraldton and the greater Mid-West Region

c) *Actively managing the estate's carbon profile* – this is primarily driven by industry and involves measures to support improved carbon efficiency, renewable energy and carbon sequestration opportunities

d) *Facilitating the generation and storage of onsite renewable energy sources* – this includes wind, wave, solar and seawater pumped storage hydro-electric schemes

e) *Protecting, managing and incorporating heritage values* – this has been progressed through European Heritage Reports and an Aboriginal Heritage Management Plan (**Appendices 6** and **7**)

f) *Protecting, enhancing and incorporating natural values* – this has been progressed through the Landscape Report and the Environmental Review Report (**Appendices 5** and **2**), which include measures to conserve natural assets and provides an environmental management framework for the estate manager and future proponent

g) *Stimulating regional economic development opportunities* – this will be achieved through the implementation of the Mid West Investment Plan being developed by the Mid West Development Commission. There is an opportunity for this work to be informed by the Industry Ecology Strategy to further enhance industry attraction

These sustainability initiatives, together with other sustainability opportunities progressed during the development of the industrial estate, provide the basis to establish a highly efficient and competitive industrial development which emphasises flexibility, innovation and adaption to future challenges facing the Mid West Region.

5.3 Implications for the Oakajee Industrial Estate Structure Plan

The following sustainability factors have been considered in the development of the OIE-SP:

a) Design guided by industrial ecology principles as outlined in Section 7

b) Identification of potential renewable energy sites for wave, pumped seawater storage hydroelectricity and wind power, which will be subject to detailed feasibility analysis by future proponents

c) Integrated multi-nodal transport system which includes rail connection to the deep water port and other important destinations in the region and interstate;

d) Potential for carbon sequestration opportunities in Buffer area

e) Identification of areas with the potential for revegetation

f) Identification of some areas of remnant vegetation suitable for conservation including for the purposes of environmental offsets

g) Facilitation of heavy industry in proximity to Geraldton further promoting it as a sustainable city

h) Inclusion of a District Water Management Strategy (DWMS) which, among other things, seeks to promote water quality (including groundwater protection)

5.4 Implications for Governance

As explained in the Sustainability Report the delivery of broad sustainability outcomes and benefits to the community extends beyond the OIE-SP and relies on the actions of key stakeholders. The Sustainability Report makes the following recommendations:

a) The Estate Manager and the Department of State Development to develop Terms of Reference for the governance bodies with a focus on sustainability and innovation

b) Develop an Industry Attraction Strategy for attracting a diversity of industry types to contribute to industrial ecology synergies and competitive advantage. The strategy would draw upon existing guidelines, policies, structures, approvals reform initiatives, industrial ecology and best practice sustainability innovation strategies to realise competitive advantages

The application of sustainability principles and environmental performance requirements will be implemented on a project specific basis. That is, the opportunity for sustainability initiatives will be identified, assessed and applied as performance requirements as appropriate to the industry activity at hand.

6.0 ENVIRONMENT

6.1 Overview

LandCorp engaged PB to prepare an Environmental Review Report (ERR) to support the development of the OIE-SP (**Appendix 2**). The ERR addresses the following:

a) Reviews the relevant environmental factors previously identified by the EPA in Bulletin 848
b) Outlines opportunities and constraints associated with each relevant environmental factor
c) Identifies management measures to mitigate potential environmental impacts

The environmental factors associated with the OIE (as prescribed by Bulletin 848) include:

a) Flora and vegetation
b) Fauna
c) Surface water
d) Groundwater
e) Liquid and solid waste
f) Gaseous emissions
g) Dust and particulate emissions
h) Noise emissions
i) Public health and safety
j) Heritage
k) Visual impact

The EPA made a number of recommendations in Bulletin 848 for the management of the estate and for future studies required to address environmental factors. The further studies identified are the responsibility of the Estate Manager (LandCorp) or future proponents of the industrial estate as outlined in the following table.

Estate Manager	Future Proponents
• Spring surveys for Rare and Priority Flora prior to removal of any remnant vegetation • Baseline and ongoing groundwater monitoring • Liquid waste management strategy • Air quality and cumulative monitoring, including impacts on vegetation • Baseline dust levels and cumulative dust monitoring • Additional noise modelling and monitoring of cumulative noise • Ongoing determination of cumulative risk • Develop and implement strategies for site screening	• Spring surveys for Rare and Priority Flora prior to removal of any remnant vegetation • Demonstrate that industry with potential to pollute will not have significant impact on surface water • Appropriate management and monitoring of surface water • Individual groundwater monitoring and mitigation procedures • Resolution of solid and liquid wastes • Air emissions and greenhouse gas monitoring • Monitor fugitive dust and stack emissions • Assess noise from proposed railway and other transport infrastructure • Risk and hazard (including societal risk analysis) for each industry • Detailed ethnographical survey of development sites • Smoke plume view shed analysis by individual industries

It is important to recognise that LandCorp, as Estate Manager, and others associated with development proposals at Oakajee have since implemented the majority of the EPA recommendations as follows:

a) Spring vegetation survey, subsequently reinforced by more recent vegetation surveys by Ecologia for OPR and by Ecoscape for the Geraldton Regional Flora and Vegetation Survey (GRFVS)

b) Groundwater, surface water and rainfall monitoring

c) Marine water and sediment quality monitoring

d) Vegetation condition surveys

e) Revisiting air emissions, risk and noise modelling

f) Noise and dust monitoring

g) Developing and commencing implementation of strategies for site landscaping, revegetation and screening (refer Section 9)

The key environmental factors potentially or directly impacted by the land use activities proposed in the OIE-SP include the loss of remnant vegetation and related fauna habitat, surface water and ground water quality and quantity (including impact of possible treated wastewater irrigation/infiltration), dust and noise. These impacts will be adequately managed through a range of environmental management measures that are typically applied to industrial developments through the approvals and licensing process.

6.2 Summary of Findings

6.2.1 *Flora and Vegetation*

For the purpose of the OIE-SP, the GRFVS has been the primary reference point for establishing the likely value of flora and vegetation within the OIE.

The GRFVS has identified some remnant vegetation associations which may have regional conservation significance within the OIE. Should portions of these areas need to be cleared, there are substantial opportunities for revegetation offsets elsewhere in the OIE. Opportunities include the revegetation of the Oakajee and Buller River corridors and the foothills of the Moresby Range. Revegetation opportunities are identified in the Landscape Report (**Appendix 5**) accompanying the OIE-SP. Clearing for development within the Strategic Industry Area and General Industry Areas will be relatively minor, with the ERR noting as follows:

> *The Strategic Industry Area and the General Industry Areas are substantially clear of vegetation and fauna habitat, allowing distribution of industry across greater than 90% without impact on remnant vegetation.*

The key environmental management measures relevant to flora and vegetation include:

- Prepare vegetation clearing permit applications
- Protect vegetation with conservation significance in the buffer
- Prepare biodiversity offsets strategy
- Minimise vegetation clearing and disturbance of priority listed flora species
- Develop and implement dieback hygiene control measures
- Establish vegetation corridors linking coastal area to Moresby Ranges
- Actively manage buffer to ensure conservation measures are implemented

Further detail regarding these measures is outlined in section 2.1.3 of Appendix 2.

6.2.2 *Fauna*

The ERR has identified 5 migratory bird species of conservation significance which may occur in remnant vegetation associated with the SIA. These species will require consideration should future proposals include clearing of vegetation. It is, however, reiterated that that there are substantial opportunities for offsets within the OIE, especially within the Buffer (as identified in the Landscape Report) which can provide habitat for these species.

During the preparation of the OIE-SP, it was also established that stygofauna exist in the subterranean environment of the OIE. In terms of environmental protection it will be important to maintain groundwater quality including recharge volumes and levels. This matter is addressed in the DWMS accompanying the OIE-SP. The Federal Department of Environment, Water, Heritage and Arts (DEWHA) have been notified as part of the OPR Public Environmental Review referral process.

The key environmental management measures relevant to fauna include:

- Protect vegetation with conservation significance in the buffer
- Establish vegetation corridors linking coastal area to Moresby Ranges

- Actively manage buffer to ensure conservation measures are implemented
- Maintain groundwater recharge and quality to protect stygofauna habitat

Further detail regarding these measure is outlined in section 2.2.3 of Appendix 2 and complement those management measures for flora and vegetation in section 2.1.3 of Appendix 2.

6.2.3 *Surface Water*

The Strategic Industry Area and General Industry Areas are located on deep sandy soils that drain internally with minimal prospect of escape of surface discharges to local streams.

6.2.4 *Groundwater*

The depth to groundwater ranges from 10 to 60 metres, affording significant separation between the groundwater and future industrial uses, with negligible quantities available for extraction.

Hydrogeological studies of the site have also confirmed the presence of a granite aquaclude in the north western sector of the OIE. This feature restricts the groundwater discharge front and thereby facilitates monitoring of groundwater quality before any discharge to the marine environment.

6.2.5 *Liquid and solid waste*

In the short term, the management of solid and liquid wastes will be through existing or proposed licensed facilities associated with landfills (solid waste, septage) and wastewater treatment plants (sewage, suitable quality industrial process water).

Opportunities to recycle and re-use solid waste from industrial processes have been considered in the Industrial Ecology Strategy (**Appendix 3**), for example:

- By-Product Management – creating a framework in which by-products can be used as inputs to other industrial processes
- Industrialised Solid Waste Re-processing – a dedicated facility to re-process selected solid wastes from the region/state into useable materials
- Solid By-Product Storage Areas – identifying areas within the Buffer where industries can store by-products in anticipation of future reuse.

6.2.6 *Gaseous emissions*

The location of the OIE is characterised by good meteorological conditions for dispersion of gaseous emissions.

Recent modelling conducted by Air Assessments has confirmed previous predictions of the adequacy of the Buffer to contain the impacts of gaseous emissions.

6.2.7 *Dust and particulate emissions*

Atmospheric conditions likewise favour dispersion of dust and particulate emissions. Modelling has demonstrated that the Buffer is adequate to contain likely dust and particulate emissions, with a recent review of earlier modelling confirming this.

Iron ore stockpiles proposed in the future Port Area adjacent to the SIA may nonetheless result in elevated dust levels within the north western corner of the SIA. This will be a key compliance issue for the managers of the stockpiles, requiring post construction review and monitoring of conditions.

6.2.8 *Noise emissions*

Modelling conducted by Herring Storer demonstrates the Buffer is adequate to contain noise predicted to be generated within the OIE.

6.2.9 *Public Health and Safety*

Modelling undertaken by Environmental Risk Solutions indicates the Buffer is adequate to contain risk impacts of a variety of candidate industries, with no evident need to preferentially locate high, medium or low risk industries within particular sectors of the SIA.

6.2.10 *Coastal Environment*

Coastal erosion is an environmental factor that is the management responsibility of the Geraldton Port Authority.

6.3 Implications for the Oakajee Industrial Estate Structure Plan

The following findings from the ERR are relevant to the OIE-SP:

a) Confirmation of the adequacy of the Buffer to contain predicted emissions from future industry based on particular development scenarios

b) Confirmation that the General and Strategic Industry Areas are largely unconstrained by environmental factors

c) Identification of vegetation offset opportunities and definition of these within the Landscape Report

d) Reiteration of the requirement for future industry within the SIA to obtain environmental approvals

e) A management framework which will assist future proponents and the Estate Manager to meet the requirements of Bulletin 848 as reflected in Amendment No.18 to the Shire of Chapman Valley TPS No 1

The requirement and timing for preparation of the biodiversity conservation and offsets strategy is identified as a future opportunity. Biodiversity conservation and offset strategies, prepared in association with individual development proposals, can be

expected to address issues relating to identification and conservation of Carnaby's black cockatoo habitat.

The biodiversity framework and management measures for Area B – Coastal Zone will be implemented through the Coastal Management Strategy (Koltasz Smith 2007), OPR Terrestrial Port PER conditions (and associated management plans) and the Oakajee Port Master Plan.

7.0 INDUSTRIAL ECOLOGY

7.1 Overview

As explained in section 1.4.1, best practice industrial estate planning and development requires consideration of the principles of industrial ecology. Industrial ecology is described by Ferart Design as follows:

> *Industrial ecology is a way of designing and operating industrial activity where industries are linked to mimic ecological systems. By linking industries, energy and water use, and carbon emissions are minimised. By-products from one industry become the inputs for another thereby increasing efficiency and reducing waste.*

Ferart Design, Parsons Brinckerhoff and Curtin University have prepared an Industrial Ecology Strategy to support the development of the OIE-SP (**Appendix 3**). The Industrial Ecology report has developed the following key principles which have influenced the development of the OIE-SP:

a) Integration into the site

b) Diversity of Industry

c) Design for overall efficiency

d) Interfaces between industries

e) Implementation

7.2 Key Principles

7.2.1 *Site Integration*

Industrial Ecology encourages the location of industry in sympathy with the natural environment, including landform, landscape and associated eco-systems.

Landform has had some influence on the location and disposition of components of the OIE, with the Strategic Industry Area occupying a relatively flat plateau. Landform will also have some bearing on the location of transport and infrastructure corridors, as explained in the various technical reports accompanying the OIE-SP.

The Environmental Review Report and Landscape Report also identify areas for revegetation and possible conservation.

7.2.2 *Diversity of Industry*

In order to maximise opportunities for synergies, it is important to understand the likely mix of users within the OIE. The report has devised a list of industries likely to locate in the OIE with the majority related directly or indirectly to resource processing. The list provides an understanding of the likely synergies between industries and clustering scenarios. The report has identified the following themes in terms of identifying suitable uses for industry clusters:

a) Risk

b) Transport

c) Energy / Water

d) Land use

An appraisal was conducted of the likely land area, transport, water, energy and labour requirements of the potential industries identified. This information has been useful to ensure key elements of the OIE-SP such as transport networks, infrastructure corridors, servicing requirements and land areas are sufficient to meet the requirements of future industry.

Consideration of the above themes can guide the Estate Manager in allocating land to future proponents. Based on the above themes a possible clustering plan has been developed for illustrative purposes only (refer **Figure 4 Indicative Industrial Ecology Plan**).

7.2.3 *Design for overall efficiency*

This principle requires industries to be located to optimise shared use of by-products, energy, water and transport and, related to this, minimise materials, energy and water requirements.

Efficiency can be enhanced by the following common user elements:

a) *Water Processing*: Facility to process multiple water sources, including treatment of wastewater. This could be a technologically advanced waste water treatment unit or other facility

b) *Power Supply*: Power supply station with the capacity to treat and transfer energy by-products between industries including gases

c) *Renewable Energy*: Power requirements can be supplemented by renewable energy

d) *Solid Waste Reprocessing*: Processing of waste nearby so as to maximise re-use

e) *By-product Storage*: Storage of waste to allow future re-use

Section 11.3 and 11.4 outlines how the above elements have been addressed within the OIE-SP.

7.2.4 *Interfaces between industries*

In order to provide opportunities for synergies, it is important that the OIE is supported by ample service corridors that enable easy transfer of materials, liquids and energy between industries.

In terms of the OIE-SP the Industrial Ecology Strategy, therefore, reinforces the need for service and infrastructure corridors which are:

a) Of sufficient width to accommodate transport arteries, conveyors, services and infrastructure including piping to convey gas, slurry, and recycled water

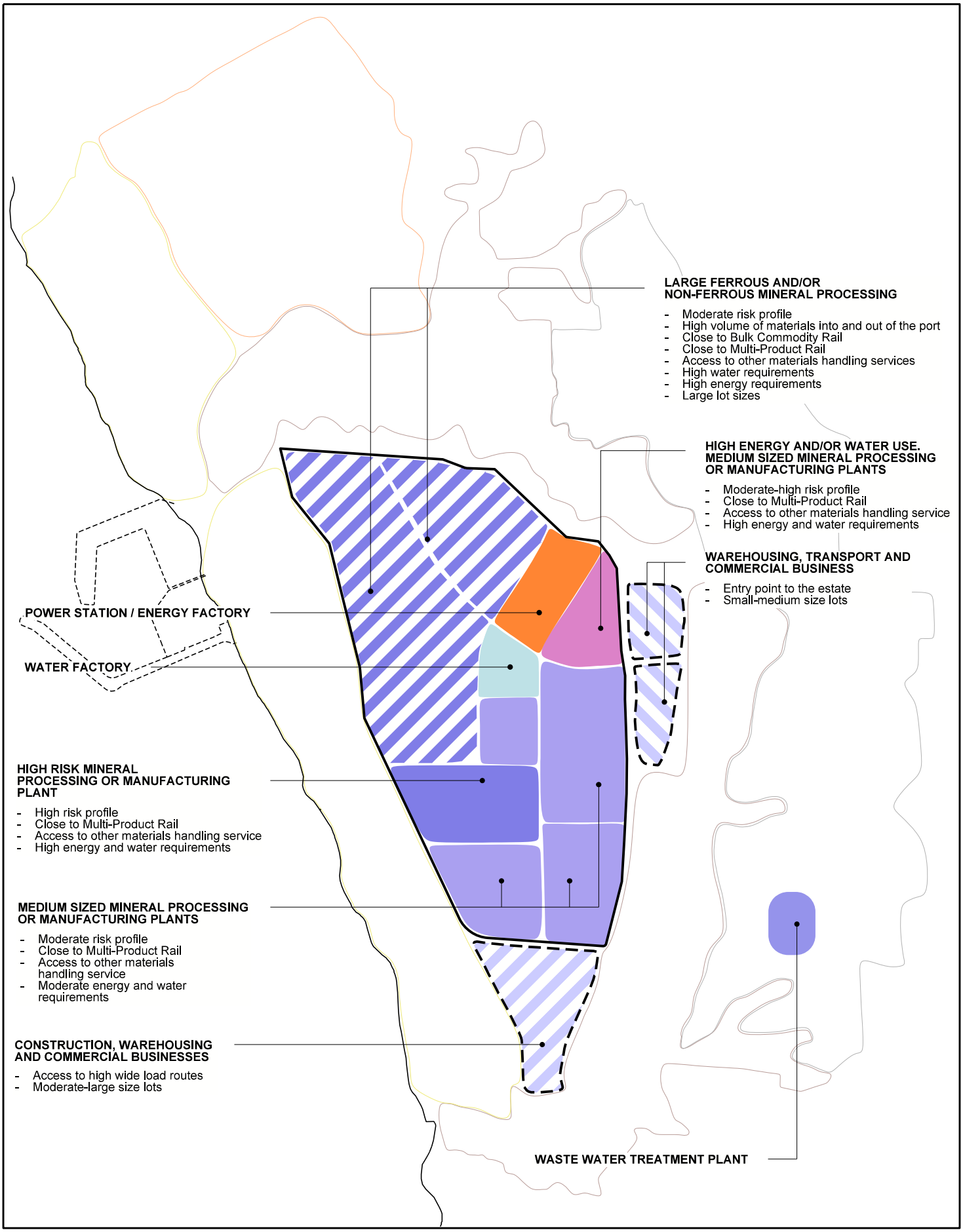
b) Appropriately located so as to provide optimum access to future users

c) Allow connection to key infrastructure elements

d) Where practical enable multiple points of ingress and egress to development sites

7.2.5 *Implementation*

The suggested implementation of the identified principles is addressed in Section 4 of the Industrial Ecology Strategy (**Appendix 3**).



LEGEND

Strategic Industry Area

General Industry Area

NORTH

0 1 2 3km

1:50,000@A4 3570-5-009a.dgn 16 March 2012

Source: Landgate Slip Enabler Dated: June 2005 Checked : NT

FIGURE 4

INDICATIVE INDUSTRIAL ECOLOGY PLAN

Oakajee Industrial Estate, OAKAJEE

RPS

8.0 TRANSPORT

8.1 Overview

GHD were engaged by LandCorp to prepare an Integrated Transport Strategy ('the Strategy') to support the development of the OIE–SP (**Appendix 4**). Specifically the Strategy provides:

a) An outline of existing transport infrastructure

b) An assessment of the likely transport requirements for future industry

c) An outline of proposed transport and infrastructure initiatives including the Oakajee Port, Oakajee Port and Rail and the Oakajee Narngulu Infrastructure Corridor (ONIC)

d) A transport framework which incorporates the following:

   i) Integration between the OIE, Oakajee Port and the ONIC

   ii) Identification of key, service, infrastructure, road & rail corridors

   iii) Staging of transport provision.

In order to understand the likely transport requirements of the OIE, GHD have had regard to similar estates such as the Kwinana Industrial Area, trade forecast projections, and projected traffic volumes. Importantly, the assessment of transport requirements, forming part of the Industrial Ecology Strategy (**Appendix 3**), has also informed the development of the Strategy.

The Strategy is based on extensive work undertaken by LandCorp (OIE-SP), the Geraldton Port Authority (GPA) and OPR.

8.2 Existing Transport Infrastructure

8.2.1 *North West Coastal Highway*

The NWCH provides the only viable access to the OIE. In relation to the OIE, the Strategy has identified a number of issues:

a) Industrial development in the Pilbara is placing pressure on the heavy haulage road network in particular the section of NWCH immediately north and south of Geraldton

b) Development of the OIE will increase the number of Restricted Access Vehicles (RAV) movements on NWCH

c) There is a limited number of potential access points from NWCH into the OIE

d) Should development proceed, heaviest traffic demand is projected to be commuter traffic and service vehicles between the OIE and Geraldton via NWCH. The mixing (conflict) of their vehicles and heavy freight vehicles should be minimised to optimise safety, efficiency and reliability on the road network

e) The portion of NWCH fronting the industrial estate will need to be upgraded to accommodate a future dual lane highway

In order to provide effective access to the OIE, the NWCH will need to be progressively upgraded in response to development and other initiatives including the ONIC.

8.2.2 *Rail*

There is no existing rail infrastructure in the immediate vicinity of the OIE.

Nevertheless, there is a significant opportunity to link the OIE to the broader rail network via Narngulu. Together with a Port at Oakajee, peak industry bodies in the Mid-West identify rail access to the OIE as critical to achieving sustainable development in the Mid-West.

8.3 Proposed Transport & Infrastructure Initiatives

The OIE-SP is a catalyst to integrate a number of projects related to the OIE. Accordingly the Strategy has had regard to the following.

8.3.1 *Oakajee Narngulu Infrastructure Corridor*

The ONIC has been outlined in the Geraldton Region Plan since 1999, and in 2009 the Department of Planning (DoP) commenced a review and more detailed planning for the ONIC. It is proposed that the ONIC will be approximately 34km long, generally 250m wide and will accommodate a road, rail line and services corridor linking the Oakajee Port and Industrial Estate to the Narngulu Industrial Estate and Geraldton Port.

The road portion of the ONIC will ultimately be a four lane, controlled access, rural highway which will allow heavy freight vehicles to by-pass the built up areas of Geraldton. This portion of the ONIC is being planned in collaboration with Main Roads WA and will include consideration of first stage bypass road. The first stage bypass road being planned and considered by Main Roads WA will utilise the proposed ONIC alignment from North West Coastal Highway through to Chapman Valley Road and then utilise the existing Moonyoonooka - Yuna Road (Morrell Road and Moonyoonooka - Narra Tarra Road) through to the Geraldton-Mt Magnet Road. The by-pass road is a high priority for the OIE as access to a land-backed Panamax berth is not likely to be initially available at the Oakajee Port and will be required by a pioneer industry.

The rail portion of the ONIC will be a dual gauge rail line that will service the Oakajee Port and Industrial Estate and join Brookfield's existing narrow gauge rail line to the east of the Narngulu Industrial Estate.

The services portion of the ONIC is being designed to allow space for future service and utilities requirements such as water, slurry pipelines, and telecommunications.

The northern portion of the corridor passes through the Wokathera Gap in the Moresby Range where it splits into a number of segments just west of the Gap. One corridor will accommodate the regional road and services, and the other will accommodate the rail lines. The OPR heavy duty standard gauge rail line will also pass through the Wokathera Gap parallel to the alignment of the ONIC before proceeding north and linking into the port on the western boundary of the SIA.

The alignment of the ONIC as depicted in this structure plan is indicative only and is subject to further studies and consideration by the State Government prior to progressing development of the ONIC beyond the planning phase.

8.3.2 *Oakajee Port & Rail*

OPR propose to construct a dedicated heavy rail line to transport iron ore from deposits situated 570 kilometres north-east of Geraldton to Oakajee. The proposal also involves:

a) A new port at Oakajee including: southern breakwater, loading wharf, channel and basin suitable for 'Cape' size vessels;

b) Stockpiles (45Mt);

c) Conveyor system;

d) Various service and maintenance roads;

e) Construction of an access road to a temporary workers camp and rail infrastructure;

f) Realignments to NWCH north of the SIA to enable suitable grade separation for road over rail.

The proposed rail alignment skirts the northern and western perimeter of the SIA. The alignment has the effect of severing the SIA from the adjoining port and coastal area representing a significant constraint to achieving integration. A key requirement of the Strategy is to resolve the development of a structure (underpass or overpass) to allow the Central Access Road to connect the SIA with the Port.

8.3.3 *Oakajee Port Master Plan*

Strategically the OPMP identifies 3 main access corridors for the Oakajee Port and the OIE – namely a southern access (providing access to the estate and port), a central access (providing the main heavy traffic access to the estate and port) and a northern access providing for future direct access to the port.

8.3.4 *Realignment and Classification of North West Coastal Highway*

The Geraldton by-pass road will facilitate a change from the NWCH being the primary freight route to an important commuter and commercial traffic route, however still retaining its function as a primary regional road. The realignment presents enhanced intersection opportunities for the proposed southern access road servicing the Port and OIE.

It is also proposed to upgrade NWCH to a dual lane highway.

8.4 Traffic Generation

Understanding of traffic generation arising from the OIE was determined by consideration of the following:

a) Oakajee Industrial Estate Traffic Study

b) Forecast traffic generation

c) Traffic volume distribution analysis

8.5 Implications for Oakajee Industrial Estate Structure Plan

The Integrated Transport Strategy (**Appendix 4**) considered a number of alternative road and rail options in developing the Structure Plan and a summary of the key findings are as follows:

Roads

a) It is considered absolutely essential that the SIA and Port are provided with a minimum of two main access / egress points. These include a central access road and either a southern or northern access road

b) In terms of optimum integration and maximum functionality, the central access corridor is considered the most critical link for connectivity and linkage between the Port, the SIA, North West Coastal Highway (NWCH) and the Oakajee Narngulu Infrastructure Corridor (ONIC)

c) The central access corridor will need to cater for heavy freight vehicles and will need to provide sufficient clearance (minimum 10m x 10m) for High Wide Loads when crossing the rail lines separating the Port and SIA. The preferred maximum grade on this road should be 3% and should not exceed 5%

d) A preferred location for the intersection between the central access road and the NWCH has been identified. This intersection will be at grade initially until an increase in traffic warrants a grade separated interchange. The central access road will be required when industry locates within the SIA

e) The mixing (conflict) of heavy freight vehicles and other traffic should be minimised to optimise safety, efficiency and reliability on the road network. The central access road as the primary freight route in combination with the southern access road as the primary route for light vehicles and commercial traffic could achieve this

f) Construction of the Geraldton Bypass and the consequent increase in heavy freight vehicles will possibly trigger the construction of the southern access road. This road could be extended to provide a southern access to the Port

g) The Geraldton Bypass will link the OIE and Narngulu Industrial Estate through the ONIC. This bypass road will be required to ensure that industries locating in the SIA have access to a land-backed Panamax berth at the Geraldton Port if a suitable berth is initially unavailable at Oakajee Port

h) It is possible that the Geraldton Bypass could initially consist of a link from the NWCH through to Chapman Valley Road and then utilise the existing Moonyoonooka - Yuna Road (Morrell Road and Moonyoonooka - Narra Tarra Road) through to the Geraldton-Mt Magnet Road. The long term Geraltedon Bypass would be within the ONIC

i) A grade separated interchange will be required for linking the re-aligned NWCH to the Geraldton Bypass

j) OPR have proposed to construct a northern access road to the Port. It is unlikely that this road will provide access to the SIA

k) In the initial stages of the development all intersections and crossings are likely to be at grade. As traffic volumes increase, critical intersections will be upgraded to grade separated interchange

Rail

a) The SIA will require a multi-product railway line to service the needs of industry. This line is intended to run parallel to the iron ore lines and follow the perimeter of the SIA

b) The Oakajee Port will require a multi-product rail link to support the development of the berths on the future northern breakwater. It is important to make provision for a direct rail link between the SIA and the port and any future expansion to the north

c) The locations for a rail marshalling and maintenance / provisioning yards for multi user rail purposes for the estate and port requires further consideration. Based on an initial high level review, a preferred location for this yard is the OIE buffer to the east of the NWCH

d) When rail lines are introduced the main transport crossings will consist of a combination of level crossings and grade separation as required by the traffic volumes and safety and operational requirements. The intersections with main access and distributor roads will be grade separated

Infrastructure Corridors

a) Wherever feasible and practical the road, rail and services infrastructure will be co-located in shared infrastructure corridors

b) A service corridor will follow the Geraldton Bypass from the Wokathera Gap. This corridor will enter the SIA at the central access road

c) A service corridor, including provision for conveyors, is required between the SIA and the Port

d) Service corridors will be provided in SIA and GIAs either side of major roads

9.0 LANDSCAPE

9.1 Overview

Hassell were engaged by LandCorp to prepare a Landscape Report to support the development of the OIE–SP (**Appendix 5**). The major objectives of the Landscape Report included:

a) Minimising the impact of the OIE on the rural amenity of the neighbourhood

b) Ameliorating through landscaping and revegetation such impacts as may occur

c) Providing within the OIE a visual ambience that is pleasing to visitors and that encourages pride amongst occupants in their working environment and in the presentation of their work sites

d) Planting vegetation that is suited to site conditions and is native to the local area

e) Creating a landscape design that has a distinct and memorable character and identity

The Landscape Report had two key purposes. Firstly, to conduct an appraisal of the potential visual impact of development at Oakajee and secondly, to provide a Landscape Management Plan to guide future development within the OIE.

9.2 Visual Impact Assessment

The focus of the Visual Impact Assessment was to establish likely changes to the landscape and visual character of the Oakajee area and to assist development of a strategy to manage visual impacts of the proposed industrial development.

Five key view sheds were identified for assessment:

a) Drummond Cove residential precinct approximately 3.5km south of the Southern GIA
b) Park Falls residential precinct approximately 2.0km south-east of the Southern GIA
c) North West Coastal Highway directly east of the SIA
d) North West Coastal Highway about 3.0km north of the SIA and within close proximity to the proposed quarry
e) Nanson-Howatharra Road providing an open elevated view about 5.5km north-east of the SIA

A computer model was prepared incorporating existing site topography and hypothetical industrial buildings to 30m in height with chimneys from 60 to 100 metres tall. These were located within the SIA and both GIA's.

Computer photomontage images of the proposed industrial area were produced to help assess development in the existing landscape context. These images provide a useful tool to help evaluate the development and its visual impact.

Plate 1: Photomontage – North West Coastal Highway (east of SIA)

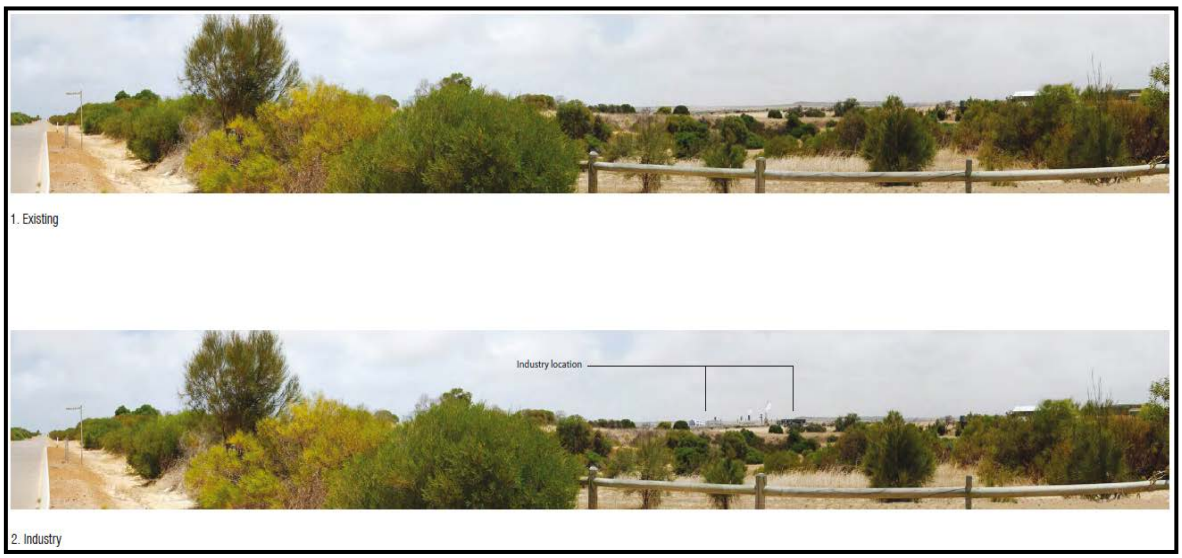


Plate 2: Photomontage – Park Falls Residential Development

Findings of the visual impact assessment included the following:

a) Drummond Cove Residential precinct – impact on existing views should be minor, with the development area removed 3.5km to the north and partially screened by terrain and by existing vegetation on and above the coastal escarpment

b) Park Falls Residential precinct – industrial structures will be evident in the background from the elevated viewing area of Park Falls, ameliorated somewhat by perimeter vegetation in the south and east. The visual impact will be modest, allowing for the 2.5km separation between the closest viewing areas and the southern GIA

c) NWCH – the Oakajee ridgeline and ridgeline planting, undertaken by LandCorp, provides a significant screen which largely hides the estate and future structures within it from passing traffic on the highway east of the estate

d) Hard rock quarry site – views from the highway where it passes by the proposed quarry site are softened by the distance to the SIA and intervening

terrain and vegetation. Tall buildings and chimney stacks within the SIA may be partially visible

e) Nanson-Howatharra Road – there is a clear elevated view towards the SIA from this road west of the Moresby Range. While Industrial structures will be visible, the 5.5km distance means their visual impact will be minor

9.3 Landscape Report

The Landscape Report outlines a number of landscaping and revegetation opportunities for the OIE including:

a) Integrating pedestrian and cycle linkages, where appropriate

b) Maintaining productive commercial plantations, including existing sandalwood plantations, in the northern, eastern and southern buffer

c) Integrating water sensitive design throughout the site

d) Providing visual relief from industrial buildings through appropriate plant selection and placement

e) Retaining remnant natural vegetation around the perimeter of the SIA and within the Buffer for its ecological value and for the contribution it can make to screening

f) Maintaining the tree and shrub community already planted along the ridgeline that constitutes the eastern boundary of the SIA, to enhance the screening effect provided by this ridge

g) Reinforcing the concept of ecological corridors by planting ribbons of vegetation along drainage lines to connect pockets of remnant vegetation

h) Creating high quality planted streetscape environments along arterial roads, railways and service corridors

i) Developing landscaped entry statements at major points of access into the estate

j) Establishing development guidelines for industrial allotments which deal with such issues as layout, building form and aesthetics, and landscape plantings

k) Establishing robust management and maintenance standards for the estate

10.0 HERITAGE

10.1 European Heritage

The guidance provided by State Planning Policy 3.5 Historic Heritage Conservation has been observed during the identification and assessment of heritage sites.

Five sites listed on the Heritage Council of Western Australia (HCWA) database are located within the OIE:

a) "Chinaman's Hut" (registered place 6358) by the Oakajee River in the northern margins of the Buffer

b) Two lime kilns and a lime kiln group a few hundred metres upslope from "Chinaman's Hut" (registered places 6356, 6357 and 13670)

c) White Peak quarry (registered place 6355), is in the eastern Buffer, adjacent to NWCH

The historic Geraldton-Northampton railway alignment traverses the eastern Buffer from south to north. Although it is not listed on the Heritage Council database, it was identified as warranting assessment for possible inclusion on the State Heritage Register.

Laura Gray, a heritage consultant engaged by LandCorp, concluded:

a) Chinaman's Hut and lime kilns are all in poor condition, have a low degree of integrity, provide minimal evidence of their original nature, and are not intact or redeemable

b) The majority of the original Geraldton-Northampton rail line within the OIE has been cleared or levelled and is indeterminate. Rubble near White Peak Road and the remains of a culvert 1.5km north of this road are the only evidence of the former railway. The final alignment of the ONIC will need to consider the Geraldton Northampton Railway Reserve and will need to be formally referred to the Office of Heritage under the provisions of the Government's Heritage Property Disposal Process.

The Heritage Council has subsequently undertaken an archaeological assessment of the lime kilns and Chinaman's Hut but the findings are not known at present. Regardless of the findings, the kilns and hut are within an area of the northern Buffer which should not be impacted by development proposals envisaged for the OIE or the Port. White Peak quarry is likewise located in an area of the buffer which is unlikely to be impacted by development.

The Heritage Reports are attached at **Appendix 6**.

10.2 Unexploded Ordnance

On behalf of LandCorp a survey was undertaken by Milsearch in September 2009 for potential unexploded ordnance within the OIE (**Appendix 8**). The survey found no evidence of such ordnance.

10.3 Aboriginal Heritage

In early 2010, LandCorp commissioned R. & E. O'Connor to prepare an Aboriginal Heritage Management Plan (AHMP) (refer **Appendix 7**) for the OIE sufficient to ensure management of existing registered Aboriginal sites and to provide for lawful and timely assessment and management of any further sites discovered in the course of development of the estate. A AHMP was prepared and discussed with the three Aboriginal groups, Amangu, Mullewa Wadjari and Naaguja, whose members have a known or claimed traditional association with the Oakajee area and knowledge of its Aboriginal heritage.

Feedback from the groups following this consultation was received and informed modification of the AHMP to Draft #3. This version of the AHMP was then reviewed by the Department of Indigenous Affairs and the resultant feedback is reflected in the AHMP which is an addendum to the OIE-SP.

The AHMP proposes that LandCorp, as manager of the OIE, makes the following commitments:

a) Appointment of an officer with primary responsibility for implementation of the AHMP

b) Ongoing Aboriginal consultation

c) Adherence to requirements of the Aboriginal Heritage Act (AHA)

d) Preservation *in situ* of Aboriginal heritage sites or, where this is not feasible, consultation with relevant Aboriginal groups prior to making application(s) under Section 18 of the AHA in respect of sites that require disturbance

e) Subject to Section 18 clearance for site disturbance, salvaging archaeological materials as and if required by indigenous representatives and the Aboriginal Cultural Materials Committee. Such salvage is to be in accordance with archaeological best practice and to be supervised by appropriate Aboriginal monitors

f) For any areas where adequate heritage surveys have not yet been executed, carrying out such surveys prior to any ground disturbance

g) Advising development proponents of their obligations under the AHA, and requiring them to enter into an agreement that any Aboriginal heritage sites discovered in the course of earthmoving will be dealt with appropriately

h) Dealing with discovery of Aboriginal sites and/or skeletal material in accordance with procedures defined in the AHMP

11.0 OAKAJEE INDUSTRIAL ESTATE STRUCTURE PLAN

11.1 Land Use

In order to understand the likely land use scenarios, consideration has been given to the Industrial Ecology Strategy (**Appendix 3**).

The work identified the following generic uses likely to be accommodated in the OIE:

Strategic Industry Area	
• Ferrous mineral processing • Large non ferrous mineral processing / manufacturing • Medium size non-ferrous mineral processing / manufacturing • Large scale mineral processing / manufacturing	• Non – ferrous mineral processing / manufacturing • Heavy construction • Energy supply • Agricultural industrial processing • Solid waste industrial processing
Coastal Area	
• Marine construction • Fuel storage / depot	• Infrastructure hub – port related services • Grain handling
General Industry Areas	
• Warehousing • Transport companies	• General Industry • Commercial businesses
Buffer – Compatible Use Area	
• Renewable energy • Extractive Industry – Quarries • Inorganic by-product storage and processing • Stockyards	• Agriculture (non food production) • Waste Treatment • Storage (including by-products subject to environmental assessment)

For the purposes of illustration, two 'Rural Industry' precincts are nominated within the eastern portion of the Buffer. Subject to feasibility and approval there is the potential for the precincts to accommodate holding paddocks, some forms of agriculture and storage facilities (refer **Figure 5 Oakajee Industrial Estate – Structure Plan**).

A potential by-products storage area is also identified in the northern Buffer west of NWCH.

OAKAJEE INDUSTRIAL ESTATE STRUCTURE PLAN

NOTE:
For provisions, please refer to Section 10.6.1

0 1 2km

NORTH

LEGEND

- Structure Plan Boundary
- Buffer (Compatible Use)
- Area A - General Industry
- Area B - Coastal
- Area C - Strategic Industry
- Indicative Future Port Area

- Indicative Multi-product Rail (North)
- Indicative Multi-product Rail (South)
- Indicative Spine Road
- Indicative Central Access Road
- Proposed Quarry Haul Road
- Indicative Northern Access Road (Option 1)
- Indicative Northern Access Road (Option 2)
- Indicative Southern Access Road Link to Geraldton Bypass
- Indicative Southern Access Road
- Gas Lateral Easement

SOURCE : GHD (July 2010)

- Indicative Gas Pressure Reduction Station
- Indicative Water Corporation Tank Site
- 90 metre wide Service Corridor
- 200 metre wide - Proposed Corridor to Port
- 210 metre wide - Proposed Infrastructure Corridors
- Possible Site for Waste Water Treatment Plant
- Proposed Quarry
- Indicative Location of Road Over Rail
- Indicative Underpass / Overpass

- Proposed Western Power Corridor (for proposed 132KV)
- Indicative route of 330KV Dual Circuit Powerline with 110m Easement

SOURCE : Maunsell Aecom (November 2009)

- Indicative Terminal 330 / 123Kv Substation
- Indicative Iron Ore Rail Lines

- Potential Pumped Seawater Storage Hydroelectricity

SOURCE : LandCorp (July 2010)

- Existing Acacia / Sandalwood Plantations

SOURCE : Forrest Products Commission

- River

SOURCE: Hassell Plan (Dated 2/7/2010)

- Existing Road
- Indicative North West Coastal Highway Re-alignment
- Indicative Geraldton Bypass Road
- Proposed access to Buller River day use area and campsite (This road is currently Private)

- Potential Wind Farm
- Proposed Day Access Recreation Node / Opportunity for enhancement
- Proposed Camp Ground
- Existing camp ground / beach access

- Existing Port Reserve
- Existing revegetation area
- Indicative By Product Storage Area
- Indicative Rural Industry Area
- Future Conservation Area
- Oakajee Nature Reserve

SOURCE : RPS Planning (July 2010)

Base data supplied by various consultancies, see legend for more information

Projection MGA Zone 50

Areas and dimensions shown are subject to final survey calculations.
All carriageways are shown for illustrative purposes only and are subject to detailed engineering design.

LandCorp	CLIENT
1:20,000@A1	SCALE
9 March 2012	DATE
3570-2-001zd.dgn	PLAN No
zc	REVISION
S.D.	PLANNER
R.F.	DRAWN
N.T.	CHECKED

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FIGURE 5

11.2 Transport Network

The proposed transport network is derived from the Strategy prepared by GHD and comprises the following elements:

a) Northern Access Road

b) Central Access Road

c) Geraldton Bypass / NWCH intersection

d) Southern Access Road

e) Multi Product Rail (OIE)

f) Northern Multi Product Rail (Port)

In order to understand the integration and timing of these elements consideration should be given to **Figure 6 Staging Plan**. These elements are discussed in turn.

11.2.1 *Northern Access Road to Port*

The Geraldton Port Authority's OPMP identifies the long-term requirement for a northern access road to the Port. OPR have proposed to construct a northern access road. The OPMP requirement for the road is related to the construction of the northern breakwater and requirement for separate road access for freight entering and leaving the Port. OPR's proposed alignment has been reflected on the OIE-SP.

11.2.2 *Central Access Road to the Port and OIE*

The central access road will be required by a pioneer industry locating in the SIA. The road will be located within the east west infrastructure corridor as shown on the OIE-SP. The road will provide a vital link between the SIA and the Port and connect with NWCH and the broader existing and proposed road network (refer **Figure 6 Staging Plan**). Further details relating to the road are outlined in Section 12.

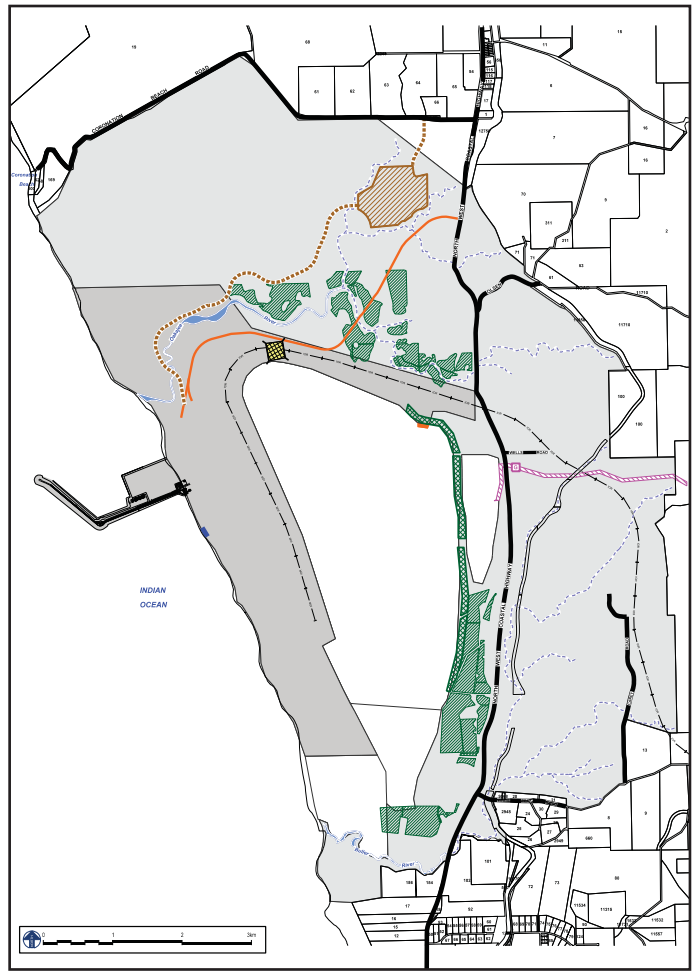
The road is forecast to carry heavy traffic and the preferred maximum grade should be 3% and should not exceed 5%. It is also intended that the road will have two lanes for heavy vehicles at very slow speeds and a separate lane for commuter traffic.

Initially the intersection of the road component with NWCH will be at grade. Ultimately the intersection will be grade separated to allow priority for freight travelling along the bypass.

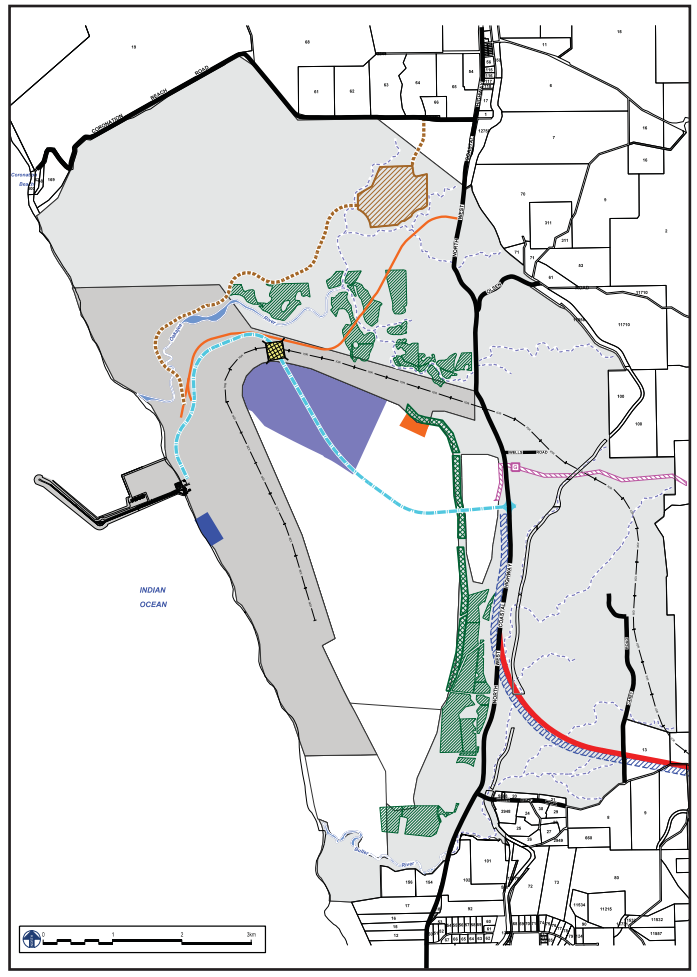
11.2.2.1 Underpass/Overpass: High Wide Load Access

Vital to connecting the SIA and Port is installation of a bridge structure to cross OPR's heavy rail alignment to allow movement, at suitable grade, for heavy haulage vehicles. The underpass / overpass will need to be capable of allowing passage for vehicles carrying high wide loads.

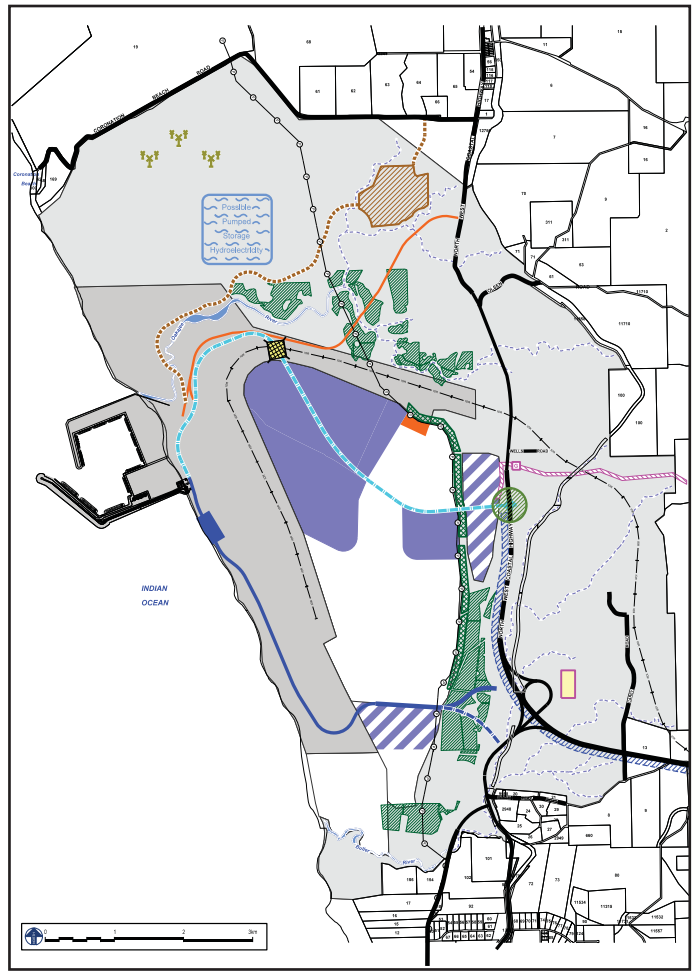
Given the significant variation in elevation between the SIA and Port the underpass / overpass is the only efficient option for access and integration. In order to achieve the grade requirements for heavy haulage roads, alternative routes would almost certainly be excessively circuitous and result in significant costs and inefficiencies.



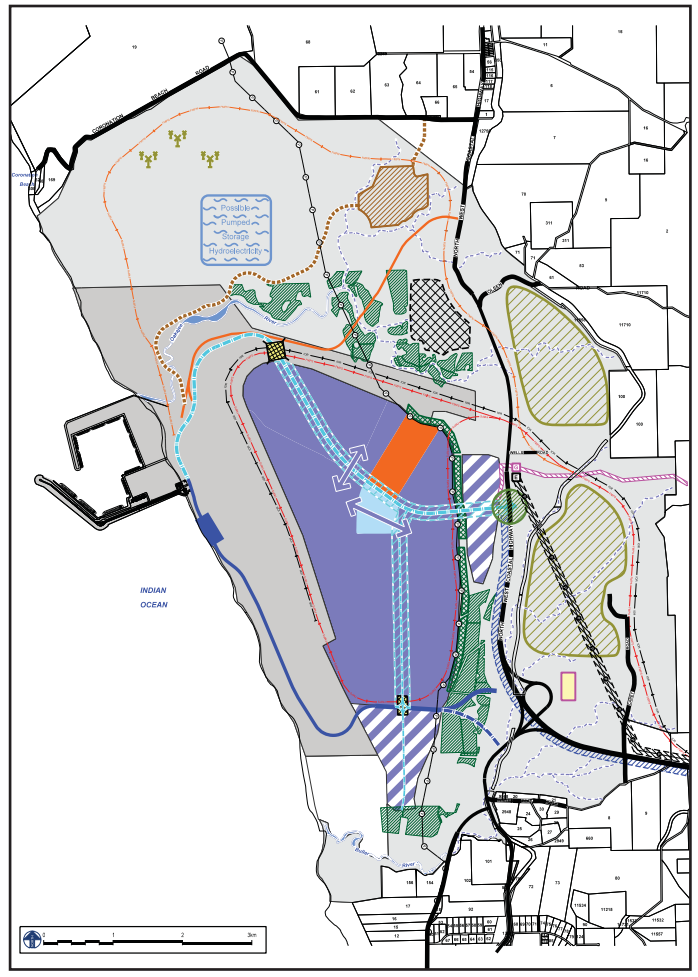
STAGE 1 Port and Rail Infrastructure



STAGE 2 Pioneer Industry develops in Strategic Industry Area



STAGE 3 Further development of the Strategic Industry Area, General Industry Area and the Port



STAGE 4 Full development of Oakajee Industrial Estate

LEGEND

- Buffer (Compatible Use)
- Area A - General Industry
- Area B - Coastal
- Area C - Strategic Industry
- Indicative Future Port Area
- Power Supply / Possible Energy Factory
- Possible Water Factory
- Indicative Multi-product Rail (North)
- Indicative Multi-product Rail (South)
- Indicative Spine Road
- Indicative Central Access Road
- Proposed Quarry Haul Road
- Proposed Northern Access Road
- Indicative Southern Access Road Link to Geraldton Bypass
- Indicative Southern Access Road
- Gas Lateral Easement
- Indicative Gas Pressure Reduction Station
- Indicative Water Corporation Tank Site
- 90 metre wide Service Corridor
- 210 metre wide - Proposed Infrastructure Corridors
- Possible Site for Waste Water Treatment Plant
- Proposed Western Power Corridor (for proposed 132KV)
- Indicative route of 330KV Dual Circuit Powerline with 110m Easement
- Proposed Quarry
- Indicative Location of Road Over Rail
- Indicative Underpass / Overpass
- Indicative Terminal 330 / 123Kv Substation
- Existing Road
- Indicative North West Coastal Highway Re-alignment
- Indicative Geraldton Bypass Road
- Potential Wind Farm
- Existing revegetation area
- Indicative By Product Storage Area
- Indicative Rural Industry Area
- Potential Pumped Storage Hydroelectricity
- Existing Acacia / Sandalwood Plantations
- Indicative Iron Ore Rail Lines

INDICATIVE STAGING PLAN

Oakajee Industrial Estate

LandCorp : CLIENT
N.T.S. @ A3 : SCALE
16 March 2012 : DATE
3570-SK-004g.ai : PLAN No
g : REVISION
S.D. : PLANNER
L.W. : DRAWN
N.T. : CHECKED

RPS

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FIGURE 6

The underpass / overpass will be critical to achieving integration between the Port, SIA and NWCH. The importance of such integration is identified as critical by several strategic planning documents outlined in Section 4.

11.2.3 *Geraldton Bypass and NWCH Interchange*

Initial development within the SIA will most likely rely on Geraldton Port for import / export of materials and products. This will particularly be the case if industry requires access to a land backed Panamax berth which initially will not be available at Oakajee Port. On this basis, it is likely that at least the first stage of the Geraldton Bypass will be required to be constructed in order to allow for the safe and efficient movement of heavy vehicular traffic around residential areas of Geraldton to Geraldton Port. Initially it is likely that the Bypass will be constructed from Oakajee as far east to Morrell Road with associated upgrading of the Road for heavy vehicles (refer **Figure 6 Indicative Staging Plan**).

The Bypass will provide a critical service for heavy vehicles accessing the Port and OIE. The Bypass will tie in with the current alignment of NWCH approximately 2.5 kilometres north of White Peak Road. The section of NWCH north of the merger point is envisaged to become a controlled access road.

Consistent with the Greater Geraldton Structure Plan, NWCH south of the tie in point (to Geraldton) may be downgraded and realigned to follow the old Geraldton Northampton rail corridor. The downgraded portion of NWCH could be tied into the Bypass via a grade separated interchange or 'trumpet' connection. The connection will permit commuter and recreational traffic to head north from Geraldton and return.

11.2.4 *Southern Access Road to Port and OIE*

A southern access road is proposed immediately south of the SIA. The road will be required to provide access to the southern GIA and SIA. Ultimately the road can be extended to provide alternative access to the Port.

Initially the proposed intersection with the current alignment of NWCH is proposed to be 2 kilometres north of White Peak Road. The construction of the Geraldton Bypass, as foreshadowed above, may result in the realignment of this section of NWCH as delineated on the OIE-SP. The realignment provides an opportunity to re-locate the intersection further south approximately 1 kilometre from White Peak Road and in doing so enhance the safety of drivers exiting the OIE onto NWCH (refer **Figure 6 Indicative Staging Plan**).

The southern access road will be a key service for commuter and light traffic whilst the Geraldton Bypass will cater for heavy haulage traffic which will ultimately access the SIA and Port via the central access road. Together both roads are vital to managing commuter and heavy traffic associated with the OIE.

The initial and ultimate intersections with NWCH are envisaged to be at grade.

11.2.5 *Multi-product Railway Line*

Considering that the OPR line will be for bulk export of iron ore only, there is a need for the OIE-SP to make provision for railway lines to the SIA should these be required by industry in the future.

It is proposed that these railway lines will initially follow the OPR alignment from Wokathera Gap to the OIE and will ultimately return along the perimeter of the eastern perimeter of the SIA. The location of the alignment relative to the SIA is considered to provide optimum access to future industry.

Provision for the railway line is integral to integrating the OIE with Narngulu Industrial Estate and other nodes beyond the OIE as outlined by a number of strategies and studies detailed in Section 4.

Major road and rail intersections will need to be grade separated with roads passing over rail facilities as detailed on the OIE-SP.

11.2.6 *Port Rail Access*

In the northern portion of the Buffer, the OIE-SP makes provision for a multi-product railway line to the Port consistent with the OPMP. The alignment integrates with the ONIC to the east providing vital connection to nodes beyond the OIE. This link could potentially serve as a direct rail link between the SIA and the Port if required.

The OPMP concluded that there was no need for a direct rail link between the SIA and the Port in the short to medium term. Nevertheless, the PTA has recommended that the option for long term connection be provided. Should this requirement arise, there is the potential to link the proposed multiproduct rail exiting the SIA with the northern rail thereby connecting the SIA with the Port.

The intersection with NWCH (realigned) will need to be grade separated allowing for a road overpass.

11.3 Sustainability

11.3.1 *Renewable Energy*

The OIE-SP identifies a number of potential sites to host renewable energy. The sites are indicative only and subject to further detailed investigation by proponents.

In the northern portion of the Buffer an area has been identified for a potential wind farm. Adjoining the western edge of the SIA another indicative location for wind turbines has been shown. The location represents a residual area between the top of the ridge and OPR's heavy haulage rail to the east and will not impede development within the SIA or the Coastal Area.

A possible seawater pumped storage hydroelectricity dam is shown in the northern portion of the Buffer. The Sustainability Report (**Appendix 1**) identifies some potential for wave energy located near the port which, when combined with wind power, may provide sufficient energy to enable the pumping of sea water to the dam. The Port and associated marine environment is under the control of the GPA. Further consideration of the potential of wave energy will be at the discretion of the GPA.

Aside from investigation of feasibility by proponents, the potential for renewable energy will be dependent upon installation of the proposed 330kV transmission line shown indicatively on the OIE-SP.

11.3.2 *Multi – Modal Transport*

The Sustainability Report identifies the importance of freight rail as a sustainable means of transport for heavy industry which may reduce reliance on road transport. As explained above, the OIE-SP provides for an integrated multi-modal transport system.

11.3.3 *Recycling*

An indicative location for a wastewater treatment plant (WWTP) site is identified in the south eastern Buffer. The Water Corporation may construct the facility in the future to meet the needs of new residential development.

The potential of the WWTP to recycle wastewater for the benefit of the OIE will be enhanced by its proximity to service corridors leading into the SIA.

11.4 Industrial Ecology

The OIE-SP incorporates a number of features which promote industrial ecology.

11.4.1 *Infrastructure Corridors*

The proposed infrastructure corridors are 210 metres wide and sufficient to accommodate industrial products and services, feedwater, return water, gas, reticulated services, landscaping and roads. Further detail relating to the infrastructure corridors is provided in Section 12.

The proposed corridors are also positioned so as to provide key linkages between the SIA and Port.

The position of these corridors will enable optimum access to services and infrastructure for future industry located within the SIA, and the sharing of by-products to reduce waste.

11.4.2 *Lot Size – Land Assembly*

In order to provide optimum flexibility, the OIE-SP does not prescribe lot sizes within the OIE. Nevertheless, the position of the infrastructure corridors creates three discernible ‘precincts’ within the SIA: north of the east-west alignment and west and east of the north south alignment. Based upon examples elsewhere, the precincts are of sufficient size to allow effective co-location or ‘clustering’ of industry.

11.4.3 *Energy and Water*

The Industrial Ecology Strategy (**Appendix 3**) identifies the potential for a water and energy factory within the SIA. The infrastructure corridors will be instrumental in allowing these facilities to proceed if found to be feasible.

As outlined above, there is also the potential for the proposed WWTP to ultimately provide recycled wastewater for processing.

11.5 Landscape Treatments

The Landscape Report (**Appendix 5**) includes a number of recommended landscape treatments which have been incorporated into the development of the OIE-SP. These landscape treatments relate to several elements, being:

a) Revegetation / Potential Ecological Corridors

b) Plantations

c) Road and Rail Corridors

d) Service Corridors

e) Public Open Space

11.5.1 *Revegetation*

The ridge forming the eastern boundary to the SIA was planted in 1999 with a 100m wide band of trees and taller shrubs over a 4-kilometre length. The revegetation has now formed a substantial community on the highest and most evident portion of the Oakajee plateau adjoining the SIA. The revegetation serves to both enhance the future amenity of the OIE and at the same time manage the potential visual impact of development from viewing points to the east.

The Landscape Report indentifies other opportunities for revegetation. Particular attention will focus on existing remnants, the Oakajee and Buller Rivers and their tributaries, footslopes of the Moresby Range, the estate perimeter, and planned service and infrastructure corridors crossing the buffer and entering the estate. Implementation of revegetation works may be undertaken by way of environmental offset arrangements associated with specific approvals.

11.5.2 *Plantations*

Planting of acacias and sandalwood occurred in 2008-2010 (refer **Figure 5 Oakajee Industrial Estate – Structure Plan**). This initiative adds to extensive remnants within the Oakajee Valley to provide a wide buffer surrounding the industrial precincts on northern, eastern and southern sides, while remnant vegetation of the limestone escarpment and coastal dunes affords a similar buffer in the west.

11.5.3 *Estate Entries, Road and Rail Corridors*

Major gateways are proposed at the northern and southern entries to the estate off NWCH. These will be focal points for landscape treatment, creating an attractive estate entry that relates to the natural and/or cultural heritage of the area. An indicative concept plan is shown below:

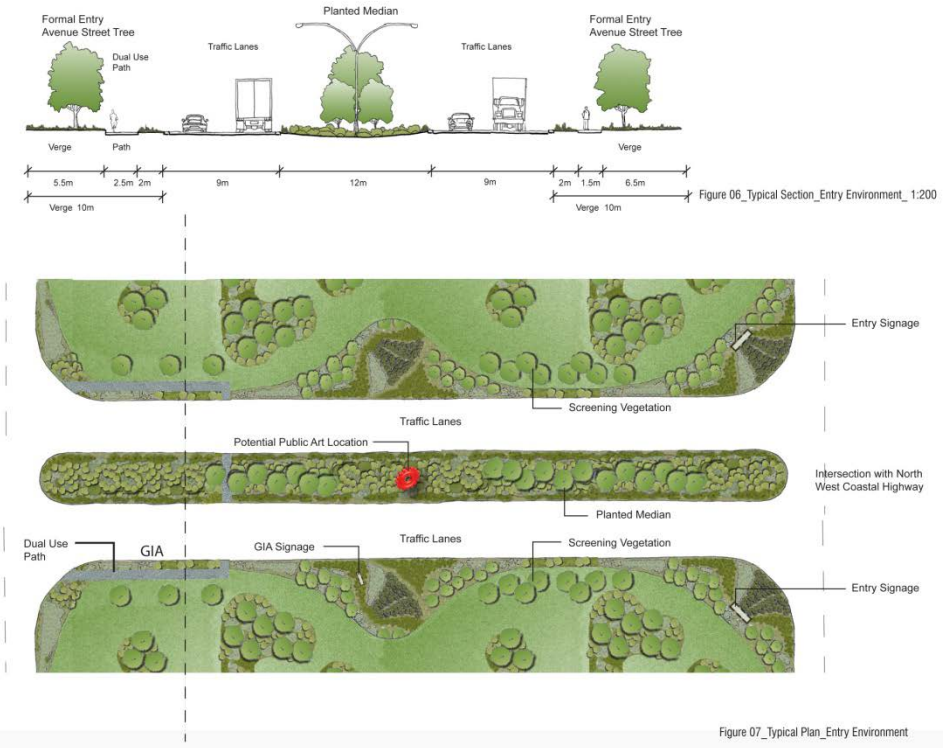


Figure 06_Typical Section_Entry Environment_ 1:200

Figure 07_Typical Plan_Entry Environment

The above concept is indicative only and assumes an intersection at grade. As discussed in Section 8 the intersection will ultimately be grade separated in response to increased traffic volumes.

Road and rail corridors will incorporate a 10m wide landscape strip on each side of the corridor. A grassed swale will receive drainage between the landscape easement and the road or railway line.

11.5.4 Infrastructure Corridors

Service corridors will have a 10m wide planted landscape strip either side, with a surface cover of dryland grass within the corridor and beneath landscape plantings except where access or services requirements demand a hard surface. Trees and shrubs will be planted into these strips as delineated in the indicative cross-section below:

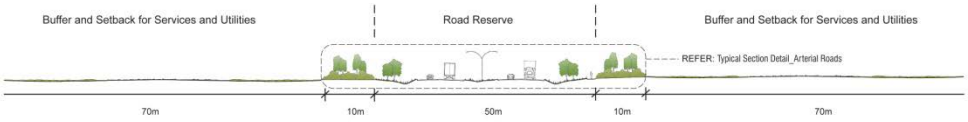
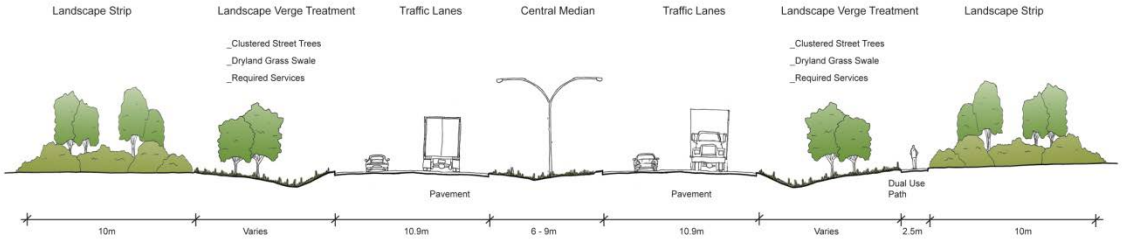


Figure 01_Typical Section_Arterial Roads



Typical Section Detail_Arterial Roads

11.5.5 *Recreation*

Consistent with the Shire of Chapman Valley Coastal Management Strategy 2007, the OIE-SP identifies a potential camp ground on the northern bank of the Buller River approximately 800 metres from the coast and a day recreational facility at the Buller River mouth. The day facility may also represent an opportunity to rehabilitate degraded areas around Buller River mouth. Details relating to the form and timing of development is subject to further negotiation with the Department of Environment and Conservation in addition to consideration by the Shire and the Geraldton Port Authority.

The Coastal Management Strategy also includes recommendations regarding access to recreational areas around the Buller Rivermouth and the coast south of the Port Area. Achieving these recommendations will be subject to discussions with the Geraldton Port Authority.

The OIE-SP also identifies the existing camping facilities at Coronation Beach to the north.

Opportunities exist for vehicle and pedestrian linkages to the Moresby Range as a means to maintain / enhance public amenity and facilities in accordanc with the Moresby Range Management Strategy and Moresby Range Management Plan.

11.6 Provisions

11.6.1 *Buffer*

As explained in Section 4.3.2.2 there is a need to introduce provisions attached to the OIE-SP to clarify land use in the Buffer. The following shall apply:

Development within the Buffer shall be subject to the following exceptions to TPS 1:

a) Uses not permitted:

- *Abattoir*
- *Cattery*
- *Civic Use*
- *Club Premises*
- *Commercial Centre*
- *Dog Kennels*
- *Drive – In Theatre*
- *Education Establishment*
- *Health Studio*
- *Horse Stables*
- *Industry – Cottage*
- *Medical Centre*
- *Nursery, and premises for the sale of Domestic Garden Plants*
- *Open Air Display*
- *Piggery*
- *Place of Assembly*
- *Places of natural beauty with managed public access*
- *Poultry Farm*
- *Produce Store*
- *Public Worship, Place of*
- *Roadhouse*
- *Rural Pursuit*
- *Veterinary hospital and consulting rooms*

b) Council may refer the following proposals to the Department of Environment and Conservation prior to making a determination:

i) 'Industry – Extractive

ii) 'Public Utility'

iii) 'Stockyards'

iv) 'Water Supply, Sewerage and Drainage Headworks'

and

c) Intensive agriculture to be limited to non food production activity

12.0 SERVICING

GHD have prepared an Engineering Services Report (**Appendix 9**) to inform the OIE-SP. The OIE-SP considers, inter alia, each of the following elements:

a) An integrated transport solution which incorporates High Wide Load (minimum 10m x 10m) access from SIA to the proposed Oakajee Port, access to a multi-product rail line linking the SIA with the ONIC and two access points to NWCH

b) Provision of a suitable power supply

c) Provision of adequate potable water

d) Provision of feedwater for industries

e) Provision of natural gas

f) Provision of adequate infrastructure corridors to service long-term requirements of the estate

A number of assumptions were made to forecast future demand for servicing in the OIE, including the mix of industries that could potentially locate in the estate. These assumptions are explained in GHD's Engineering Services Report.

The following sections provide an overview on provision of essential services to the OIE.

12.1 Service Corridors

12.1.1 *Oakajee Narngulu Infrastructure Corridor*

The ONIC is a proposed rail, road, services and utilities corridor that will link the OIE to Narngulu. The corridor will split at Wokathera Gap, with rail heading north and the Geraldton Bypass and services heading west through the Buffer Area to the central access corridor into the SIA.

The ONIC, which is broken down into a number of segments, includes provision for an easement for underground services, including telecoms, low voltage power, up to three slurry pipelines, water supply and high pressure gas. It also allows for a rail reserve of 60m – 80m and a road reserve of 70m – 90m. These road and rail reserves, when combined with the proposed services easement, result in an overall corridor width up to 250m. A 60m rail corridor has been allowed for railway lines heading north from the Wokathera Gap and the Geraldton Bypass and services heading east through the Buffer Area will be accommodated in a 170m wide corridor, comprising 90m for services and 80m for the road reserve.

High voltage power transmission lines are not included in the proposed corridor.

12.1.2 *Oakajee Industrial Estate Infrastructure Corridors and Service Sites*

The indicative widths for infrastructure corridors have been set to ensure the OIE is not constrained in the future and can reach full capacity. The OIE-SP identifies the following infrastructure corridors and service sites:

a) The primary central east-west distributor road through the SIA which includes easements for utility providers within the road reserve, 10m landscape easements on either side and 70m easements for trunk services on either side, providing a 210m wide infrastructure corridor linking the SIA to the port and NWCH. This typical infrastructure corridor is shown in Figure 7.

b) The main north-south distributor road within the SIA which includes easements for utility providers within the road reserve, 10m landscape easements on either side and 70m easements for trunk services on either side, providing a 210m wide infrastructure corridor.

c) A bridge solution (underpass or overpass) to cross the railway lines to provide High Wide Load (minimum 10m x 10m) access between Oakajee Port and the SIA via the central east-west corridor.

d) The southern east-west link which includes a distributor road, utility services within the road reserve, a multi-user railway line and services easements on either side, providing a 180m – 200m infrastructure corridor linking the estate, the port and the future ONIC.

e) The outer estate ring road will include services for the utility providers within the road reserve and will also allow for a multi-product rail corridor, a conveyor corridor (along the western boundary only) and 20m – 40m wide services easements on either side, providing an outer infrastructure corridor on the boundary of the SIA ranging from 120m - 200m in width.

f) A site for a gas pressure reduction station to step down the operating pressure of the lateral main off the Dampier to Bunbury pipeline.

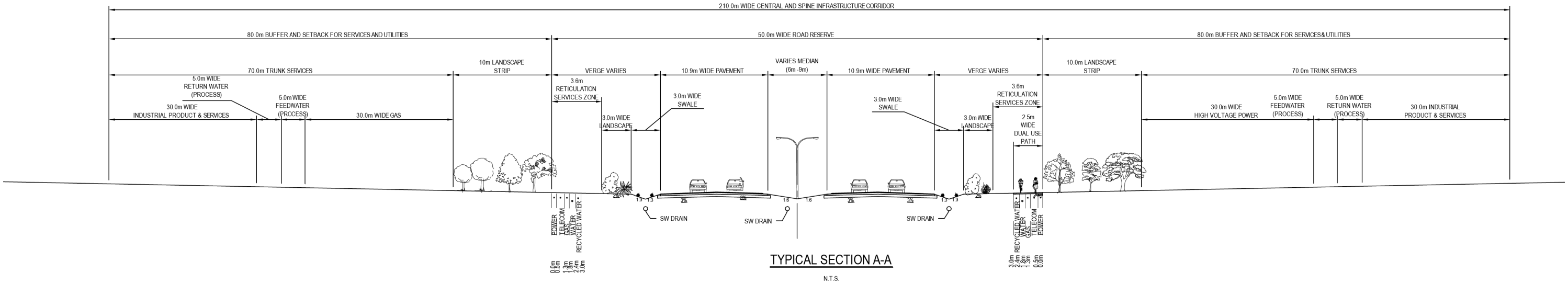
g) A Terminal Substation and adjacent Zone Substations for power transmission lines.

h) A site for Water Corporation infrastructure including two ground tanks, an elevated tank and a booster pump station.

i) A site for Telstra to house an exchange, to be located in the vicinity of the optic fibre cable.

j) Two mobile phone tower sites whose locations will be negotiated with Telstra or other carrier(s).

The abovementioned infrastructure corridors and service sites (excluding communications) are identified on the OIE-SP.



TYPICAL SECTION A-A

N.T.S.

INDICATIVE INFRASTRUCTURE CORRIDOR

Oakajee Indistrial Estate

Base data supplied by GHD

Accuracy +/- 4m.

Areas and dimensions shown are subject to final survey calculations.
All carriageways are shown for illustrative purposes only and are subject to detailed engineering design.

LandCorp : CLIENT
N.T.S.@A3 : SCALE
25 January 2011 : DATE
3570-5-010.dgn : PLAN No
- : REVISION
K.K. : PLANNER
L.W. : DRAWN
N.T. : CHECKED

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FIGURE 7

12.2 Power Supply

It is estimated that industry will ultimately require 439MW of power by 2060 at the OIE.

A 132kV transmission line from Chapman Substation to a Zone Substation (60MVA) located at Oakajee could supply the demand from OPR and initial loads for the industrial estate. Based on a capacity of 144 MVA in the 132kV line (approximately 115MW) and OPR's requirement for 30MVA (approximately 24MW), this supply should be sufficient to 2020 when considering the projected demand for power available in the Engineering Services Report (**Appendix 9**). To supply power beyond this date, Western Power will need to consider the feasibility of a second 132kV line from Chapman Substation or the ultimate 330kV power line from Moonyoonooka.

The Zone Substation discussed above will not have capacity to supply customers with large block loads of 60MW or more within OIE. These industries will be supplied off at least one 132kV transmission line located within the infrastructure corridors in the SIA and individual proponents will need to make an allowance for a Zone Substation (120m x 100m) within their lot boundaries.

Ultimately the OIE should be linked to the South-West Interconnected System (SWIS) through the construction of a double circuit 330kV line from Moonyoonooka Terminal Station to a Terminal Substation at Oakajee. The transmission line will occupy a 100m to 110m wide corridor and will require sufficient land at the OIE for a Terminal substation (330m x 330m) and an adjacent Zone Substation (120m x 100m). These facilities can be located in the Buffer Area.

Without the development of the 330kV transmission line, renewable energy projects (i.e. wind, solar, tidal) which generate power and new industries which use power are unlikely to be able to locate at Oakajee.

Aerial reticulation through the estate for high voltage lines (66kV or higher) will utilize infrastructure corridors parallel to road reserves. Power cables of 22kV or less will be placed underground within road reserves, in easements reserved for power as per the Utility Providers Code of Practice.

Should OPR choose a gas-fired Independent Power Plant as its supply option, the power station would initially be sized to meet OPR's requirements and could potentially be expanded to provide power to the OIE and the grid though 132kV transmission lines.

12.3 Gas Supply

In the long-term, it is estimated that the OIE will demand 154,284 (TJ/a) of gas. Presently, there are no gas mains located in the vicinity of the site.

Dampier Bunbury Pipeline Pty Ltd (DBP) has investigated the potential to construct a lateral to the OIE from the Dampier to Bunbury Natural Gas Pipeline. Such a lateral could be developed to provide gas for an Independent Power Plant and for future industry needs, although its capacity is unknown at this stage.

The lateral will require a pressure reduction station to reduce operating pressure before reticulating gas through the SIA. Based on information from DBP, it is anticipated the pressure reduction station (Gate Station) will require an area of approximately 100m x 100m. It will also require a buffer that complies with Planning Bulletin 87 – High Pressure

Pipelines in the Perth Metropolitan Region. This buffer will need to be 200m wide around the site.

The easement for a gas lateral and the indicative location for the Gate Station are shown on the OIE-SP.

12.4 Potable Water Supply

It is estimated that 108ML/a of potable water will be required for the OIE in the long-term. The only Water Corporation infrastructure in the vicinity of the site is the DN375 Northampton Transfer Main. This main has limited capacity and indications are that, without upgrade, it would provide the estate with a maximum of only 20kL/day.

The closest developed potable water resource is the borefield at Allanooka approximately 40km south-east of Geraldton. The Water Corporation's Draft Groundwater Management Plan for Allanooka indicates a potential sustainable yield of 28.8GL/year from the resource, of which 12GL is currently allocated for public water supply. The Water Corporation has applied for this allocation to be increased to 14GL and has plans to expand the borefield within 5 years to supply up to 18GL per year.

Potable water for OIE could potentially be supplied via the following alternatives:

a) Scheme water from Water Corporation infrastructure, supplied from storage tanks.
b) Desalination plant operated by private enterprise using Sea Water Reverse Osmosis technology and a sea water supply.

The Water Corporation is in the process of upgrading water supply infrastructure for the north Geraldton area. The planned upgrades have considered the potable water needs of the OIE.

12.5 Process and Cooling Water

Given the nature of industry envisaged for the OIE, demand for feedwater will be high. Requirements are estimated to be approximately 24,517ML/a for low quality feedwater and 13,211ML/a for high quality feedwater by 2060. There is the potential for feedwater to be supplied from the following sources:

12.5.1 *Desalinisation*

Industry feedwater could also be supplied from a desalination plant. This could be in the form of a central Sea Water Reverse Osmosis (SWRO) plant to supply all OIE needs or reticulation of seawater through the estate to users who would then develop their own SWRO plants to bring the water to a standard suitable to their individual needs. Both options would require a large ocean intake and a brine ocean outfall.

12.5.2 *Groundwater Sources*

The Department of Water is currently concluding an investigation of the Casuarina area which is immediately north of the Allanooka Borefields. Drilling and testing is complete and modelling of the data is now being undertaken. Results from the potential volumes available will be finalised in late 2012.

The other potential source of groundwater – at least for initial feedwater demands – is the Allanooka borefield 40km south-east of Geraldton. There is a potential sustainable yield of 28.8GL/year from this borefield of which 18GL will likely be allocated for potable water. Water from this source would be pumped approximately 80km to Oakajee via a large diameter pipeline. From Narngulu north, this pipeline would follow the ONIC service corridor, entering the estate at the intersection of the central access road and NWCH.

The groundwater will likely require a storage tank on site and may need to be treated prior to supply to industry, or it could be supplied raw, in which event individual industries would have to undertake their own treatment to render the water suitable for their particular operations.

12.5.3 *Recycling*

It is anticipated initial demands for feedwater will be met from the sources discussed above. In the longer term, as industries establish, industrial waste water could be harvested, treated and recycled to limit discharge to waste. This possibility is covered in more detail in the Sustainability Report (**Appendix 1**).

There is also the possibility of sewage effluent processed by a Waste Water Treatment Plant proposed to be located within the Buffer Area being treated to a level so it could be used as lower quality feedwater by industry.

12.6 Waste Water Disposal

The Water Corporation is planning to construct a WWTP at OIE to service the northern precincts of Geraldton. It is not, at this stage, planning to accept industrial effluent from Oakajee, and will only accommodate sewage from offices and toilet blocks within the site. The Water Corporation is continuing to undertake investigations to define its location for the facility. Any future application for the facility will require independent emissions modelling to be undertaken.

The WWTP is likely to initially use lower technology treatment incorporating evaporation ponds. This will require a 1km wide buffer around the WWTP site. The Water Corporation is investigating means of disposing the treated domestic effluent by infiltration or spraying the effluent on woodlots. There will be, however, opportunities for the Water Corporation to treat effluent further to permit its use by industry within OIE as low quality feedwater and this use should be encouraged.

The indicative location of the WWTP shown in the OIE-SP complies with the Water Corporation's requirements for road access and avoidance of at-grade rail crossings. It also allows sufficient separation from residential precincts to the south.

It is anticipated that individual industries in the SIA will provide on-site package treatment plants to treat their own industrial effluent. This could then be recycled or pumped to a central water treatment facility for recycling through the estate.

Domestic effluent from each industry will be treated by Aerobic Treatment Units (ATUs) or disposed in septic tanks attached to leach drains until such time as the WWTP is operational and provides reticulated sewer to the estate. Even with such reticulated sewerage, it is likely that industries within the SIA will rely on their own ATUs for domestic

effluent, whereas industries on the smaller lots of the two GIA's will more likely be connected to sewers feeding to the WWTP.

12.7 Surface and Groundwater Management

The details of the proposed groundwater and surface water management are contained in a separate District Water Management Strategy (**Appendix 10**). Key elements of the District Water Management Strategy are:

1 yr Average Recurrence Interval

a) To retain and treat the 1-year ARI event, rooves will be connected to soak wells and, where they are adopted, to rainwater tanks;

b) Clean runoff from hardstand areas will be contained and infiltrated within each lot boundary;

c) Contaminated runoff will be contained within each lot and treated prior to discharge;

d) Road runoff will be infiltrated as close to source as practicable using water sensitive urban design (WSUD) measures, including roadside swales / table drains.

10 yr Average Recurrence Interval

a) Road runoff will be infiltrated as close to source as practicable using water sensitive urban design (WSUD) measures, including roadside swales / table drains / bio-retention structures;

b) Bio-retention structures within individual lots will treat and infiltrate stormwater runoff;

100 yr Average Recurrance Interval

a) Provision via overland flow paths will enable discharge of stormwater from each lot such that it will not exceed 100-year ARI pre-development peak flows;

b) To ensure protection of groundwater and its ecological value, groundwater monitoring is recommended throughout the various stages of development and during the subsequent operational phase to check against contamination. This will be the responsibility of proponents.

13.0 IMPLEMENTATION

13.1 Approval of Oakajee Industrial Estate Structure Plan

The OIE-SP is required to be adopted by the Shire of Chapman Valley and endorsed by the Western Australian Planning Commission. The provisions of Draft Local Planning Scheme No. 2 allow for structure plans to be readily modified.

The OIE-SP consists of the Structure Plan map (Figure 5), the Structure Plan report and accompanying Appendices, being:

Appendix 1: Sustainability Report
Appendix 2: Environmental Review Report
Appendix 3: Industrial Ecology Strategy
Appendix 4: Integrated Transport Strategy
Appendix 5: Landscape Report
Appendix 6: European Heritage Reports
Appendix 7: Aboriginal Heritage Management Plan
Appendix 8: Unexploded Ordnance Contamination Assessment
Appendix 9: Engineering Services Report
Appendix 10: District Water Management Strategy

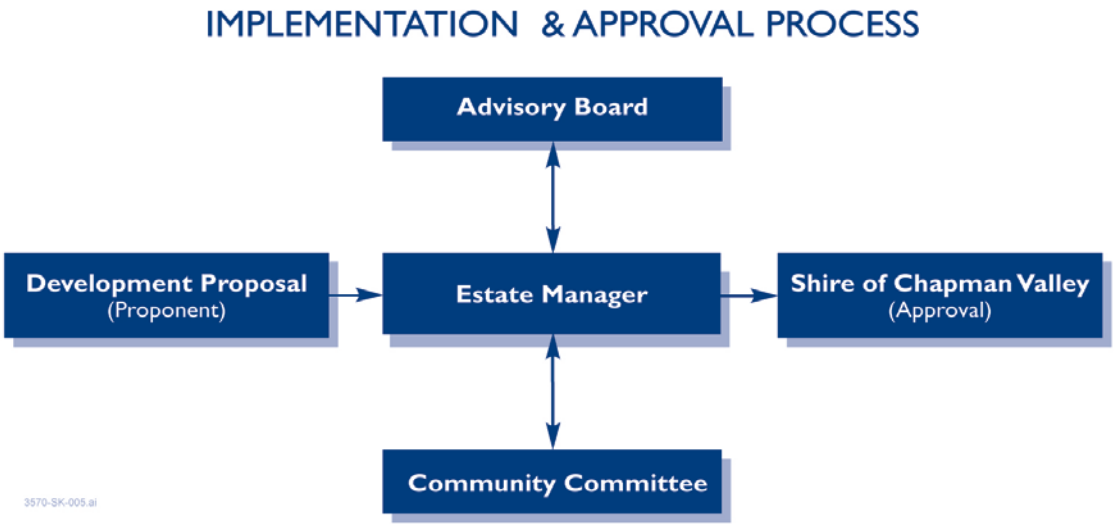
The following management plans are adjuncts to the OIE-SP as identified under the Special Control Area provisions of the Scheme

a) Landscape Report (**Appendix 5**); and

b) Aboriginal Heritage Management Plan (**Appendix 7**).

13.2 Implementation Roles

Implementation of the OIE-SP will be driven by proponents, the Estate Manager, the Department of State Development, a proposed OIE Advisory Board, and the Shire of Chapman Valley. This process is shown diagrammatically:



13.2.1 *Proponents*

Proponents are required to seek approval prior to commencing development. TPS 1 requires all development within the OIE to be in accordance with the OIE-SP and the associated management plans.

It will be the role of proponents to develop and install infrastructure in accordance with the OIE-SP. In doing so proponents will need to meet the requirements of the Estate Manager and to seek the approval of the Shire of Chapman Valley and other agencies if and when required.

13.2.2 *Estate Manager / Management Structure*

Given that the OIE is a heavy industrial estate, the development approval requirements of TPS 1 reflect the recommendations of the State Heavy Industry Policy (1998) as outlined in the Sustainability Report (**Appendix 1**).

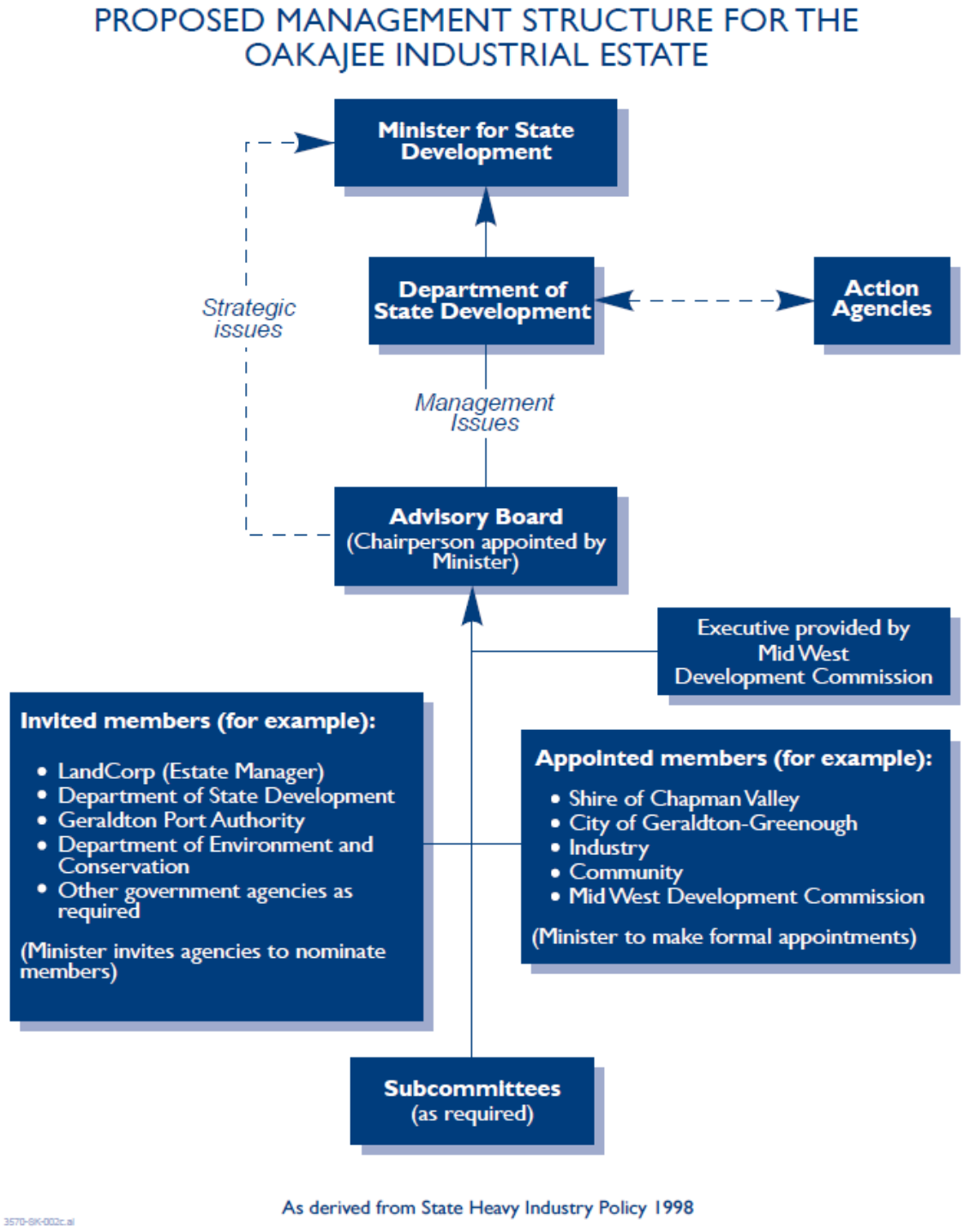
Prior to development being considered by the Shire of Chapman Valley it is a requirement that proposals be vetted by the Estate Manager (LandCorp) who shall have regard to the recommendations of an advisory group or board. In this case the Estate Manager is LandCorp. The Estate Manager and Advisory Board fit within an overall management structure as outlined in the Sustainability Report. In this way the Estate Manager and Advisory Board perform an important 'gateway' function and which have a significant role in determining the nature and location of future industry within the OIE.

The Estate Manager will also be responsible for granting leases to future proponents of heavy industry. Consideration will be given to the recommendations outlined in the Industrial Ecology Strategy (**Appendix 3**) to enable 'clustering' of industries to maximise the sharing of energy, water, by-product reuse and recycling as the basis for creating competitive advantages.

Where a strategic industry area requires broader community input than will be available through its Advisory Board, a Community Committee will also be appointed. Its role will be to consider, in a local community context, any issue that arises out of the establishment and operation of the strategic industry area.

The Committees will be modelled on those used in the Kwinana and the Kemerton areas which have considered many significant social, environmental and economic development issues and provided regular and helpful feedback to the agencies and to the relevant Minister.

A diagrammatic overview of the Management Structure for the OIE is provided below:



13.2.3 *Shire of Chapman Valley*

Once proposals have been vetted by the Estate Manager and Advisory Board, the Shire may assess the proposal as it would any other development proposal. Proponents will not be permitted to commence development without seeking the approval of the Shire.