TOWN OF PORT HEDLAND

TOWN PLANNING SCHEME NO 5
AMENDMENT NO. 56

PLANNING AND DEVELOPMENT ACT 2005

RESOLUTION DECIDING TO AMEND A LOCAL PLANNING SCHEME

TOWN OF PORT HEDLAND

TOWN PLANNING SCHEME NO. 5

AMENDMENT NO. 56

RESOLVED that the Council, in pursuance of Section 75 of the Planning and Development Act 2005, amend the above local planning scheme as follows:

a. Rezone land from:

i. 'Parks and Recreation' Reservation to 'Marina Development' Zone;

b. Insert, as an additional Zone in the Zoning Table, the 'Marina Development' Zone as follows:

ZONING TABLE		Marina Development Zone (2)
Residential		
1	Aged or Dependent Persons Dwelling	-
2	Ancillary Accommodation	-
3	Cabin *AMD 15 GG 24/3/09*	AA
4	Caretaker's Dwelling	AA(3)
5	Chalet *AMD 15 GG 24/3/09*	AA
6	Grouped Dwelling	AA(3)
7	Guesthouse *AMD 15 GG 24/3/09*	-
8	Holiday Accommodation	SA(3)
9	Holiday Home *AMD 15 GG 24/3/09*	-
10	Home Business *AMD 13 GG 15/02/11*	AA(3)
11	Home Office *AMD 13 GG 15/02/11*	P
~~Home Occupation~~ *DELETED BY AMD 13 GG 15/02/11*		-
12	Hotel	SA
13	Lodge *AMD 15 GG 24/3/09*	-
14	Motel	SA
15	Movable Dwelling	SA
16	Multiple Dwelling	AA(3)
17	Residential Building	AA(3)
18	Rural Settlement	-
19	Serviced Apartment *AMD 15 GG 24/3/09*	AA
20	Short Stay Accommodation *AMD 15 GG 24/3/09*	AA
21	Single House	-
22	Transient Workforce Accommodation	-
23	Tourism Development *AMD 15 GG 24/3/09*	AA
24	Tourist Resort *AMD 15 GG 24/3/09*	AA
Industry		
25	Abattoir	-
26	Agriculture	-

27	Arts and Crafts Centre	AA
28	Container Park *AMD 24 GG 08/02/11*	-
29	Distribution Centre *AMD 24 GG 08/02/11*	-
30	Fuel Depot *AMD 24 GG 08/02/11*	-
31	Intensive Agriculture	-
32	Harbour Installation *AMD 24 GG 08/02/11*	AA
31	Hire Service (Industrial) *AMD 24 GG 08/02/11*	-
32	Industry - Cottage	-
33	Industry - Extractive	-
34	Industry - General	-
35	Industry - Light	-
36	Industry - Marine	AA
37	Industry - Noxious	-
38	Industry - Rural	-
39	Industry - Service	-
40	Industry - Resource Processing	-
41	Industry - Transport *AMD 24 GG 08/02/11*	-
42	Infrastructure	-
43	Stockyard	-
44	Storage facility/depot/laydown area	-
45	Transport Depot *AMD 24 GG 08/02/11*	-
46	Truck Stop *AMD 24 GG 08/02/11*	-
Commerce		
47	Aerodrome	-
48	Display Home Centre	-
49	Dry Cleaning	AA
50	Marina	P
51	Market	AA
52	Mobile Business *AMD 13 GG 15/02/11*	P
53	Motor Vehicle and/or Marine Repair	AA
54	Motor Vehicle and/or Marine Sales or Hire	AA
55	Motor Vehicle and/or Marine Service Station	AA
56	Motor Vehicle and/or Marine Wrecking	AA
57	Motor Vehicle Wash	-
58	Office *AMD 13 GG 15/02/11*	P
59	On-site Canteen	-
60	Outdoor Display	SA
61	Reception Centre	AA
62	Restaurant (includes café)	P
63	Restricted Premises	-
64	Shop	P
65	Showroom	AA
66	Take-away Food Outlet	AA
67	Warehouse	-
Health, Welfare and Community Services		
68	Carpark	AA
69	Child Care Service	-
70	Community Use	P
71	Consulting Rooms	AA
72	Education Establishment	-
73	Education Establishment - Tertiary	AA
74	Emergency Services	AA
75	Funeral Parlour	-
76	Hospital	-
77	Juvenile Detention Centre	-
78	Medical Centre	-
79	Nursing Home	-
80	Place of Animal Care	-
81	Place of Public Meeting, Assembly or Worship	SA
82	Prison	-
83	Public Mall	AA
84	Public Utility	AA

Entertainment, Recreation and Culture		
85	Equestrian Centre	-
86	Entertainment Venue	P
87	Private Recreation	AA
88	Public Recreation	P

The symbols used in the Zoning Table have the following meanings:

P: The development is permitted by the Scheme

AA: The development is not permitted unless the Council has granted planning approval

SA: The development is not permitted unless the Council has granted planning approval after giving notice in accordance with Clause 4.3

IP: The development is not permitted unless the use to which it is put is incidental to the predominant use as decided by Council

–: A development that is not permitted by the Scheme

(2): In the absence of an approved Development Plan (in accordance with Clause 5.2) the above land use permissibility applies for development within the 'Marina Development' Zone

(3): Unless otherwise provided for in an adopted Development Plan, Sub-clauses 6.3.8 – 6.3.11 (inclusive) shall apply to those specified residential land uses in the 'Marina Development' Zone

c. Insert a new land use definition of 'Industry – Marine' in Appendix 1, with the following text being inserted after 'Industry – Light':

Industry – Marine means any land or premises used, or intended to be used, for the purpose of conducting any industries, which require direct access to a river, creek, stream or other body of water as an essential part of their operation. The eligible industries are limited to, as applicable, the following:

- boat building, repairing or storage;
- fish and seafood processing or storage;
- fishing gear manufacturing or repair;
- marine engineering;
- naval architect or drafting services;
- slipway/boat lifter;
- warehouse associated with waterfront industry;
- wharf and dock;
- activities related to the provision of fuel for boats and other marine craft; and
- marina services.

d. List the 'Industry – Marine' land use as number 36 in the Zoning Table and renumber all of the following land uses accordingly. Notate the 'Industry – Marine' land use as an 'AA' land use in the 'Marina Development' Zone, as an 'AA' land use in the 'Urban Development', 'Strategic Industry', 'Industry' and 'Industrial Development' zones and a prohibited land use in all other zones.

e. List the 'Marina' land use as number 50 in the Zoning Table and renumber all of the following land uses accordingly. Notate 'Marina' as a 'P' use in the 'Marina Development' Zone and as a prohibited land use in all other zones.

f. Insert a new land use definition of 'Education Establishment – Tertiary' in Appendix 1, with the following text being inserted after 'Education Establishment':

Education Establishment – Tertiary means any higher level educational institute beyond school including a college, university, technical institute, academy or other education centre but excludes a juvenile detention centre.

g. List the 'Education Establishment – Tertiary' land use as number 73 in the Zoning Table and renumber all of the following land uses accordingly. Notate the 'Education Establishment – Tertiary' land use as an 'AA' land use in the 'Marina Development' Zone, as a 'P' use in the 'Education' Zone, an 'IP' land use in the 'Transient Workforce Accommodation', 'Airport', 'Community' and 'Health' zones, an 'AA' land use in the 'Light Industry' Zone, a 'SA[1]' land use in the 'West End Residential' Zone and a prohibited land use in all other zones.

h. Create 'Development Plan Area Marina Development';

i. Insert 'Marina Development' as item (i) under Sub-clause 5.2.1 of TPS 5 and amend Appendix 5 – Development Plan Areas accordingly;

j. Insert the following text after Sub-clause 5.2.1 of TPS 5;

   i. The Council can support subdivision or approve development in the 'Marina Development' Zone in the absence of an approved Development Plan where it is satisfied such a proposal will not prejudice the orderly and proper future planning and development of the surrounding area;

k. Amend the Scheme Map to reflect zone and reserve changes described in 'a' above; and

l. Amend the Scheme Map, Zoning Table and Scheme Text Appendix 5 – Development Plan Areas map to reflect the Development Plan Area changes described in 'b' to 'j', above.

Dated this __ day of __ 2013

.....
CHIEF EXECUTIVE OFFICER

SCHEME AMENDMENT REPORT

LOCAL AUTHORITY	Town of Port Hedland
DESCRIPTION OF TOWN PLANNING SCHEME	Town Planning Scheme No. 5
TYPE OF SCHEME	District Planning Scheme
SERIAL NUMBER OF AMENDMENT	Amendment No. 56
PROPOSAL	This Scheme Amendment proposes the introduction of a 'Marina Development' Zone and the necessary statutory provisions and development controls/objectives.

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1.0 Introduction

Greg Rowe and Associates acts on behalf of LandCorp, with respect to a proposed Scheme Amendment for Pt Lot 5751 Athol Street, Pt Lot 5550 & Pt Lot 5178 Sutherland Street, Port Hedland ('the subject land').

This report has been prepared in support of a Scheme Amendment to the Town of Port Hedland Town Planning Scheme No. 5 ('TPS 5') for the introduction of a 'Marina Development' Zone (and associated provisions) and to rezone the subject land to 'Marina Development' Zone.

This report includes a description of the following matters:

- Location of the subject land;
- Description of the existing land use and site attributes;
- Overview of relevant planning and design issues;
- Detailed explanation of the proposal; and
- Justification for the proposed Scheme Amendment.

2.0 Description of Site

2.1 Regional Location

The subject land is located in the Municipality of the Town of Port Hedland, within the Pilbara region of Western Australia.

Refer Figure 1 – Regional Location.

2.2 Local Location

The subject land is situated in Port Hedland and is located generally north of Sutherland Street (generally between Howe Street and Simpson Street). All of the aforementioned roads are sealed, gazetted roads.

The subject land forms part of the Spoil Bank Development Area ('SDA'), which is under the control of LandCorp.

Refer Figure 2 – Local Location.

2.3 Cadastral Information

The subject land comprises four land parcels, being:

- Part Lot 5751 on Deposited Plan 91579 contained on Certificate of Title Volume: LR3060, Folio: 422
- Part Lot 5550 on Deposited Plan 240246 contained on Certificate of Title Volume: LR3060, Folio: 414
- Part Lot 5178 on Deposited Plan 214191 contained on Certificate of Title Volume: LR3060, Folio 410

The subject land has a total land area of approximately 60 hectares.

Refer Figure 3 – Site Plan

2.4 Existing Improvements

In September 2011, RPS (consultants in local solutions in energy and resources, infrastructure, environment and urban growth) was commissioned by LandCorp to prepare an Environmental Constraints Summary Report – Port Hedland Spoil Bank Development ('the Environmental Constraints Summary'). The Environmental Constraints Summary was prepared *to undertake a series of preliminary environmental investigations to provide advice regarding key potential environmental impacts that may constrain the planned development* [of the proposed Spoil Bank Marina and Precinct]. The characteristics of the subject land may be adequately summarised as follows:

> *A review of aerial photography confirms that vegetation on the site has either been cleared or degraded from past land uses.*
>
> *The SDA south of Sutherland Street has largely been cleared of native vegetation, with some scattered mature trees and grasses remaining.*
>
> *The Spoil Bank is a man-made feature formed by the deposition of dredge soil material excavated from the harbour. It is predominantly bare soil and contains sparsely covered patches of colonising coastal shrubs and grasses of which some are likely to be introduced species (weeds).*

With the exception of the Port Hedland Yacht Club and RSL (located on the subject land north or Sutherland Street) the subject land is either cleared or the existing vegetation is degraded.

FIGURE 1 REGIONAL LOCATION

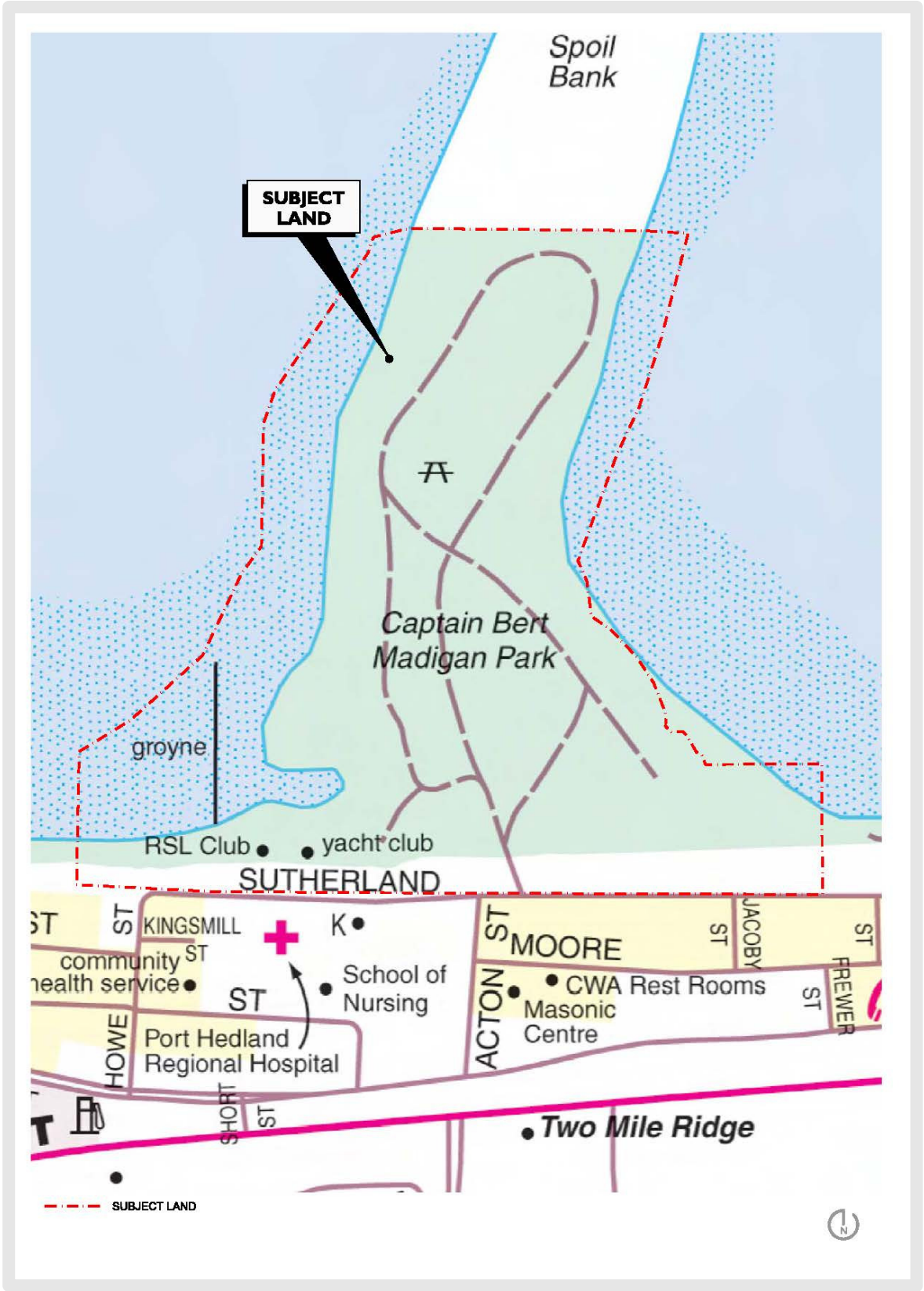


FIGURE 2 LOCAL LOCATION

FIGURE 3 SITE PLAN

3.0 Town Planning Considerations

3.1 Zoning

3.1.1 Town of Port Hedland Town Planning Scheme No. 5

Under the provisions of TPS 5 the subject land is currently reserved for 'Parks and Recreation'.

TPS 5 does not contain a 'Marina Development' Zone and associated objectives/provisions, therefore it is the intent of this Scheme Amendment to introduce to TPS 5 all necessary statutory provisions and development controls as well as the new zoning designation.

3.1.1.1 Scheme Amendment No. 22

Scheme Amendment No. 22 ('Amendment No. 22') to TPS 5 was gazetted on 27 April 2012. Amendment No. 22 rezoned land bounded by Anderson, Withnell, Sutherland and Taplin Streets, and The Esplanade in Port Hedland from 'Residential' Zone to 'West End Residential' Zone and altered the density coding to 'Minimum R30/Maximum R80'. Amendment No. 22 also rezoned land bounded by Withnell, McKay and Anderson Streets, and The Esplanade from 'Residential' Zone to 'Town Centre' Zone.

The key objectives of Amendment No. 22 in relation to the new 'West End Residential' Zone were to:

- *Discourage the long-term residency by families with children or elderly persons;*
- *Add vibrancy to both the Subject Land and the nearby commercial area; and*
- *Maximise opportunities for workers in nearby employment nodes to reside close to work opportunities and commercial and entertainment facilities.*

All new residential development in the 'West End Residential' Zone is the subject of strict criterion in order to achieve the above objectives. The above objectives were formulated to maximise the development potential of the West End and to ensure new residences are not developed in a manner that would attract residents at higher risk of respiratory issues associated with the dust issues characteristic of the West End (i.e. the young and elderly).

Amendment No. 22 contains a series of development controls (Clauses 6.3.8 – 6.3.16) that have now been incorporated into TPS 5 to control new residential development. Identical provisions with respect to permanent residential development in the 'Marina Development' Zone are proposed as part of the Scheme Amendment for the subject land and will be outlined in greater detail below.

A copy of the Gazettal Notice for Amendment No. 22 is contained as Appendix 2.

3.1.1.2 Development Plan Provisions/Intent

Clause 5.2 and Appendix 6 of TPS 5 outline the intent and requirements for the preparation and implementation of Development Plans. A Development Plan is intended to illustrate such factors and landform and topography, existing and proposed road networks, services and infrastructure and proposed lot layout and land uses (amongst other details).

It is intended that the Development Plan provisions outlined in Clause 5.2 and Appendix 6 of TPS 5 will be applied to the 'Marina Development' Zone. This is addressed in greater detail below.

3.2 Strategic Planning Context

3.2.1 Port Hedland Land Use Master Plan

The Port Hedland Land Use Master Plan ('LUMP'), endorsed by the Western Australian Planning Commission ('WAPC') in September 2008, was prepared to guide the growth and development of Port Hedland over a 20 – 25 year timeframe. Specific to the subject land, the LUMP states the following:

> *With its relatively high elevation, grand views of the coast and immediate access to the Spoil Bank, the Old Hospital occupies an extraordinary site with dramatic development potential…Plans are also progressing for development of a new marina on the west side of the Spoil Bank which will add a significant attraction to the area...A concept sketch of a possible town centre layout in this area* [Spoil Bank area generally] *(Figure 26) shows the excellent opportunities for an ocean-front development, with strong connections to the proposed marina and recreation areas of the Spoil Bank; hotel, restaurant and high density residential development lining a waterfront promenade; a mall of mixed retail and office uses with good visibility from the Anderson Street entry; and supporting medium density residential development on the Moore Street sites.*

The proposed 'Marina Development' Zone Scheme Amendment accords with the intent of the LUMP with respect to its location and mix of land uses.

3.2.2 Pilbara's Port City Growth Plan

The Town of Port Hedland has prepared and advertised the Pilbara's Port City Growth Plan document ('Growth Plan') with the latest version being approved by the WAPC subject to some minor modifications. With respect to the subject land, the Growth Plan identifies the SDA as being contained in "Precinct 1 – West End". The West End is categorised as the Port City's "soul" and a number of strategically important current or planned projects are earmarked for the Precinct. In this regard, and directly associated with the subject land and SDA, the Growth Plan outlines the following:

- A small boating facility/harbour planned for Spoil Bank, with associated accommodation facilities; and
- A key Precinct Highlight being the development opportunities (coastal access, boat ramp, moorings and major entertainment space) attributed to Spoil Bank.

As with the LUMP, the proposed 'Marina Development' Zone Scheme Amendment is consistent with the provisions of the Growth Plan.

4.0 Technical Reports and Studies

LandCorp has commissioned a number of reports and studies that have been undertaken for the subject land to "test" its suitability with respect to the proposed Spoil Bank Marina and Precinct development. The following reports/studies have been undertaken with a summary of each being provided in the sections below:

- Preliminary Dust Monitoring Data (prepared by RPS)
- Environmental Constraints Summary Report – Port Hedland Spoil Bank Development (prepared by RPS)
- Port Hedland Coastal Vulnerability Study (prepared by Cardno)
- Geotechnical Studies – Spoil Bank Marina, Port Hedland (prepared by Golder Associates)
- Spoil Bank Marina Development at Port Hedland for LandCorp – Summary Report on Marine and Civil Engineering (prepared by VDM Consulting)

Due to the size of the above reports and studies, none have been included in their entirety in this Scheme Amendment Request Report. Greg Rowe and Associates, on behalf of LandCorp, can provide the Town of Port Hedland with copies of the above should the Town not be in possession of any of these technical reports.

4.1 Dust Impacts

A preliminary dust impact review was undertaken as part of investigations for the subject land.

Air quality associated with elevated dust levels from natural sources and from nearby port ore stockpiles is an ongoing and long term issue for Port Hedland in general.

The subject land is located approximately 1.5 km from the Port Hedland harbour, and less than 300 m from the nearest ore stockpile. The Port Hedland Dust Taskforce, established in 2009, reviewed existing literature and data to provide recommendations regarding dust management in Port Hedland. It was identified areas west of Taplin Street are considered to be particularly vulnerable to elevated dust levels, and as such built form restrictions were recommended to deter the population of 'at-risk' members of the community (i.e. infants and elderly people).

Limited evidence is available on the toxicological effects of iron ore dust on human health, however the current understanding is that health studies undertaken on urban dust (originating primarily from the combustion of hydrocarbons) are not directly relevant to Port Hedland dust (mineral origin primarily from iron ore). There is no direct evidence that iron oxide in air (i.e. Port Hedland dust) poses significant health risk hazards, however long term exposure to dust may have the potential to cause risk to human health, causing symptoms of lower respiratory illness to occur.

The Port Hedland Dust Taskforce has determined a five year monitoring study should be undertaken to determine the dust levels and health risks. An interim air quality target has been established for Port Hedland (east of Taplin Street), being 70 µg/m^3 (24 hour average), not to be exceeded more than 10 times per year.

The proposed land use controls for development west of Taplin Street, as included in TPS 5 by way of Amendment No. 22, include:

- Dwellings having a maximum floor area of 110m^2 and no more than two bedrooms or rooms which can be used as bedrooms;
- The requirement to inform all landowners and potential purchasers of the potential noise and dust risks;
- A minimum residential density coding of R30 being applicable with a maximum density of R80; and

» Subdivision of land that will only support the development of grouped dwellings.

These land use controls may also considered appropriate for the subject land in regard to permanent residential development should monitoring/reporting conclude that dust levels are elevated to the levels west of Taplin Street. In the absence of a dust risk, the Town of Port Hedland may approve residential development without built form restrictions. This will be elaborated in greater detail in Section 5.0 – Description of Scheme Amendment.

Please refer to Appendix 3 for preliminary Dust Monitoring Data prepared by RPS.

4.2 Environmental Constraints Summary Report – Port Hedland Spoil Bank Development

As previously outlined, RPS was commissioned by LandCorp to *undertake a series of preliminary environmental investigations to provide advice regarding key potential environmental impacts that may constrain the planned development* of the Spoil Bank Marina and Precinct at the subject land. The Environmental Constraints Summary outlines that 10 key environmental factors were tested in relation to potential impact/s upon the development of the subject land for a marina and associated residential/commercial precinct. In this regard, the following key environmental factors were tested:

» Marine turtles
» Migratory waterbirds
» Coastal processes
» Surface water hydrology
» Marine water quality
» Acid sulphate soils
» Soil and groundwater contamination
» Air quality (dust)
» Aboriginal heritage
» European heritage

The Environmental Constraints Summary concluded the following:

> *A key conclusion of this environmental constraints summary report is that none of the identified key environmental risk factors present as being a fatal flaw to the development, although elevated ambient dust concentrations at the site will constrain the final design of the development to a significant degree (as per the requirements of the Town Planning Scheme Amendment No. 22). All environmental constraints identified at the SDA are manageable through engineering and environmental controls.*

As outlined below, a key component of the proposed 'Marina Development' Zone Scheme Amendment is the inclusion of many of the provisions that Amendment No. 22 incorporates with respect to residential development.

4.3 Port Hedland Coastal Vulnerability Study

Cardno was commissioned by LandCorp to prepare the Port Hedland Coastal Vulnerability Study ('Coastal Vulnerability Study') for the Port Hedland region, specifically including the Spoil Bank area (i.e. the subject land), *to inform future planning and development decisions in the region*. The following, an extract of Table 1.1 (as contained in the Coastal Vulnerability Study) presents a summary of the recommended design water levels for potential developments near the Spoil Bank. The Coastal Vulnerability Study, in this regard, states:

The recommended design water levels are based on a 2110 planning period. If infill development is being considered, it is recommended that general fill levels be based on the acceptable risk level design criteria for a 2110 planning period. Based on the uncertainty in the modelling and in estimating long return period design levels, it is recommended that floor levels in any fill development be specified at least 0.5m above the required design water level. For the Spoil Bank region which has wave setup included in the design water levels in Table I.1, the potential inundation as a result of wave run-up and overtopping will also need to be considered when determining the crest level for any shoreline structures.

ARI (YEARS)	DESIGN PEAK TOTAL STILL WATER LEVEL (mAHD) – SPOIL BANK AREA
2	4.4
10	5.7
20	5.8
50	6.1
100	6.8
200	7.0
500	7.8

Extract of Table I.1 (from the Coastal Vulnerability Report) – Summary of Design Peak Total Still Water Levels (TSWL) for Spoil Bank Developments – Selected ARI's for 2110 Climate Scenario

4.4 Geotechnical Studies – Spoil Bank Marina, Port Hedland

Golder Associates (at the request of MP Rogers and Associates Pty Ltd and authorised by the Port Hedland Port Authority) undertook a series of preliminary geotechnical studies in relation to the proposed Spoil Bank Marina and Precinct development. The resulting document, the Geotechnical Studies – Spoil Bank Marina, Port Hedland ('Geotechnical Studies'), contains a series of technical data and recommendations. The Geotechnical Studies outlines the objective and scope of work as:

The objective of the geotechnical studies was to undertake a preliminary investigation of the subsurface conditions along and to the north of the proposed entrance channel and in proposed marina areas. A summary of the scope of works is as follows:

- *review of available geotechnical information for the area;*
- *perform a preliminary site investigation to assess ground conditions;*
- *assess the stability of the seabed to support the proposed breakwater, seawalls and marine elements;*
- *assess dewatering aspects for the construction of the marina; and*
- *assess suitable footing options for the support of structures, including pile support for marina structures.*

For the purposes of a Scheme Amendment to introduce a 'Marina Development' Zone into TPS 5 (and include the subject land into this Zone) detailed geotechnical solutions are not required at this juncture. Suitable remediation of any geotechnical issue/s should be addressed as part of the detailed design/construct phase.

Notwithstanding the above, the Geotechnical Studies conclude that sufficient remediation actions can be undertaken to support on-shore buildings, marine structures, dewatering, acid sulphate soils, dredging/excavation and breakwaters/seawalls as part of the proposed marina development at the subject land.

4.5 Spoil Bank Marina Development at Port Hedland for LandCorp – Summary Report on Marine and Civil Engineering

The Spoil Bank Marina Development at Port Hedland for LandCorp – Summary Report on Marine and Civil Engineering ('Marine and Civil Engineering Summary Report') was prepared by VDM Consulting. VDM Consulting was commissioned by LandCorp through NS Projects Pty Ltd. The Marine and Civil Engineering Summary Report was prepared primarily for utilisation in informing feasibility studies/options for a marina development in Port Hedland. The Marine and Civil Engineering Summary Report also contains a summary with respect to the servicing infrastructure for the subject land (see Appendix 4 and the information outlined in Section 4.5.1 below).

The executive summary (of the Marine and Civil Engineering Summary Report) provides clarity regarding the selection and suitability of the subject land for a marina development. In this regard, the Marine and Civil Engineering Summary Report states:

> *The need for consideration of a marina had been identified with work carried out by the Town of Port Hedland and a Spoilbank Marina Project Steering Group. LandCorp commissioned further studies to confirm boating demand and to investigate possible alternative sites for a recreational boating marina at Port Hedland.*
>
> *The sites study reviewed seven possible sites and concluded that the Spoilbank site physically offered the most viable site, notwithstanding that it is within a dust-nuisance zone from port operations. The influence of this zone is subject of on-going monitoring which will influence possible development outcomes and timing.*
>
> *Three separate marina and land-based development options have been investigated for the Spoilbank site. Servicing constraints and opportunities have been investigated, and preliminary options of probable orders-of-cost to develop the marina and subdivision in accordance with the selected options have been investigated. Cost estimates are presented for each option. Landscaping estimates have been prepared by Emerge Consultants.*

4.5.1 Servicing Assessment

The following provides a summary of the servicing infrastructure and requirements for the subject land. Please refer Appendix 4 for a copy of the Marine and Civil Engineering Summary Report prepared by VDM Consulting for the subject land.

4.5.1.1 Water and Sewer

The treatment and disposal of wastewater within the Town of Port Hedland is undertaken by the Water Corporation. The Water Corporation's wastewater reticulation system currently discharges to one of two wastewater treatment plants, one in Port Hedland and the other in South Hedland.

There are currently no reticulated sewerage services available to the subject land.

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

Whilst reticulation mains and other infrastructure exists to supply the subject land, the Water Corporation will need to conduct an analysis of the final planned development to confirm what, if any, upgrades are required to provide adequate water supplies.

4.5.1.2 Power

Horizon Power is the supply authority operator of the Pilbara power supply grid. Power supply within the established areas of the Town of Port Hedland are supplied via a high voltage supply scheme network of 22kV, which is made up of a combination of overhead lines and underground power cables fed from by one of the three zone substations located within the Town.

Subject to actual demand by the development, there will be a need for an additional high voltage feeder cable to be installed from the site along an appropriate 2 km route through existing streets to a new circuit breaker to be installed at the zone sub-station. The zone substation is located west on the corner of Wilson and McKay Streets.

4.5.1.3 Telecommunications

Telstra infrastructure exists in the area.

A mobile phone tower exists on the corner of Sutherland Street west.

Amplification and installation of telecommunications services for the proposed development will need to be negotiated with NBN Co.

4.5.1.4 Gas

There are no reticulated gas services currently available to the subject land. Alinta Gas currently provides reticulated services to the Boodarie Power Station, however it is not considered economically viable to extend these services to the subject land. Bottled LPG gas may be considered as an alternative if a gas supply is required/desired for the subject land.

5.0 Description of Scheme Amendment

LandCorp is seeking a Scheme Amendment to the Town of Port Hedland Town Planning Scheme No. 5 ('TPS 5') to introduce a 'Marina Development' Zone (into TPS 5) and to rezone the subject land to 'Marina Development' Zone. The intent of the Scheme Amendment is to provide the necessary and appropriate planning provisions to facilitate the development of the Spoil Bank Marina and Precinct (at the subject land) in a manner that is cognisant of contemporary planning principles and that responds to and takes maximum advantage of the unique characteristics of the land.

In recognition of the strategic location of the subject land, in its local and regional context, comprehensive planning needs to be carried out for the subject land.

LandCorp has prepared a Concept Plan for the development of a marina and associated residential/commercial precinct at the subject land. A copy of the Proposed Port Hedland Marina Concept – Option 2A is contained as Figure 4. This Concept Plan is presented as indicative only. The initiation and finalisation of the proposed Scheme Amendment is not intended to give any status to the attached Concept Plan – the plan has been included simply to help guide consideration of the proposed Amendment.

5.1 Specifics of the Scheme Amendment

In order to provide the greatest flexibility with respect to the development of the subject land for marina and associated residential/commercial precinct purposes, it is intended to amend TPS 5 to apply the provisions of Clause 5.2 (Development Plans) and Appendix 6 to the 'Marina Development' Zone. Therefore, it is proposed to add the 'Marina Development' Zone as item (i) under Sub-clause 5.2.1 of TPS 5 and amend Appendix 5 – Development Plan Areas of TPS 5 accordingly. This then applies all Development Plan provisions to the 'Marina Development' Zone which, as stated in Sub-clause 5.2.1 of TPS 5, specifies that: *Council may prepare, or require the preparation of, a Development Plan prior to considering subdivision or development proposals.*

It is proposed to include, as an additional Zone in the Zoning Table, the 'Marina Development' Zone and associated permissibility of any development determined by cross reference between the list of uses on the left side of the Zoning Table against the 'Marina Development' Zone added to the top of the Zoning Table.

It is also proposed to include a new 'Industry – Marine' and 'Education Establishment – Tertiary' land use definitions and associated permissibilities to assist the Town of Port Hedland assess and determine applications for marine based industries (and associated uses) and 'higher order' tertiary educational institutions (but preclude education establishments meant for younger children) respectively. The Zoning Table will be amended to list 'Industry – Marine' as use number 36 and 'Educational Establishment – Tertiary' as use number 73. In order to rectify an anomaly that exists in TPS 5, a 'Marina' land use will also be included in the Zoning Table as use number 50. The 'Marina' land use definition exists in 'Appendix 1' however it is not referenced in the Zoning Table.

Appendix 1 (Definitions) will be amended to include the following land use definitions:

Industry – Marine — *means any land or premises used, or intended to be used, for the purpose of conducting any industries, which require direct access to a river, creek, stream or other body of water as an essential part of their operation. The eligible industries are limited to, as applicable, the following:*

- *boat building, repairing or storage;*
- *fish and seafood processing or storage;*
- *fishing gear manufacturing or repair;*
- *marine engineering;*
- *naval architect or drafting services;*

- » *slipway/boat lifter;*
- » *warehouse associated with waterfront industry;*
- » *wharf and dock;*
- » *activities related to the provision of fuel for boats and other marine craft; and*
- » *marina services.*

Educational Establishment – Tertiary	*means any higher level educational institute beyond school including a college, university, technical institute, academy or other education centre but excludes a juvenile detention centre.*

In the absence of an approved Development Plan for the 'Marina Development' Zone, development may take place in accordance with the specifics of the Zoning Table. It is proposed to notate in the Zoning Table, by way of a footnote, that in the absence of an approved Development Plan the permissibility of development in the 'Marina Development' Zone is to be in accordance with specifics of the Zoning Table.

In addition, and with respect to a use not listed, the generic provisions of TPS 5 will allow for approval to be granted for land uses in the 'Marina Development' Zone that cannot reasonably be included in the definition of one of the development categories listed in the Zoning Table. That is, the specifics of Sub-clause 3.2.6 of TPS 5 will still apply to any use not listed.

Furthermore, given the subject land's proximity to the new 'West End Residential' Zone and port operations, it is proposed to apply the same (relevant) development provisions for residential development to the 'Marina Development' Zone. This will also be notated in the Zoning Table and explained by way of a footnote. Such development controls generally relate to the following:

- » Notwithstanding anything contained within the Residential Design Codes, all residential development in the 'Marina Development' Zone shall comply with the following:
  - a) The maximum plot ratio for all dwellings is 110m^2
  - b) No dwelling shall have greater than two (2) bedrooms or rooms capable of being used as bedrooms
- » The 'Marina Development' Zone has no prescribed maximum residential density. The R30 minimum density coding is prescribed to ensure efficient use of available land and prevent the development of single dwellings within this Zone.
- » When considering an application for planning approval within the 'Marina Development' Zone, Council shall consider impact on streetscape, building setbacks from the boundary, open space and outdoor living provision, car parking provision and any other matter it deems appropriate prior to determining the application.
- » Council shall require as a condition of any planning approval granted for land in the 'Marina Development' Zone, and prior to the commencement of any associated works, that the landowner prepare a notification, in a form acceptable to the Town, to be lodged with the Registrar of Titles for endorsement on the Certificate of Title for the subject lot. This notification is to be sufficient to alert prospective landowners or occupiers that:
  - *a) The Western Australian Department of Health has advised in a preliminary investigation that it does not support medium density residential development in this area due to a potential causal link between the dust generated by nearby ore mining processes and port facilities, and increased likelihood of respiratory health impacts;*
  - *b) Seniors, children, and persons with existing heart or lung disease appear to be at an elevated risk of dust-related health impacts;*

c) *Should additional information be required in regard part 'a' or 'b', the prospective landowners should contact the Western Australian Department of Health.*

Should land that is not affected by the same dust mitigation issues as the subject land be zoned 'Marina Development' Zone (in the future), suitable provisions exist to ensure the same limitations need not apply restricting residential development. The proposed Scheme Amendment provisions have been drafted in a manner that may require the preparation of a Development Plan (for the 'Marina Development' Zone). Sub-clause 5.2.10 of TPS 5 states that: *A Development Plan may indicate development categories in the zoning table which, upon final Development Plan approval, shall be considered permitted (P), (AA) or otherwise by Council in the area of the plan.* Therefore, the above limitations can be circumvented and not applied to all land zoned 'Marina Development' Zone.

5.2 'Marina Development' Zone

5.2.1 Purpose and Intent of the Zone

The 'Marina Development' Zone is intended to provide for public marina uses, tourist, commercial and residential components for the local and visiting community. It is proposed that development within the 'Marina Development' Zone shall be in accordance with any Local Planning Policies, Development Plan/s or Design Guideline/s adopted for this Zone. The Development Plan shall be prepared in accordance with Section 5.2 and Appendix 6 of the Scheme. In the absence of a Development Plan, development of the 'Marina Development' Zone shall accord with the Zoning Table. At this juncture, and has been outlined above, the Zoning Table proposed for the 'Marina Development' Zone includes the 'West End Residential' Zone land use restrictions (and associated footnotes), which aim to control development should monitoring/reporting conclude that dust levels at the subject land are elevated to the levels west of Taplin Street. In the absence of a dust risk, an amendment to the Zoning Table associated with the 'Marina Development' Zone will be made to remove the 'West End Residential' Zone-style limitation imposed, particularly in relation to the restrictions on residential development.

5.2.2 Permitted Uses and Development Standards

Where alternative and permitted uses and subdivision and development standards are adopted as part of a Development Plan those permitted uses and development standards shall apply. In the absence of an adopted Development Plan the land use permissibility for land within the 'Marina Development' Zone shall accord with the Zoning Table as outlined below.

ZONING TABLE		Marina Development Zone (2)
Residential		
1	Aged or Dependent Persons Dwelling	-
2	Ancillary Accommodation	-
3	Cabin *AMD 15 GG 24/3/09*	AA
4	Caretaker's Dwelling	AA(3)
5	Chalet *AMD 15 GG 24/3/09*	AA
6	Grouped Dwelling	AA(3)
7	Guesthouse *AMD 15 GG 24/3/09*	-
8	Holiday Accommodation	SA(3)
9	Holiday Home *AMD 15 GG 24/3/09*	-
10	Home Business *AMD 13 GG 15/02/11*	AA(3)

11	Home Office *AMD 13 GG 15/02/11*	P
~~Home Occupation~~ *DELETED BY AMD 13 GG 15/02/11*		-
12	Hotel	SA
13	Lodge *AMD 15 GG 24/3/09*	-
14	Motel	SA
15	Movable Dwelling	SA
16	Multiple Dwelling	AA(3)
17	Residential Building	AA(3)
18	Rural Settlement	-
19	Serviced Apartment *AMD 15 GG 24/3/09*	AA
20	Short Stay Accommodation *AMD 15 GG 24/3/09*	AA
21	Single House	-
22	Transient Workforce Accommodation	-
23	Tourism Development *AMD 15 GG 24/3/09*	AA
24	Tourist Resort *AMD 15 GG 24/3/09*	AA
Industry		
25	Abattoir	-
26	Agriculture	-
27	Arts and Crafts Centre	AA
28	Container Park *AMD 24 GG 08/02/11*	-
29	Distribution Centre *AMD 24 GG 08/02/11*	-
30	Fuel Depot *AMD 24 GG 08/02/11*	-
31	Intensive Agriculture	-
32	Harbour Installation *AMD 24 GG 08/02/11*	AA
31	Hire Service (Industrial) *AMD 24 GG 08/02/11*	-
32	Industry - Cottage	-
33	Industry - Extractive	-
34	Industry - General	-
35	Industry - Light	-
36	Industry – Marine	AA
37	Industry - Noxious	-
38	Industry - Rural	-
39	Industry - Service	-
40	Industry - Resource Processing	-
41	Industry - Transport *AMD 24 GG 08/02/11*	-
42	Infrastructure	-
43	Stockyard	-
44	Storage facility/depot/laydown area	-
45	Transport Depot *AMD 24 GG 08/02/11*	-
46	Truck Stop *AMD 24 GG 08/02/11*	-
Commerce		
47	Aerodrome	-
48	Display Home Centre	-
49	Dry Cleaning	AA
50	Marina	P
51	Market	AA
52	Mobile Business *AMD 13 GG 15/02/11*	P
53	Motor Vehicle and/or Marine Repair	AA
54	Motor Vehicle and/or Marine Sales or Hire	AA
55	Motor Vehicle and/or Marine Service Station	AA
56	Motor Vehicle and/or Marine Wrecking	AA
57	Motor Vehicle Wash	-
58	Office *AMD 13 GG 15/02/11*	P
59	On-site Canteen	-
60	Outdoor Display	SA
61	Reception Centre	AA
62	Restaurant (includes café)	P
63	Restricted Premises	-
64	Shop	P
65	Showroom	AA
66	Take-away Food Outlet	AA
67	Warehouse	-
Health, Welfare and Community Services		
68	Carpark	AA

69	Child Care Service	-
70	Community Use	P
71	Consulting Rooms	AA
72	Education Establishment	-
73	Education Establishment - Tertiary	AA
74	Emergency Services	AA
75	Funeral Parlour	-
76	Hospital	-
77	Juvenile Detention Centre	-
78	Medical Centre	-
79	Nursing Home	-
80	Place of Animal Care	-
81	Place of Public Meeting, Assembly or Worship	SA
82	Prison	-
83	Public Mall	AA
84	Public Utility	AA
Entertainment, Recreation and Culture		
85	Equestrian Centre	-
86	Entertainment Venue	P
87	Private Recreation	AA
88	Public Recreation	P

The symbols used in the Zoning Table have the following meanings:

P: The development is permitted by the Scheme

AA: The development is not permitted unless the Council has granted planning approval

SA: The development is not permitted unless the Council has granted planning approval after giving notice in accordance with Clause 4.3

IP: The development is not permitted unless the use to which it is put is incidental to the predominant use as decided by Council

–: A development that is not permitted by the Scheme

(2): In the absence of an approved Development Plan (in accordance with Clause 5.2) the above land use permissibility applies for development within the 'Marina Development' Zone

(3): Unless otherwise provided for in an adopted Development Plan, Sub-clauses 6.3.8 – 6.3.11 (inclusive) shall apply to those specified residential land uses in the 'Marina Development' Zone

FIGURE 4 PROPOSED PORT HEDLAND MARINA CONCEPT – OPTION 2A

Conclusion

This report supports the proposal to amend the Town of Port Hedland Town Planning Scheme No. 5 by including a 'Marina Development' Zone (and associated provisions) and by rezoning the subject land from 'Parks and Recreation' Reservation to 'Marina Development' Zone.

Planning for a marina and associated residential/commercial precinct at the subject land has been underway for a number of years. LandCorp has engaged various technical consultants to undertaken investigations with regard to the suitability of the subject land to accommodated redevelopment for a marina and associated residential/commercial uses. The subject land has the technical capability needed to accommodate such development and its location being in proximity to Port Hedland's West End, existing transport network and services adds further justification for the Scheme Amendment.

As demonstrated within this report, the proposed inclusion of a 'Marina Development' Zone (and associated provisions) and rezoning of the subject land to 'Marina Development' Zone is considered to be justified and appropriate for the following reasons:

- The marina proposal has been identified in the Port Hedland Land Use Master Plan, which was endorsed by the Western Australian Planning Commission in September 2008;
- The proposal accords with the objectives of 'Precinct 1 – West End' as contained in Pilbara's Port City Growth Plan;
- The Scheme Amendment will provide the necessary legal town planning mechanisms to facilitate the development (which has been in the preliminary planning phase for some time);
- The Environmental Constraints Summary Report – Port Hedland Spoil Bank Development concludes that no key environmental risk factor poses a fatal flaw to the development and any identified environmental issue can be managed through engineering or environmental controls; and
- Suitable mechanisms have been drafted into the proposed 'Marina Development' Zone (and associated provisions) to allow for certainty and flexibility in implementation.

APPENDIX 1

SCHEME AMENDMENT DOCUMENTS

PLANNING AND DEVELOPMENT ACT 2005

RESOLUTION DECIDING TO AMEND A LOCAL PLANNING SCHEME

TOWN OF PORT HEDLAND

TOWN PLANNING SCHEME NO. 5

AMENDMENT NO. 56

RESOLVED that the Council, in pursuance of Section 75 of the Planning and Development Act 2005, amend the above local planning scheme as follows:

a. Rezone land from:

ii. 'Parks and Recreation' Reservation to 'Marina Development' Zone;

b. Insert, as an additional Zone in the Zoning Table, the 'Marina Development' Zone as follows:

ZONING TABLE		Marina Development Zone (2)
Residential		
1	Aged or Dependent Persons Dwelling	-
2	Ancillary Accommodation	-
3	Cabin *AMD 15 GG 24/3/09*	AA
4	Caretaker's Dwelling	AA(3)
5	Chalet *AMD 15 GG 24/3/09*	AA
6	Grouped Dwelling	AA(3)
7	Guesthouse *AMD 15 GG 24/3/09*	-
8	Holiday Accommodation	SA(3)
9	Holiday Home *AMD 15 GG 24/3/09*	-
10	Home Business *AMD 13 GG 15/02/11*	AA(3)
11	Home Office *AMD 13 GG 15/02/11*	P
~~Home Occupation~~ *DELETED BY AMD 13 GG 15/02/11*		-
12	Hotel	SA
13	Lodge *AMD 15 GG 24/3/09*	-
14	Motel	SA
15	Movable Dwelling	SA
16	Multiple Dwelling	AA(3)
17	Residential Building	AA(3)
18	Rural Settlement	-
19	Serviced Apartment *AMD 15 GG 24/3/09*	AA
20	Short Stay Accommodation *AMD 15 GG 24/3/09*	AA
21	Single House	-
22	Transient Workforce Accommodation	-
23	Tourism Development *AMD 15 GG 24/3/09*	AA
24	Tourist Resort *AMD 15 GG 24/3/09*	AA
Industry		
25	Abattoir	-
26	Agriculture	-
27	Arts and Crafts Centre	AA
28	Container Park *AMD 24 GG 08/02/11*	-
29	Distribution Centre *AMD 24 GG 08/02/11*	-
30	Fuel Depot *AMD 24 GG 08/02/11*	-

31	Intensive Agriculture	-
32	Harbour Installation *AMD 24 GG 08/02/11*	AA
31	Hire Service (Industrial) *AMD 24 GG 08/02/11*	-
32	Industry - Cottage	-
33	Industry - Extractive	-
34	Industry - General	-
35	Industry - Light	-
36	Industry – Marine	AA
37	Industry - Noxious	-
38	Industry - Rural	-
39	Industry - Service	-
40	Industry - Resource Processing	-
41	Industry - Transport *AMD 24 GG 08/02/11*	-
42	Infrastructure	-
43	Stockyard	-
44	Storage facility/depot/laydown area	-
45	Transport Depot *AMD 24 GG 08/02/11*	-
46	Truck Stop *AMD 24 GG 08/02/11*	-
Commerce		
47	Aerodrome	-
48	Display Home Centre	-
49	Dry Cleaning	AA
50	Marina	P
51	Market	AA
52	Mobile Business *AMD 13 GG 15/02/11*	P
53	Motor Vehicle and/or Marine Repair	AA
54	Motor Vehicle and/or Marine Sales or Hire	AA
55	Motor Vehicle and/or Marine Service Station	AA
56	Motor Vehicle and/or Marine Wrecking	AA
57	Motor Vehicle Wash	-
58	Office *AMD 13 GG 15/02/11*	P
59	On-site Canteen	-
60	Outdoor Display	SA
61	Reception Centre	AA
62	Restaurant (includes café)	P
63	Restricted Premises	-
64	Shop	P
65	Showroom	AA
66	Take-away Food Outlet	AA
67	Warehouse	-
Health, Welfare and Community Services		
68	Carpark	AA
69	Child Care Service	-
70	Community Use	P
71	Consulting Rooms	AA
72	Education Establishment	-
73	Education Establishment - Tertiary	AA
74	Emergency Services	AA
75	Funeral Parlour	-
76	Hospital	-
77	Juvenile Detention Centre	-
78	Medical Centre	-
79	Nursing Home	-
80	Place of Animal Care	-
81	Place of Public Meeting, Assembly or Worship	SA
82	Prison	-
83	Public Mall	AA
84	Public Utility	AA
Entertainment, Recreation and Culture		
85	Equestrian Centre	-
86	Entertainment Venue	P
87	Private Recreation	AA
88	Public Recreation	P

The symbols used in the Zoning Table have the following meanings:

P: The development is permitted by the Scheme

AA: The development is not permitted unless the Council has granted planning approval

SA: The development is not permitted unless the Council has granted planning approval after giving notice in accordance with Clause 4.3

IP: The development is not permitted unless the use to which it is put is incidental to the predominant use as decided by Council

–: A development that is not permitted by the Scheme

(2): In the absence of an approved Development Plan (in accordance with Clause 5.2) the above land use permissibility applies for development within the 'Marina Development' Zone

(3): Unless otherwise provided for in an adopted Development Plan, Sub-clauses 6.3.8 – 6.3.11 (inclusive) shall apply to those specified residential land uses in the 'Marina Development' Zone

c. Insert a new land use definition of 'Industry – Marine' in Appendix 1, with the following text being inserted after 'Industry – Light':

Industry – Marine means any land or premises used, or intended to be used, for the purpose of conducting any industries, which require direct access to a river, creek, stream or other body of water as an essential part of their operation. The eligible industries are limited to, as applicable, the following:

- boat building, repairing or storage;
- fish and seafood processing or storage;
- fishing gear manufacturing or repair;
- marine engineering;
- naval architect or drafting services;
- slipway/boat lifter;
- warehouse associated with waterfront industry;
- wharf and dock;
- activities related to the provision of fuel for boats and other marine craft; and
- marina services.

d. List the 'Industry – Marine' land use as number 36 in the Zoning Table and renumber all of the following land uses accordingly. Notate the 'Industry – Marine' land use as an 'AA' land use in the 'Marina Development' Zone, as an 'AA' land use in the 'Urban Development', 'Strategic Industry', 'Industry' and 'Industrial Development' zones and a prohibited land use in all other zones.

e. List the 'Marina' land use as number 50 in the Zoning Table and renumber all of the following land uses accordingly. Notate 'Marina' as a 'P' use in the 'Marina Development' Zone and as a prohibited land use in all other zones.

f. Insert a new land use definition 'Education Establishment – Tertiary' in Appendix 1, with the following text being inserted after 'Education Establishment':

Education Establishment – Tertiary means any higher level educational institute beyond school including a college, university, technical institute, academy or other education centre but excludes a juvenile detention centre.

g. List the 'Education Establishment – Tertiary' land use as number 73 in the Zoning Table and renumber all of the following land uses accordingly. Notate the 'Education Establishment – Tertiary' land use as an 'AA' land use in the 'Marina Development' Zone, as a 'P' use in the 'Education' Zone, an 'IP' land use in the 'Transient Workforce Accommodation', 'Airport', 'Community' and 'Health' zones, an 'AA' land use in the 'Light Industry' Zone, a 'SA[1]' land use in the 'West End Residential' Zone and a prohibited land use in all other zones.

h. Create 'Development Plan Area Marina Development';

i. Insert 'Marina Development' as item (i) under Sub-clause 5.2.1 of TPS 5 and amend Appendix 5 – Development Plan Areas accordingly;

j. Insert the following text after Sub-clause 5.2.1 of TPS 5;

   ii. The Council can support subdivision or approve development in the 'Marina Development' Zone in the absence of an approved Development Plan where it is satisfied such a proposal will not prejudice the orderly and proper future planning and development of the surrounding area;

k. Amend the Scheme Map to reflect zone and reserve changes described in 'a' above; and

l. Amend the Scheme Map, Zoning Table and Scheme Text Appendix 5 – Development Plan Areas map to reflect the Development Plan Area changes described in 'b' to 'j', above.

Town of Port Hedland
Town Planning Scheme No.5
Planning and Development Act 2005 and Town Planning Regulations 1967 (As Amended)
Amendment No.62

Existing Zoning

LEGEND
LOCAL SCHEME RESERVES
- SUBJECT LAND
- LOCAL ROAD
- OTHER PUBLIC PURPOSES DENOTES AS FOLLOWS:
- H — HOSPITAL
- PARKS AND RECREATION

ZONES
- TOURISM
- WEST END RESIDENTIAL

OTHER
- LOCAL GOVERNMENT BOUNDARY
- NO ZONE
- R20 — R CODES

ADOPTION/REFUSAL

ADOPTION [Regulation 13(1)]
ADOPTED by resolution of the Council of the Town of Port Hedland at the Ordinary Meeting of the Council held on the ___ day of _____, 201__.

_____
MAYOR

_____
CHIEF EXECUTIVE OFFICER

FINAL APPROVAL

1. FINAL ADOPTION BY COUNCIL

Adopted for Final Approval by Resolution of the Town of Port Hedland at the _____ Ordinary Meeting of Council held on the day of _____ _____. _____ The Common Seal of the Town of Port Hedland was hereunto affixed by authority of a resolution of the Council in the presence of:

_____
MAYOR

_____
CHIEF EXECUTIVE OFFICER

2. RECOMMENDED / SUBMITTED FOR FINAL APPROVAL:

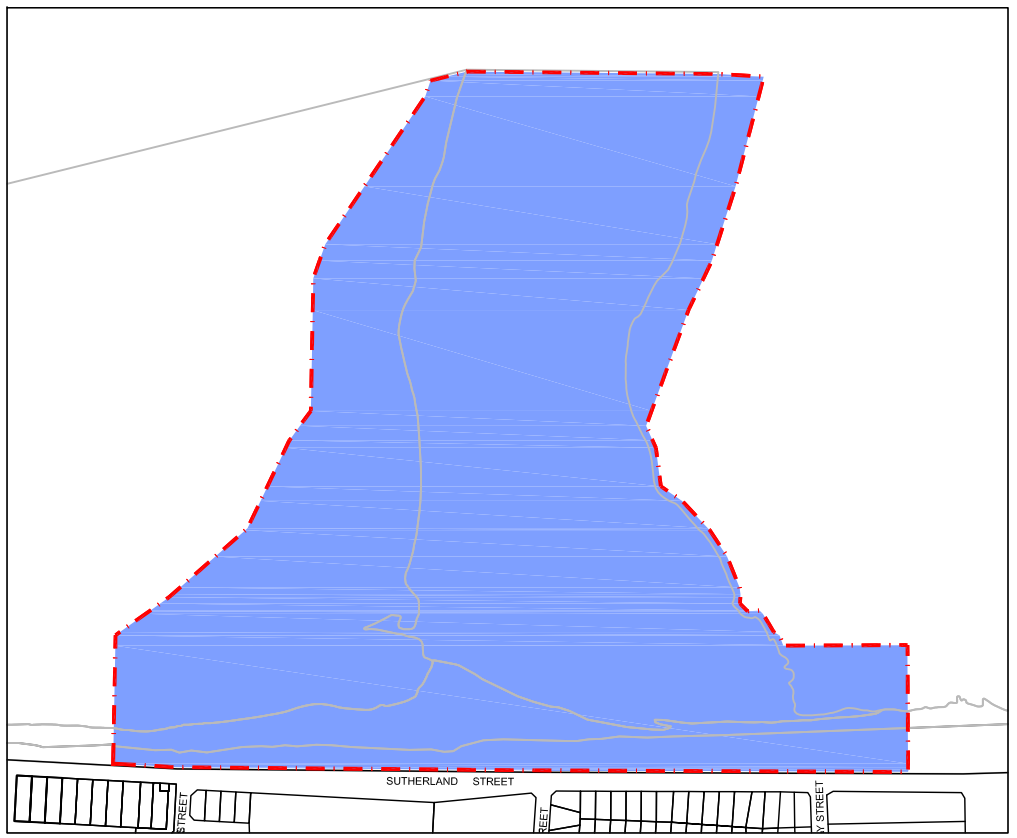
_____
DELEGATED UNDER S.16 OF PD ACT 2005

Date:_____

3. FINAL APPROVAL GRANTED

_____
MINISTER FOR PLANNING

Date:_____



Proposed Zoning

LEGEND
LOCAL SCHEME RESERVES
- SUBJECT LAND

ZONES
- MARINA DEVELOPMENT

0 250 500 Metres
Scale 1:10,000 @ A3

N:\TOWN PLANNING\7000-7999\7533\DRAFTING\A-CAD\7533_REZ01A_20130605 PORT HEDLAND.DWG
Kim Trenberth 5 June 2013

Plan ID: 7533_REZ01A_20130605 PORT HEDLAND.DWG

ADOPTION

Adopted by resolution of the Council of the Town of Port Hedland at the Meeting of the Council held on the __ day of __ 2013.

.....

MAYOR

.....

CHIEF EXECUTIVE OFFICER

FINAL APPROVAL

Adopted for final approval by resolution of the Town of Port Hedland at the Meeting of the Council held on the .....day of .....201..... and the Common Seal of the Town of Port Hedland was hereunto affixed by the authority of a resolution of the Council in the presence of:

.....

MAYOR

.....

CHIEF EXECUTIVE OFFICER

Recommended/Submitted for Final Approval

.....

DELEGATED UNDER S16 OF PD ACT 2005

DATE.....

Final Approval Granted

.....

MINISTER FOR PLANNING

DATE.....

APPENDIX 2

AMENDMENT NO. 22 GAZETTAL NOTICE

Local Government Act 1995—Part 9, Division 2, Subdivision 1, Sections 9.13, 9.16 and 9.17—Miscellaneous Provisions About Enforcement—Robert Butler

Local Government Act 1995—Section 3.39—Impounding and Removing Goods Involved in Certain Contraventions—Robert Butler

Food Act 2008—Part 10, Division 3, Sections 122, 126 (2)—Ross Keegan

Environmental Protection Act 1986—Sections 87 and 88—Ross Keegan

All previous authorisations for Drew Monkhouse are hereby revoked.

GARY TUFFIN, Chief Executive Officer.
Updated 19 April 2012.
PO Box 70, Bindoon WA 6502.
Ph: (08) 9576 4600 Fax: (08) 9576 1250.

PLANNING

PL401*

PLANNING AND DEVELOPMENT ACT 2005

METROPOLITAN REGION SCHEME AMENDMENT 1211/41

MADDINGTON-KENWICK STRATEGIC EMPLOYMENT AREA—PRECINCT 1

Outcome of Submissions

The Western Australian Planning Commission (WAPC) has considered all the submissions received in respect of the amendment proposal for the Maddington-Kenwick Strategic Employment Area—Precinct 1 Amendment 1211/41. This proposal was first published in the *Government Gazette* on 2 August 2011. The amendment is shown on WAPC plan number 3.2356/2.

The amendment, with modifications, has been presented to and approved by the Governor in accordance with the requirements of the *Planning and Development Act 2005*. It will now be tabled in both Houses of Parliament, where it must remain for 12 sitting days. During this time either House may, by resolution, disallow the amendment. As soon as the amendment is no longer subject to disallowance it becomes legally effective in the Metropolitan Region Scheme.

Copies of the amendment and the accompanying report on submissions are available for public inspection from Wednesday 2 May 2012 at—

- Western Australian Planning Commission, 140 William Street, Perth
- J S Battye Library, Level 3 Alexander Library Building, Perth Cultural Centre
- City of Perth
- City of Fremantle
- City of Gosnells
- Shire of Kalamunda

Copies of the report on submissions are also available from the PlanningWA website *www.planning.wa.gov.au*.

NEIL THOMSON, Secretary,
Western Australian Planning Commission.

PL402*

PLANNING AND DEVELOPMENT ACT 2005

APPROVED LOCAL PLANNING SCHEME AMENDMENT

Town of Port Hedland

Town Planning Scheme No. 5—Amendment No. 22

Ref: TPS/0087

It is hereby notified for public information, in accordance with section 87 of the *Planning and Development Act 2005* that the Minister for Planning approved the Town of Port Hedland local planning scheme amendment on 12 April 2012 for the purpose of—

1. Rezoning the land bounded by Anderson, Withnell, Sunderland and Taplin Streets, and The Esplanade, Port Hedland currently zoned "Residential" to "West End Residential", with an applied density code of "Min. R30/Max. R80" as depicted on the amendment map.
2. Rezoning the land bounded by Withnell, McKay and Anderson Streets, and The Esplanade, Port Hedland from "Residential" to "Town Centre" as depicted on the amendment map.
3. Amending the Scheme text by—
   (i) Inserting section "3.1 (a) iv. West End Residential".
   (ii) Inserting under section "6.3 Residential Zone," and above clause 6.3.1 the subheading "General Provisions".

(iii) Following clause 6.3.7 inserting the subheading "West End Residential".

(iv) Inserting the following clauses under the subheading "West End Residential"—

6.3.8 The purpose of the West End Residential Zone is to establish a residential zone in which dwellings are designed and constructed in such a way as to discourage occupation by families with children or by elderly persons.

6.3.9 Residential development within the West End Residential Zone and within the area bounded by Withnell, McKay and Anderson Streets, and The Esplanade, Port Hedland shall be in accordance with a local planning policy, development plan or design guideline adopted by Council that incorporates building design and performance standards to reduce exposure to dust, and to include but not necessarily be limited to—

- filtration of incoming air into the building designed to utilise coarse disposable pre-filtration (i.e. G3 or G4 rated) and then a finer filter (i.e. F4 rated);
- location of operable windows and doors on the western and southern building facades only;
- use of deflection screens on the northern and eastern edges of operable windows;
- use of eaves;
- orienting buildings to avoid wind tunnelling effects; and
- protective screens and porticos at building entrances to reduce the direct impact of wind onto the opening.

6.3.10 Notwithstanding anything contained within the Residential Design Codes, all residential development in the West End Residential Zone shall comply with the following—

(a) Residential development must be between a minimum yield equivalent to the R30 density and a maximum yield equivalent to the R80 density for all land and/or any individual lot included within an application for planning approval.

(b) The maximum internal floor area for all dwellings is 110 m^2.

(c) No dwelling shall have greater than two (2) bedrooms or rooms capable of being used as bedrooms.

6.3.11 When considering an application for planning approval within the West End Residential Zone, Council shall consider the purpose of the zone and recommendations of any formal risk study undertaken by or endorsed by the Department of Health.

6.3.12 Notwithstanding Clause 6.1.1 of the Residential Design Codes of Western Australia 2008, Council shall not recommend approval for the creation of lots that are less than 600 m^2 unless the lots are already developed or it is demonstrated that the lots may be developed for grouped or multiple dwellings.

(v) Inserting under section "6.6 Commercial Zones," and after clause 6.6.5 the following—

6.6.6 Residential development on land bounded by Withnell, McKay and Anderson Streets, and The Esplanade, must comply with the requirements of Clause 6.3.9 and 6.3.10 of the Scheme.

4. Inserting a new use in the Zoning Table for West End Residential—

Town of Port Hedland TPS 5
Zoning Table

	ZONING TABLE	**West End Residential**
Residential		
1	Aged or Dependent Persons Dwelling	–
2	Ancillary Accommodation	–
3	Caretaker's Dwelling	AA
4	Grouped Dwelling	AA
5	Holiday Accommodation	SA
6	Home Occupation	AA

ZONING TABLE		West End Residential
7	Hotel	SA
8	Motel	SA
9	Movable Dwelling	
10	Multiple Dwelling	AA
11	Residential Building	AA
12	Rural Settlement	–
13	Single House	–
14	Transient Workforce Accommodation	SA
Industry		
15	Abattoir	–
16	Agriculture	–
17	Arts and Crafts Centre	SA
18	Intensive Agriculture	–
19	Harbour Installation	–
20	Hire Service (Industrial)	–
21	Industry—Cottage	SA
22	Industry—Extractive	–
23	Industry—General	–
24	Industry—Light	–
25	Industry—Noxious	–
26	Industry—Rural	–
27	Industry—Service	–
28	Industry—Resource Processing	–
29	Infrastructure	AA
30	Stockyard	–
31	Storage Facility/Depot/Laydown Area	–
Commerce		
32	Aerodrome	–
33	Display Home Centre	SA
34	Dry Cleaning	–
35	Market	SA
36	Motor Vehicle and/or Marine Repair	–
37	Motor Vehicle and/or Marine Sales or Hire	–
38	Motor Vehicle and/or Marine Service Station	–
39	Motor Vehicle and/or Marine Wrecking	–
40	Motor Vehicle Wash	–
41	Office	SA
42	On-site Canteen	–
43	Outdoor Display	–
44	Reception Centre	–
45	Restaurant (includes café)	SA
46	Restricted Premises	–
47	Shop	–
48	Showroom	–
49	Take-away Food Outlet	–
50	Warehouse	–

ZONING TABLE		West End Residential
Health, Welfare & Community Services		
51	Carpark	SA
52	Child Care Service	–
53	Community Use	SA[1]
54	Consulting Rooms	SA
55	Education Establishment	SA[1]
56	Emergency Services	–
57	Funeral Parlour	–
58	Hospital	–
59	Juvenile Detention Centre	–
60	Medical Centre	–
61	Nursing Home	–
62	Place of Animal Care	–
63	Place of Public Meeting, Assembly or Worship	–
64	Prison	–
65	Public Mall	–
66	Public Utility	AA
Entertainment, Recreation & Culture		
67	Equestrian Centre	–
68	Entertainment Venue	–
69	Private Recreation	SA[1]
70	Public Recreation	AA[1]

The symbols used in the zoning table have the following meanings—

P The development is permitted by the Scheme

AA The development is not permitted unless the Council has granted planning approval

SA The development is not permitted unless the Council has granted planning approval after giving notice in accordance with clause 4.3

lP The development is not permitted unless the use to which it is put is incidental to the predominant use as decided by Council

– A development that is not permitted by the Scheme

[1] Notwithstanding anything contained in Appendix 1—Definitions, no land use shall be approved within the West End Residential Zone that is intended for use either exclusively or primarily by children or elderly persons.

5. Amending the Scheme Map accordingly.

K. HOWLETT, Mayor.
P. MARTIN, Chief Executive Officer.

PL403*

PLANNING AND DEVELOPMENT ACT 2005

LOCAL PLANNING SCHEME AVAILABLE FOR INSPECTION

Shire of Wiluna

Local Planning Scheme No. 2 and Local Planning Strategy

Ref: TPS/0459

Notice is hereby given that the local government of the Shire of Wiluna has prepared the abovementioned local planning scheme and local planning strategy for the purpose of—

Local Planning Scheme

1. setting out the local government's planning purposes and intentions for the scheme area;

2. setting aside land as reserves for public purposes;
3. zoning land within the scheme area for the purposes defined in the scheme;
4. controlling and guiding land use and development;
5. setting out procedures for the assessment and determination of planning applications;
6. making provision for the administration and enforcement of the scheme; and
7. addressing other matters contained in the First Schedule to the Planning and Development Act.

Local Planning Strategy

The Local Planning Strategy is part of a recognised statutory process, and can tie together a range of land use, social, economic and regional development issues within a delivery framework. It will provide the planning direction for the sustainable growth and development of the Shire for the nest 15 years and will apply state and regional planning policies, and provide the rationale for the land use zones and other provisions of the local planning scheme.

Plans and documents setting out and explaining the local planning scheme and local planning strategy have been deposited at Council Offices, Scotia Street, Wiluna and at the Western Australian Planning Commission, 140 William Street, Perth, and will be available for inspection during office hours up to and including 30 July 2012.

Submissions on the local planning scheme and local planning strategy may be made in writing on Form No. 4 and lodged with the undersigned on or before 30 July 2012.

T. DOUST, Acting Chief Executive Officer.

PL404*

PLANNING AND DEVELOPMENT ACT 2005

APPROVED LOCAL PLANNING SCHEME AMENDMENT

City of Greater Geraldton

Town Planning Scheme No. 3—Amendment No. 60

Ref: TPS/0661

It is hereby notified for public information, in accordance with section 87 of the *Planning and Development Act 2005* that the Minister for Planning approved the City of Greater Geraldton local planning scheme amendment on 11 April 2012 for the purpose of—

1. Rezoning Lot 381 Fifth Street, Wonthella from Residential R12.5/40/50 to Local Centre.
2. Amending the Scheme Maps accordingly.

I. W. CARPENTER, Mayor.
A. BRUN, Chief Executive Officer.

PL405*

PLANNING AND DEVELOPMENT ACT 2005

APPROVED LOCAL PLANNING SCHEME AMENDMENT

City of Greater Geraldton

Town Planning Scheme No. 3—Amendment No. 65

Ref: TPS/0810

It is hereby notified for public information, in accordance with section 87 of the *Planning and Development Act 2005* that the Minister for Planning approved the City of Greater Geraldton local planning scheme amendment on 11 April 2012 for the purpose of—

1. Deleting Additional Uses 1, 2, 3 and 49 (Service Industry) from Schedule 2.
2. Deleting Special Use (Service Station) from Schedule 3.
3. Rezoning Lots 83, 74, 63 and 62 North West Coastal Highway, Wonthella from Residential Additional Use (Service Industry) to Highway Commercial and Lot 82 North West Coastal Highway, Wonthella from Special Use (Service Station) to Highway Commercial.
4. Amending the Scheme Map accordingly.

I. W. CARPENTER, Mayor.
A. BRUN, Chief Executive Officer.

APPENDIX 3

DUST MONITORING - RPS

38 Station Street, Subiaco, WA 6008 • PO Box 465, Subiaco 6904, Western Australia
T +618 9211 1111 F +618 9211 1122 E environment@rpsgroup.com.au W rpsgroup.com.au

Our Ref: C12249

Email: colm.corcoran@rpsgroup.com.au
Date: 31 August 2012

Todd Wood
Senior Project Manager
LandCorp
Level 6 Wesfarmers House
40 The Esplanade
PERTH WA 6000

Dear Todd

SPOIL BANK MARINA, PORT HEDLAND

RPS were commissioned by LandCorp to review a series of documents relating to dust monitoring data in relation to a proposed development for the Spoil Bank Marina, Port Hedland. RPS were provided with the following documentation:

- Port Hedland Outer Harbour Development, Dust Modelling and Assessment, SKM February 2011
- Port Hedland Outer Harbour Development, Air Quality Assessment, pae holmes March 2012
- Addendum to Port Hedland Outer Harbour Development, Air Quality Assessment, pae holmes May 2012

RPS were requested to review the dust modelling data presented in the reports and to assess the feasibility of applying the available data to the area of proposed development. Subsequent to a review of the data RPS arranged for a series of maps to be generated. These maps were reproduced from the report 'Port Hedland Outer Harbour Development – Air Quality Assessment', pae holmes, March 2012 on behalf of BHP Billiton Iron Ore, (Section 7.1 Model results).

The maps were digitised in order to overlay the contours in relation to the proposed development which was added to the final figure. As the reports provided for review contained only pdf figures and based on the absence of source monitoring data, RPS did not feel it was appropriate to extrapolate the data and to thereby extend the contours across the proposed development area. On this basis RPS are of the opinion that additional data points will be required in order to provide the information required regarding the development. However in a number of cases the dust contours presented in the referenced report either encompassed the proposed development area or extended close to the development boundary. Where this occurred RPS produced figures focused on the relevant section of the map in order to more easily present the contours in relation to the development.

While every effort has been made to ensure that the contours in these figures are accurately presented, the figures are reproductions and are intended for use as a visual reference. The figures have not been produced using the original modelling data, as this has not been made available. Following discussions with LandCorp, RPS contacted BHP regarding the potential release of the original dust modelling data. RPS were informed that the release of the data could not be guaranteed owing to potential commercial confidentiality issues. At the request of LandCorp RPS have not pursued the release of this information any further.

Yours sincerely
RPS

COLM CORCORAN
Principal

ATTACHMENTS

Figure 1: Maximum predicted 24-hr PM10 concentrations (OHD standalone without background)
Figure 2: Maximum predicted 24-hr PM10 concentrations (OHD and PHIHP with background)
Figure 3: Number of excursions above 70 (OHD and PHIP with background)
Figure 4: Annual average predicted TSP concentrations (OHD standalone without background)
Figure 5: Maximum predicted TPS concentrations (OHD and PHIHP with background)
Figure 6: Maximum predicted 24-hr PM10 concentrations (Cumulative with background)
Figure 7: Number of excursions above 70 (Cumulative with background)
Figure 8: Annual average predicted TSP concentrations (Cumulative with background)

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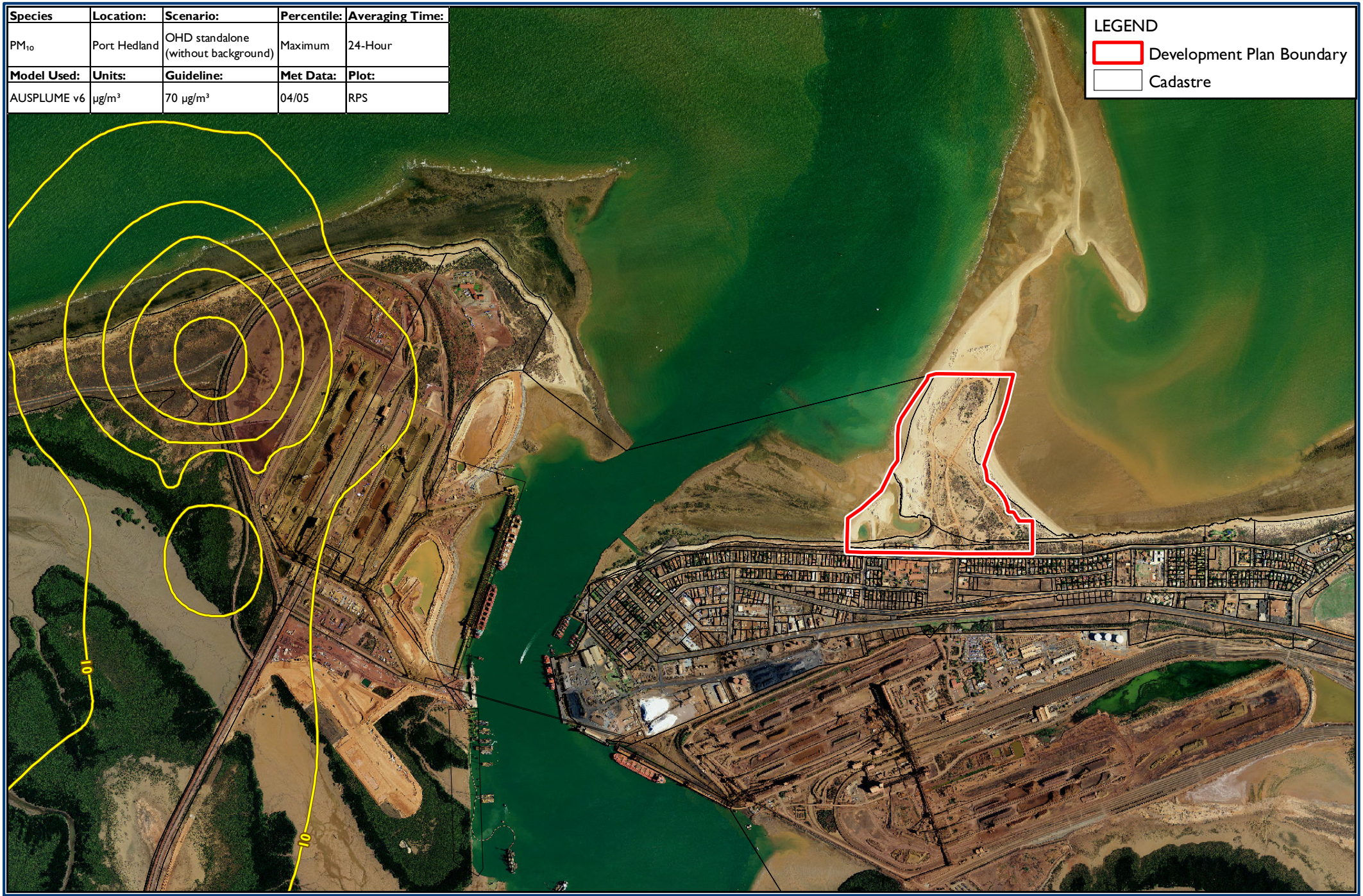
Species	Location:	Scenario:	Percentile:	Averaging Time:
PM_{10}	Port Hedland	OHD standalone (without background)	Maximum	24-Hour
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AUSPLUME v6	µg/m³	70 µg/m³	04/05	RPS



RPS

Job Number: C12249BD
Date: 22.08.12
Version: 0
Scale: 1:25,000 @ A4
Drafted by: MA
Source: Cadastre - Landgate, 2011 Orthophoto - Landgate, 2009

0 125 250 500 750 1,000 m

Figure 1

Maximum predicted 24-hr PM_{10} concentrations (OHD standalone without background)

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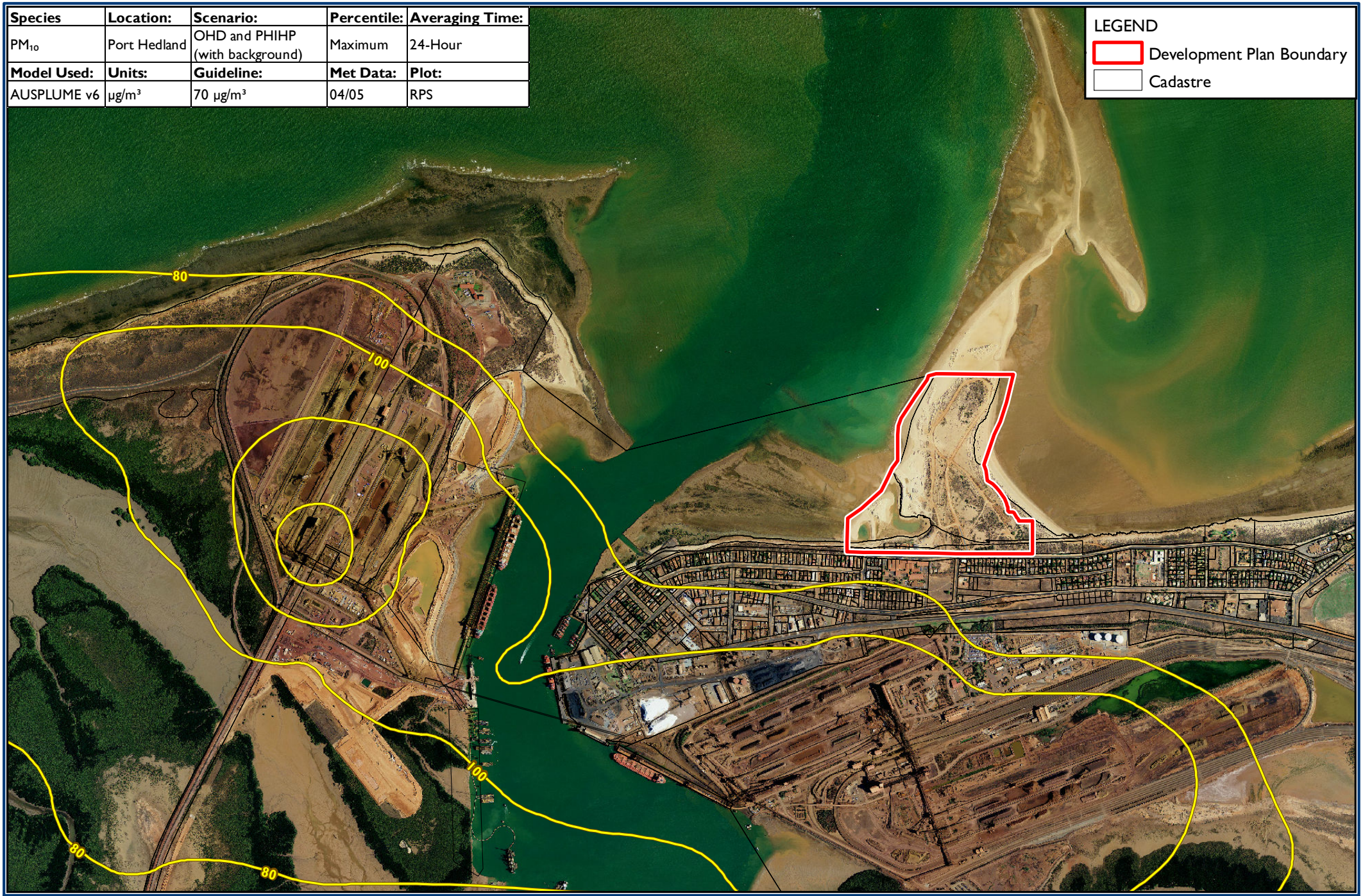
Species	Location:	Scenario:	Percentile:	Averaging Time:
PM_{10}	Port Hedland	OHD and PHIHP (with background)	Maximum	24-Hour
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AUSPLUME v6	µg/m³	70 µg/m³	04/05	RPS



RPS

Job Number: C12249BD
Date: 22.08.12
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Scale: 1:25,000 @ A4
Drafted by: MA
Source: Cadastre - Landgate, 2011 Orthophoto - Landgate, 2009

0 125 250 500 750 1,000 m

Figure 2

Maximum predicted 24-hr PM_{10} concentrations (OHD and PHIHP with background)

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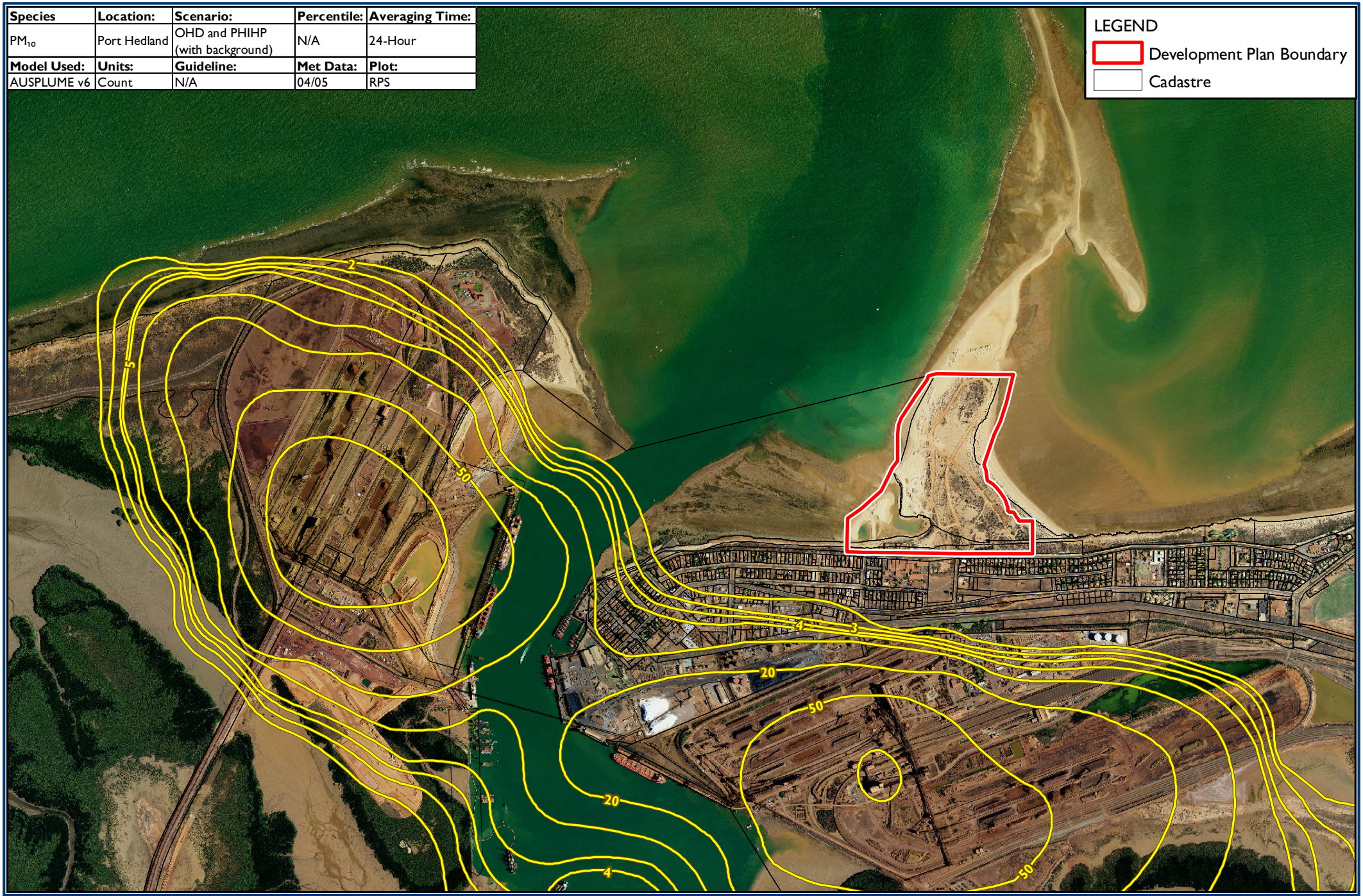
Species	Location:	Scenario:	Percentile:	Averaging Time:
PM_{10}	Port Hedland	OHD and PHIHP (with background)	N/A	24-Hour
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AUSPLUME v6	Count	N/A	04/05	RPS



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Scale: 1:25,000 @ A4
Drafted by: MA
Source: Cadastre - Landgate, 2011 Orthophoto - Landgate, 2009

0 125 250 500 750 1,000 m

Figure 3

Number of excursions above 70 µg/m³ (OHD and PHIHP with background)

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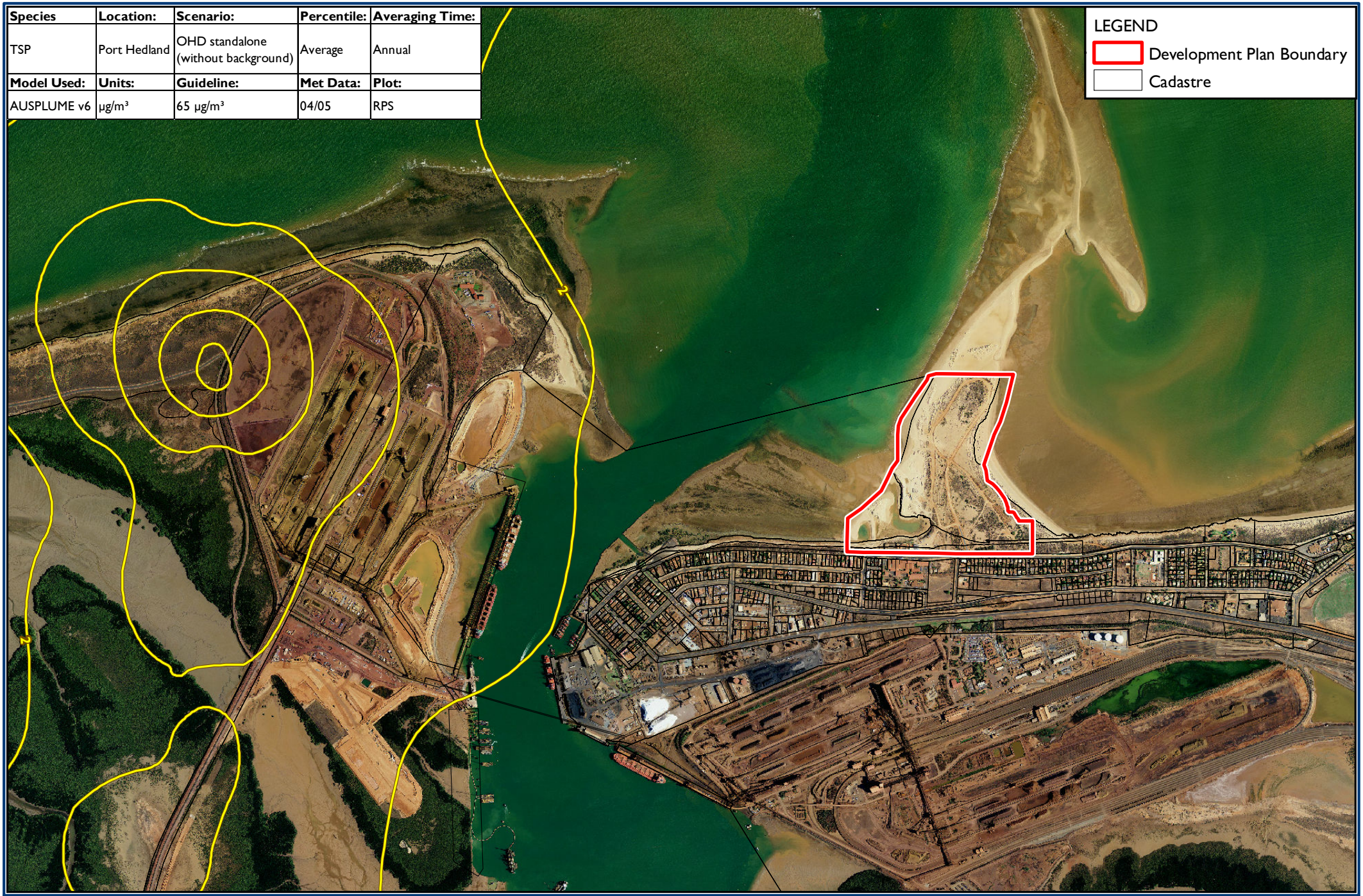
Species	Location:	Scenario:	Percentile:	Averaging Time:
TSP	Port Hedland	OHD standalone (without background)	Average	Annual
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AUSPLUME v6	µg/m³	65 µg/m³	04/05	RPS



RPS

Job Number: C12249BD
Date: 22.08.12
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Scale: 1:25,000 @ A4
Drafted by: MA
Source: Cadastre - Landgate, 2011 Orthophoto - Landgate, 2009

0 125 250 500 750 1,000 m

Figure 4

Annual average predicted TSP concentrations (OHD standalone without background)

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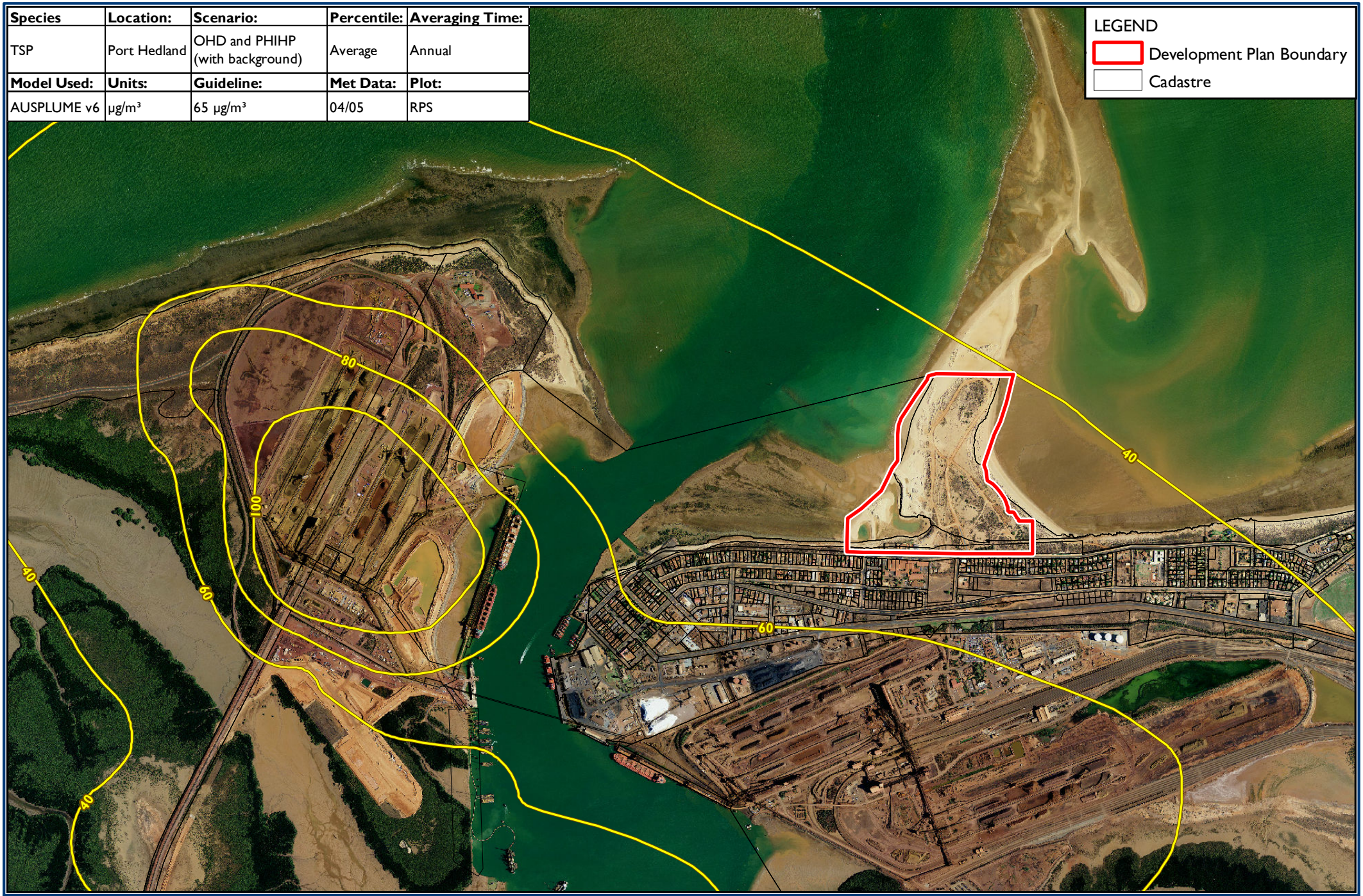
Species	Location:	Scenario:	Percentile:	Averaging Time:
TSP	Port Hedland	OHD and PHIHP (with background)	Average	Annual
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AUSPLUME v6	µg/m³	65 µg/m³	04/05	RPS



RPS

Job Number: C12249BD
Date: 22.08.12
Version: 0
Scale: 1:25,000 @ A4
Drafted by: MA
Source: Cadastre - Landgate, 2011 Orthophoto - Landgate, 2009

0 125 250 500 750 1,000 m

Figure 5

Maximum predicted TPS concentrations (OHD and PHIHP with background)

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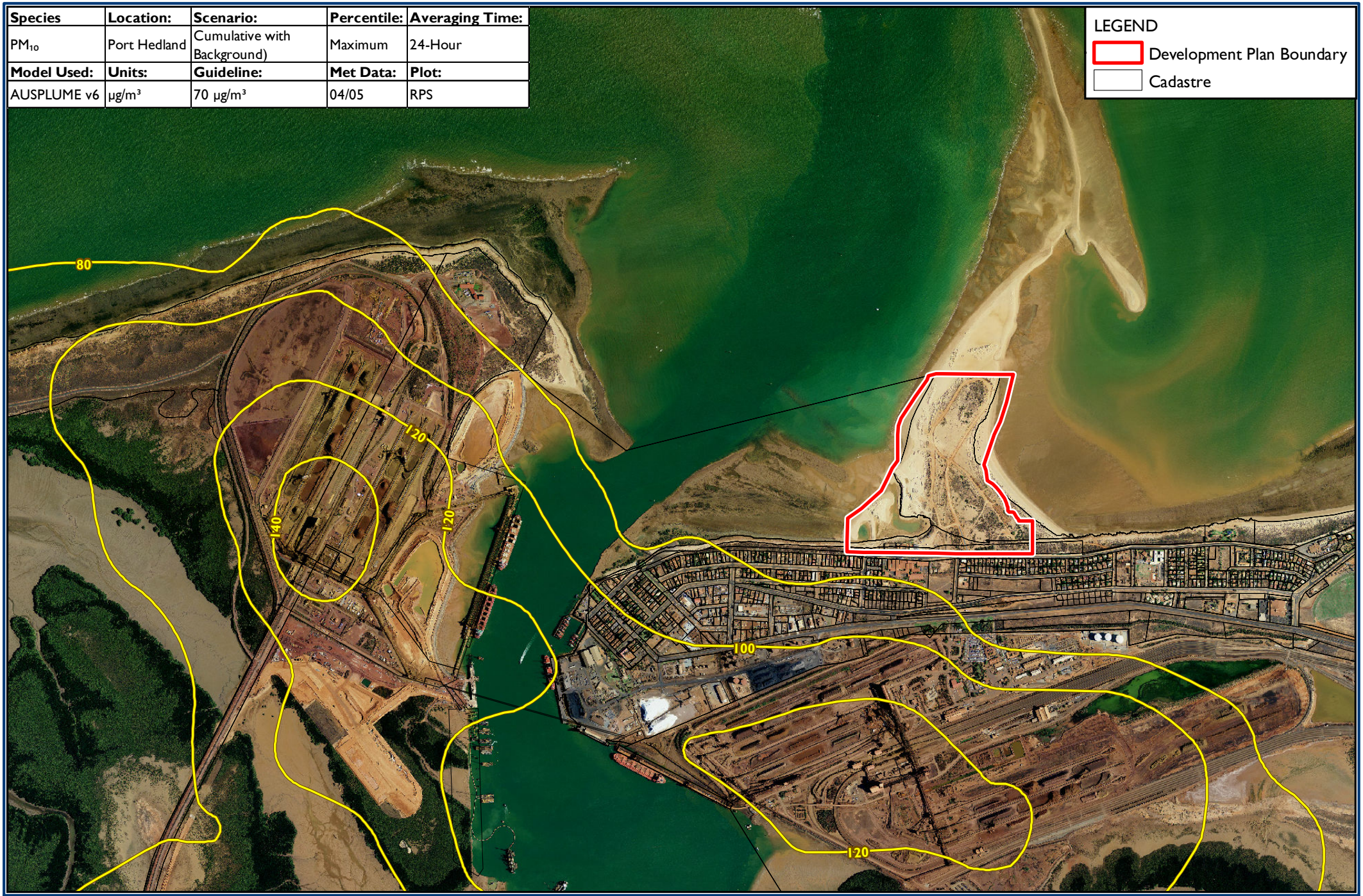
Species	Location:	Scenario:	Percentile:	Averaging Time:
PM_{10}	Port Hedland	Cumulative with Background)	Maximum	24-Hour
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AUSPLUME v6	µg/m³	70 µg/m³	04/05	RPS



RPS

Job Number: C12249BD
Date: 22.08.12
Version: 0
Scale: 1:25,000 @ A4
Drafted by: MA
Source: Cadastre - Landgate, 2011 Orthophoto - Landgate, 2009

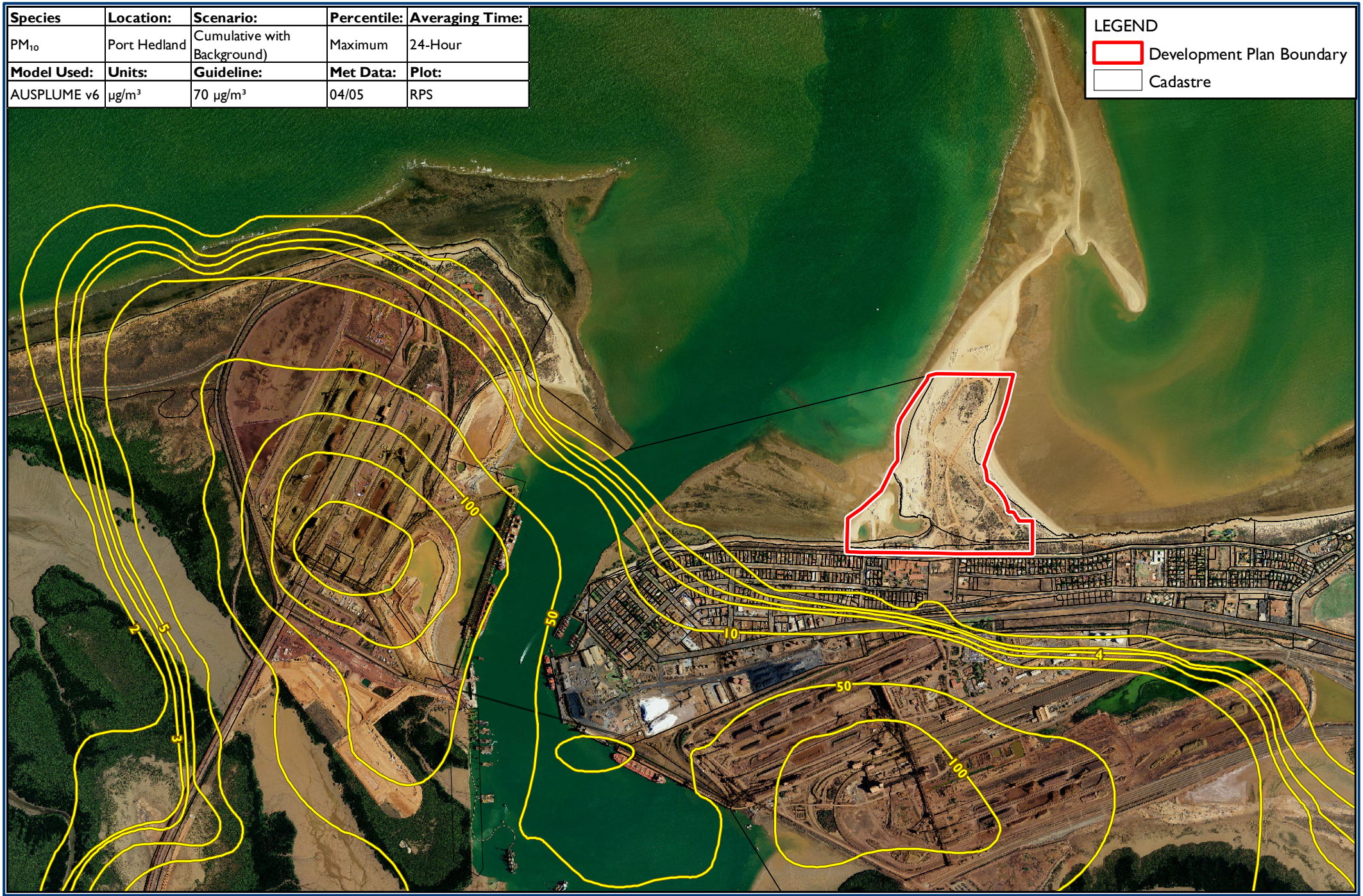
0 125 250 500 750 1,000 m

Figure 6

Maximum predicted 24-hr PM_{10} concentrations (Cumulative with background)

38 Station Street, Subiaco | T +61 8 92111111 | F +61 8 92111122 | www.rpsgroup.com.au

Species	Location:	Scenario:	Percentile:	Averaging Time:
PM_{10}	Port Hedland	Cumulative with Background)	Maximum	24-Hour
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AUSPLUME v6	µg/m³	70 µg/m³	04/05	RPS



RPS

Job Number: C12249BD
Date: 22.08.12
Version: 0
Scale: 1:25,000 @ A4
Drafted by: MA
Source: Cadastre - Landgate, 2011 Orthophoto - Landgate, 2009

0 125 250 500 750 1,000 m

Figure 7

Number of excursions above 70 µg/m³ (Cumulative with background)

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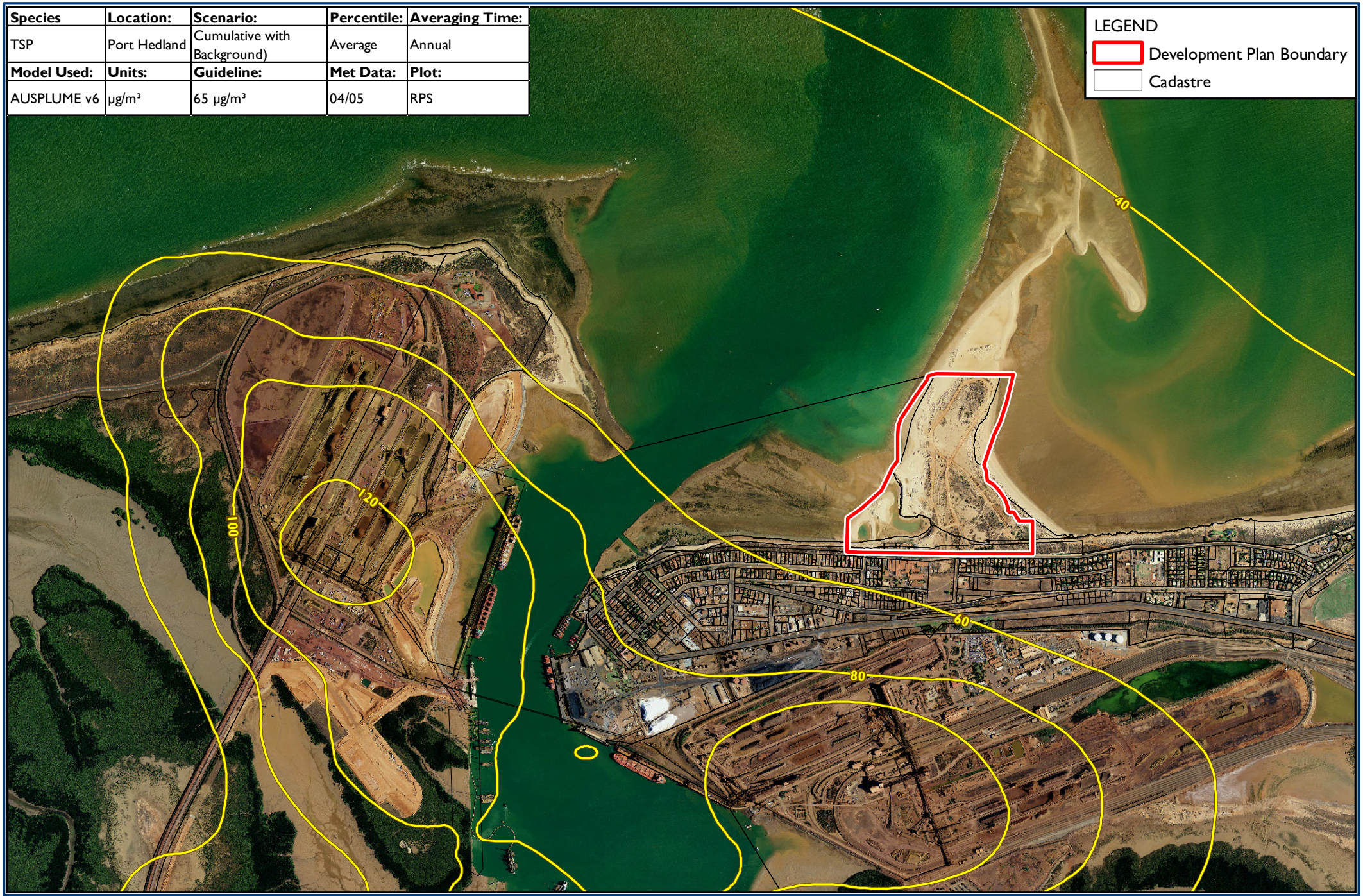
Species	Location:	Scenario:	Percentile:	Averaging Time:
TSP	Port Hedland	Cumulative with Background)	Average	Annual
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AUSPLUME v6	µg/m³	65 µg/m³	04/05	RPS



RPS

Job Number: C12249BD
Date: 22.08.12
Version: 0
Scale: 1:25,000 @ A4
Drafted by: MA
Source: Cadastre - Landgate, 2011 Orthophoto - Landgate, 2009

0 125 250 500 750 1,000 m

Figure 8

Annual average predicted TSP concentrations (Cumulative with background)

APPENDIX 4

MARINE AND CIVIL ENGINEERING REPORT - VDM

VDM CONSULTING

A member of the VDM Group
VDM Consulting (WA) Pty Ltd
ABN No. 59 009 351 400

SPOILBANK MARINA DEVELOPMENT AT PORT HEDLAND FOR LANDCORP

SUMMARY REPORT ON MARINE & CIVIL ENGINEERING

Project Management by : NS Projects Pty Ltd

Prepared by : VDM Consulting (WA) Pty Ltd
In conjunction with MP Rogers & Associates Pty Ltd. Coastal and Port Engineers (ABN 14 062 681 252)

OCTOBER 2011

310 Selby Street North, Osborne Park, Western Australia 6017
Tel: (08) 9241 1800 Fax: (08) 9241 1999

CONSULT AUSTRALIA

DOCUMENT CONTROL

Revision No.	Description of Revision	Date	Approved
Draft	Draft for Comment	11 August 2011	
-	Initial Issue	23 September 2011	
1	Revision 1	4 October 2011	
2	Revision 2	31 October 2011	

Recipients are responsible for eliminating all superseded documents in their possession.

Approved by:	**Enzo Biagioni-Froudist**
Position:	**Principal – WA Civil**
Signed:	
Date:	31/10/2011

Prepared by:	**Greg Locke**
Position:	**Consultant - Civil Engineering**
Signed:	
Date:	31/10/2011

VDM Consulting (WA) Pty Ltd
A.B.N. 59 009 351 400
A.C.N 009 351 400

Trading as VDM Consulting

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Email: vdmgroup@vdmgroup.com.au

VDM GROUP member

LQMS APPROVED COMPANY ISO 9001 Quality Management Systems

LandCorp/NS Reference

10-027B/60/160/2011-10-04/VDM Consulting/Summary Report on Marine & Civil Engineering

VDM Reference

OP100117-C0103

INDEX

REFERENCES

A. Department of Housing and Works, Port Hedland Enhancement Scheme – Spoilbank Feasibility Study – Report R168 Draft A by mp rogers & associates pty ltd.

B. Town of Port Hedland, Spoil Bank Marina – Flume Testing Results, July 2010 – Report 10113 Rev 0 by mp rogers & associates pty ltd.

C. VDM Consulting/LandCorp, April 2011 – Port Hedland Alternative Marina Locations Study – Report R288 Rev 1 by mp rogers & associates pty ltd – incorporating Facility Demand Study.

D. Spoilbank Marina, Port Hedland – Geotechnical Report by Golder Associates – December 2009.

E. Port Hedland Coastal Vulnerability Study for LandCorp by Cardno – 5th April, 2011.

1. EXECUTIVE SUMMARY

1.1 This summary report on Marina and Civil Engineering constraints and opportunities has been prepared to assist with development feasibilities of development options considered for a marina and associated land-backed development at Spoilbank, in the Town of Port Hedland.

1.2 The report has been commissioned by LandCorp through NS Projects Pty Ltd and has been prepared by VDM Consulting (WA) Pty Ltd in conjunction with MP Rogers and Associates Pty Ltd.

1.3 The need for consideration of a marina had been identified with work carried out by the Town of Port Hedland and a Spoilbank Marina Project Steering Group. LandCorp commissioned further studies to confirm boating demand and to investigate possible alternative sites for a recreational boating marina at Port Hedland.

1.4 The sites study reviewed seven possible sites and concluded that the Spoilbank site physically offered the most viable site, notwithstanding that it is within a dust-nuisance zone from port operations. The influence of this zone is subject of on-going monitoring which will influence possible development outcomes and timing.

1.5 Three separate marina and land-based development options have been investigated for the Spoilbank site. Servicing constraints and opportunities have been investigated, and preliminary options of probable orders-of-cost to develop the marina and subdivision in accordance with the selected options have been investigated. Cost estimates are presented for each option. Landscaping estimates have been prepared by Emerge Consultants.

2. INTRODUCTION

2.1 LandCorp through Project Managers N.S Projects Pty Ltd (NSP) engaged VDM Consulting (WA) Pty Ltd as civil and marine engineers to provide engineering consultancy services for Phase A services on the Spoilbank Project at Port Hedland. Phase A of this work is Feasibility Study Refinement and Cabinet Submission.

2.2 VDM Consulting (WA) Pty Ltd is providing this engineering consulting service through **VDM Consulting – WA Civil (VDM)** and specialist coastal and port engineering sub-consultants **mp rogers and associates pty ltd (MRA)**.

2.3 The development feasibility of the Spoilbank was initially investigated by MRA as part of a study commissioned by the Department of Housing and Works on behalf of the Pilbara Development Commission. This report, entitled *Port Hedland Enhancement Scheme Spoil Bank Feasibility Study – Report R168 Draft A* (Ref A), investigated the dynamics of the Spoilbank, together with the likely ocean flooding levels and the building setback requirements with the aim of developing a marina and caravan park on the Spoilbank. The study found that while the Spoilbank is a dynamic structure, there is a large land area at the base of the Spoilbank that would be suitable for development, although in some instances management and protective structures may be required.

2.4 Subsequent to the initial feasibility study, the Town of Port Hedland (ToPH) and a Spoilbank Marina Project Steering Group had considered a variety of options for development of a public boating marina at Port Hedland. MRA had been commissioned by ToPH to produce a preliminary concept for a marina to be located at Spoilbank. The location of this proposal was as shown on the attached figure 1.1, and a marina layout was agreed with the working group in February 2010. This layout is shown on figure 1.2. MRA was then commissioned by ToPH to carry out Physical Model Testing of the Marina as proposed in figure 1.2. MRA provided their report entitled *Town of Port Hedland, Spoil Bank Marina – Flume Testing Results, July 2010 – Report 10113 Rev 0* (Ref B).

This report considered the Nearshore Bathymetry as shown in the attached figure 1.3 and other criteria to refine breakwater and other construction requirements. The modeling was initially completed using the 50 year average recurrence interval (ARI) design conditions for the marina breakwaters, however at completion of the Physical Model Testing MRA noted that the breakwater sections tested were considered appropriate to withstand 100 year design conditions.

This Marina layout and the testing outcomes were utilized to prepare preliminary order – of – cost estimates for the Spoilbank Marina. The outcomes of this work have guided the development considerations and costings subsequently carried out for LandCorp.

2.4 MRA was commissioned by LandCorp to carry out a boating demand study for Port Hedland. The outcomes of this study were contained in the MRA report. *LandCorp, Spoilbank Marina – Facility Study, February 2011* - Letter Report 11038 Draft A. This report is included within an overall study which is included as Reference C to this report; *VDM Consulting/LandCorp, April 2011, Port Hedland Alternative Marina Locations Study* - Report R288 Rev 1.

2.5 The Alternative Marina Locations Study concluded that of the seven options considered, the Spoilbank Site as investigated for the ToPH provided the most appropriate long-term economically viable outcome for the Port Hedland Community.

2.6 The Spoilbank Site was thus chosen as the site for the Port Hedland Marina. This report considers alternative options for development on that site and for land south of Sutherland Street as depicted on plans prepared by RPS and CODA:

Option 1A – Prepared by RPS:

Marina and boat ramps + 1554 short stay residences + 35 permanent residences + 3000m² Commercial and 3000m² Retail.

Option 2A – Prepared by RPS:

Marina & boat ramps + 876 short stay residences + 836 permanent residences+ 3000m² Commercial and 3000m² Retail.

Option 3A – Prepared by CODA

Marina & boat ramps plus 1,152 short stay + 446 permanent residences + 5,500m² Commercial + 3,500m² Retail.

Figure 1.1 - Proposed location of the marina

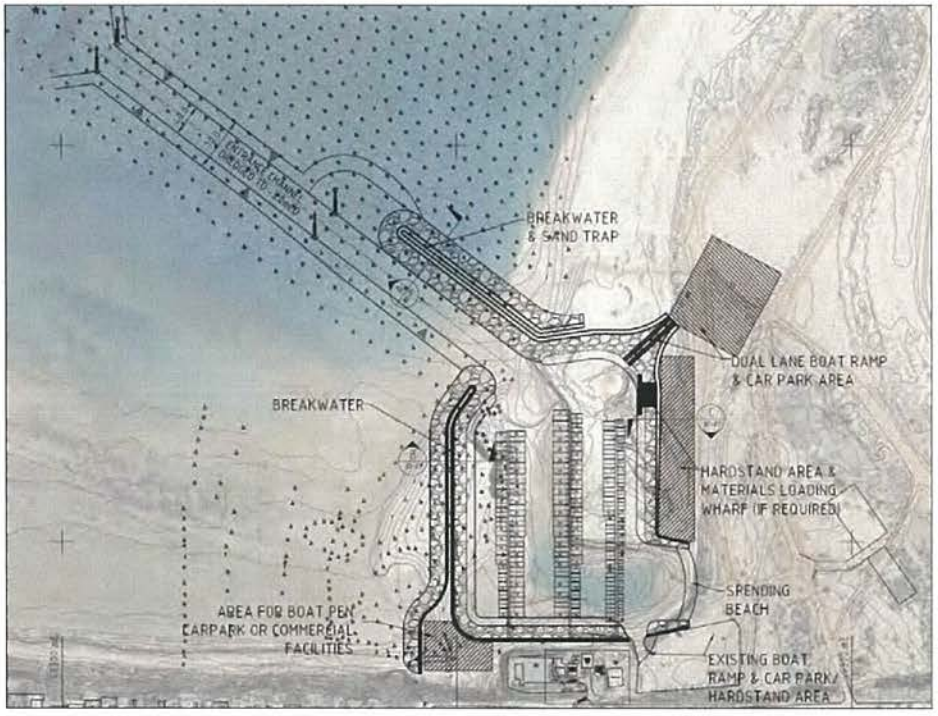


Figure 1.2 - Agreed Layout Plan for the Marina

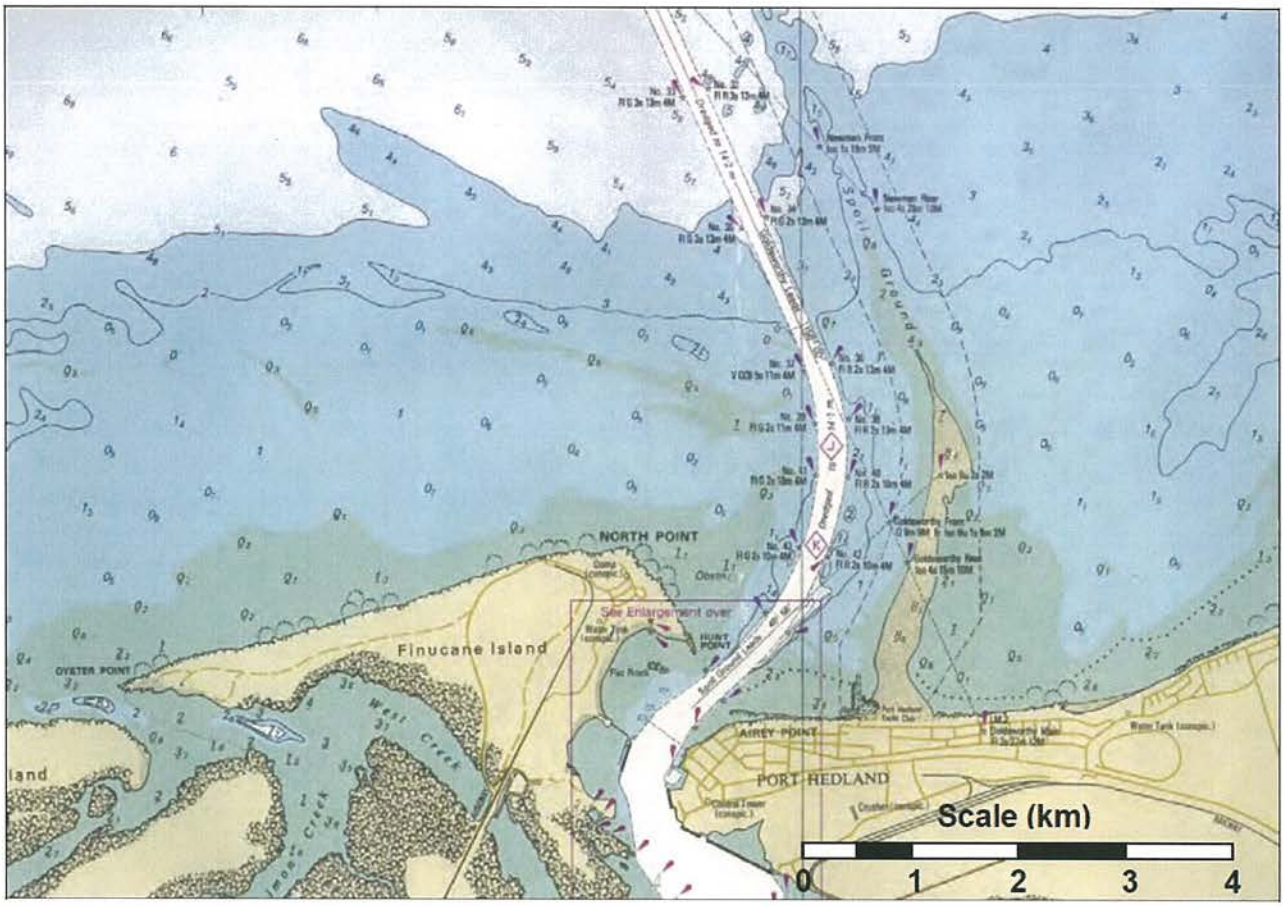


Figure 1.3 Nearshore Bathymetry

3. EXISTING SITE, SITE INVESTIGATIONS AND SERVICES

3.1 The Spoilbank site is some 1.5km east of the Port Hedland Town Centre. For the purpose of this report the site includes land-based lots bounded by Sutherland St to the north, Howe St. to the West, Morgans St. and Anderson St. to the south and bordering lot 406, the proposed Mirvac Hotel Site to the east. The marina and associated development options are proposed to be developed on part of the Spoilbank north of Sutherland St.

3.2 The Port Hedland Spoilbank was formed in the late 1960's. Its formation was the result of dumping of dredge spoil associated with the dredging of the Port Hedland Harbour and shipping channel. Upon completion of the dredging in 1970 the Spoilbank was an island that was located approximately 500 m from the mainland. This gap between the mainland and the Spoilbank was left so that there would be minimal interference with the natural littoral drift of the mainland coast.

It was estimated that the north westerly wave conditions that are prominent in the Port Hedland area caused a 50 m/yr southerly transport of the Spoilbank between 1970 and 1975. The southerly transport of sediment along the Spoilbank resulted in the closure of the gap between the mainland and the Spoilbank at mean tide by around 1980. Due to safety concerns regarding people travelling onto the Spoilbank at low tides and becoming stuck on the island as the tide increases, subsequent dredging of the harbour in 1985 placed dredge spoil between the mainland and the Spoilbank resulting in the reclamation of the area. Since this time southerly transport of sediment has continued to occur along the Spoil Bank due to the action of the waves.

An aerial photograph compiled by McMullen Nolan Surveyors shows the Spoilbank as at September 2004 and shows a possible sand disposal area from works associated with the proposed marina development.

A selection of photographs of the Spoilbank, its improvements, and Sutherland St. has been compiled to show the status of improvements as at March 2011.

3.3 There is a recently constructed Yacht Club building on the Spoilbank adjacent to Sutherland St, together with an existing RSL club building located on a site leased to the RSL. Services exist to these sites.

The balance of the site is used for recreational four wheel drive and beach related activities. A small water body that reflects the location of the original dredged basin for the yacht club prior to the encroachment of the Spoilbank has been excavated in the south west corner of the Spoilbank and the Yacht Club building has an aspect to this water body. The significant normal tidal range at the site of about 6m (7.5m at the peak), together with the substantial rate of littoral sand transport in a southerly direction on the western side of the Spoilbank (estimated by MRA to be about 35,000m^3 per year) has rendered this water body of limited usefulness for boating activities as continual excavation of the entrance channel is required in the absence of any significant barrier structure.

3.4 The land-based lot 452 between Sutherland St. and Morgans St. is the now-disused Port Hedland Hospital Site. The hospital has been de-commissioned and hospital activities were relocated to the new South Hedland Hospital by January 2011.

Documentation has been prepared to allow for tenders to be called for the demolition of hospital buildings and other improvements, however the tendering and demolition process is at present on hold. The attached VDM Consulting plan OP10114-237 (A) shows existing improvements on the hospital site. Coffey Environments had been engaged by LandCorp to carry out site sampling for contaminants, including asbestos and the like. Some groundwater monitoring bores have been established on site, although during installation the drilling intersected a hard geological layer 1m to 1.5m thick (suspected to be iron

pisolite cemented sand type stratum) 10m to 12m below ground level (and above the ground-water table). This limited the number of bores able to be installed. This information is useful as preliminary geotechnical information at the site to inform site development cost estimates, including a requirement to build a major sewage pumping station to service the area of the Hospital and adjacent Mirvac Hotel sites.

The hospital site is serviced with power, water, telecommunications and sewage and these existing services are shown on the attached VDM Consulting plan OP10114-236 (A). Services to lots 343 to 346 on Sutherland St and to lots on Morgans St are also shown on this plan.

3.5 Existing services generally in the Spoilbank area are shown marked on VDM Consulting Existing Services Plan OP10117-SK1 A.

McMULLENNOLAN
www.mapsurvey.com.au

PORT HEDLAND

Scale 1:2 500 @ A1 - 1:5000 @ A3

50m 0 200m

Source Data	Source	Date	Scale	Accuracy
Aerial Photography	LANDGATE	SEPT 2004	1:10 000	N/A
Mosaic	96487sm-062a.ecw			+/- 2m
Cadastral Data	LANDGATE	JAN 2010	N/A	+/- 0.5m
Topography	N/A	N/A	N/A	N/A
Datum: MGA	Zone: 50		Contour Interval: N/A	
Plan: 86407-001	Rev: A	Date: 30/06/2010	Drawn: JT	Chck: JM

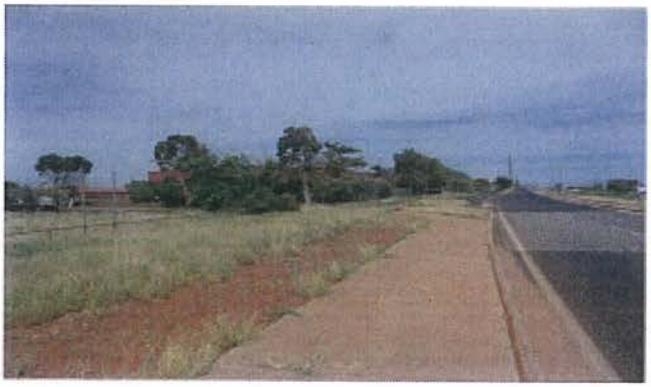
AT ORIGINAL

SPOILBANK MARINA SITE

MARCH 2011

SUTHERLAND STREET/

PORT HEDLAND HOSPITAL SITE



No.	REVISION	BY	DATE
A	ISSUED FOR INFORMATION	JAS	11.03.11

VDM CONSULTING
PERTH
310 Selby Street North, Osborne Park Western Australia 6017
VDM Consulting (WA) Pty Ltd
ABN 59 009 351 400
Tel: (+618) 9241 1800
Fax: (+618) 9241 1999

CLIENT: LANDCORP

PROJECT: SPOILBANK, PORT HEDLAND

DRAWING TITLE: EXISTING SERVICES PLAN

SCALE	1:1000	FILE	OP100117
HORIZONTAL		DESIGN	
VERTICAL		DRAWN	JAS
SURVEY DATUM	AHD	CHECKED	
WAPC No		DATE	MAR 11
CADFILE NAME	OP100117-SK1	DRAWING No.	OP100117-SK1
REV.	A	APPROVED	

THIS PLAN IS NOT TO BE USED FOR CONSTRUCTION UNLESS SIGNED BELOW

NOTE:
DEMOLITION OF STRUCTURES TO INCLUDE ALL SUPER STRUCTURES AND SUB STRUCTURES (ie. ALL STRUCTURES ABOVE AND BELOW GROUND). CONTRACTOR TO MAKE SURE THAT THEY ARE FULLY AWARE OF ALL BELOW GROUND STRUCTURES PRIOR TO WORK AND ISSUE OF TENDER PRICE.

SUTHERLAND STREET

KINGSMILL STREET

MORGANS STREET

NOTE: ALL EXISTING LIGHTING, SIGNAGE, UNDERGROUND SERVICES AND ANY OTHER EXISTING IMPROVEMENTS WITHIN THE BOUNDARY TO BE LOCATED, REMOVED AND DISPOSED OF OFF SITE BY THE CONTRACTOR AT THE CONTRACTORS EXPENSE

LEGEND

EXISTING WATERCORP SERVICES
EXISTING SEWER PIPE
EXISTING PRESSURE SEWER PIPE
EXISTING WATER SERVICES

EXISTING SERVICES
EXISTING UNDERGROUND ELECTRICAL SERVICES
EXISTING COMMS SERVICES
EXISTING FIRE SERVICES
EXISTING FIRE HYDRANT
EXISTING GAS SERVICES

EXISTING 1.0m CHAINWIRE FENCE
EXISTING 1.5m SUPER SIX FENCE
EXISTING BARBED WIRE FENCE
EXISTING COLORBOND FENCE
EXISTING CORRUGATED IRON FENCE
EXISTING TREE
DEMOLITION WORKS BOUNDARY
PHASE 1 DEMOLITION BOUNDARY
PHASE 2 DEMOLITION BOUNDARY
PHASE 3 DEMOLITION BOUNDARY
EXISTING ROAD SURFACE
EXISTING BLOCK PAVING
EXISTING CONCRETE FOOTPATH
EXISTING CONCRETE BLOCK BATTER TREATMENT
EXISTING STONE PITCHED BATTER TREATMENT
EXISTING BUILDING TO BE DEMOLISHED
PROPOSED GATE

metres 10 0 10 20 30m
SCALE 1:500

SCALES QUOTED APPLY TO ORIGINAL DRAWING SCALE A1

WARNING
BEWARE OF UNDERGROUND SERVICES
The location of underground cables are approximate only and their exact position should be checked on site. No guarantee is given that all existing cables and services are shown. Locate all underground cables and services before commencement of work. Refer to Worksafe Regulation 3.21.
DIAL 1100 BEFORE YOU DIG

No.	REVISION	BY	DATE
A	ISSUED FOR INFORMATION	CJD	06.04.11

VDM CONSULTING
PERTH
310 Selby Street North, Osborne Park
Western Australia 6017
VDM Consulting (WA) Pty Ltd
ABN 59 009 351 400
Tel: (+618) 9241 1800
Fax: (+618) 9241 1999

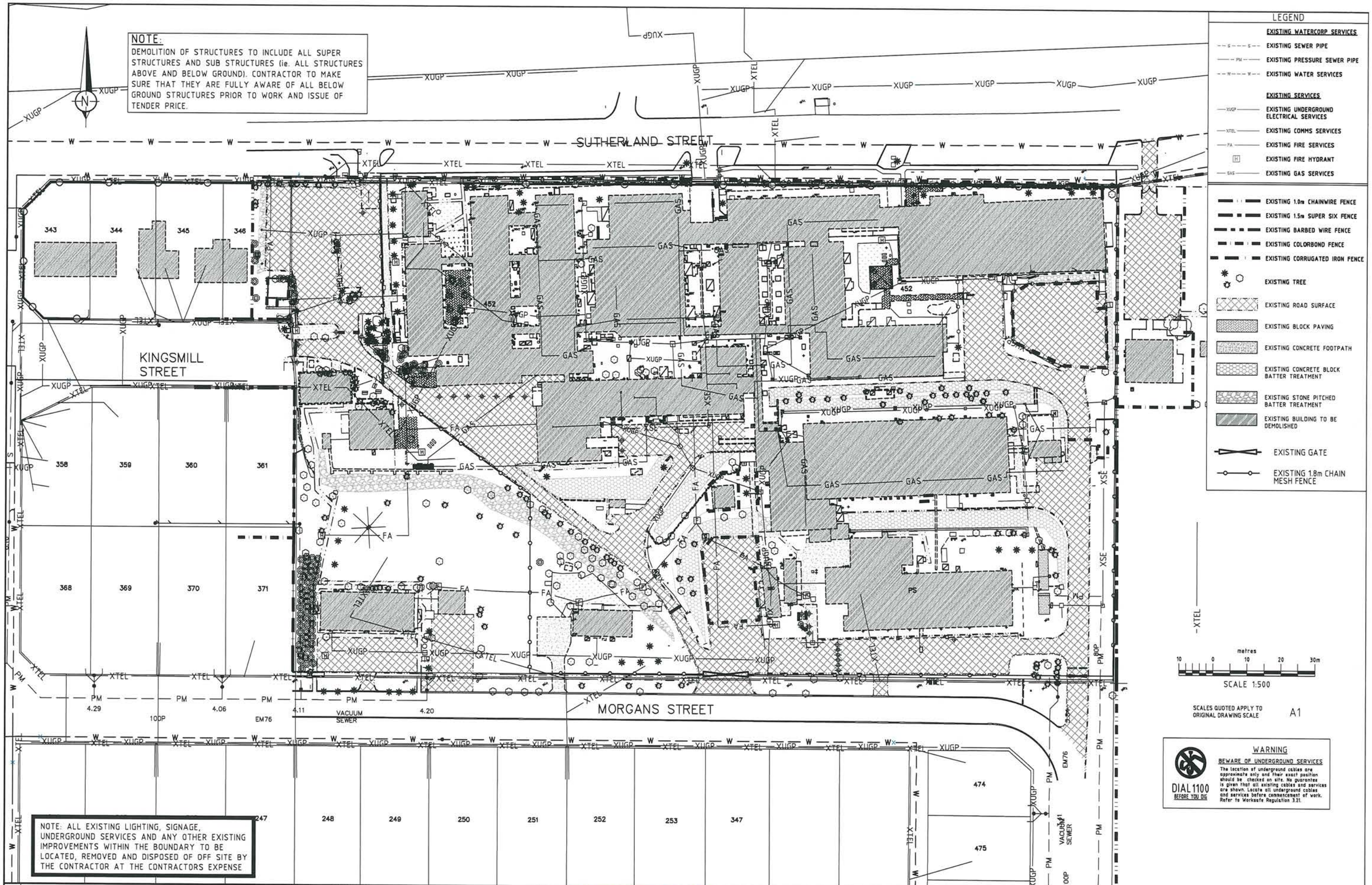
CLIENT: LANDCORP

PROJECT: PORT HEDLAND HOSPITAL DEMOLITION AND SITE REMEDIATION

DRAWING TITLE: EXISTING SERVICES PLAN

SCALE	1:500	FILE	
HORIZONTAL		DESIGN	CJD
VERTICAL		DRAWN	CJD
SURVEY DATUM	AHD	CHECKED	BSS
WAPC No		DATE	06.04.11
CADFILE NAME	OP100114-236	DRAWING No.	OP100114-236
REV.	A		

THIS PLAN IS NOT TO BE USED FOR CONSTRUCTION UNLESS SIGNED BELOW
APPROVED



No.	REVISION	BY	DATE
A	ISSUE FOR INFORMATION	JAS	27.06.11

VDM CONSULTING
PERTH
310 Selby Street North, Osborne Park
Western Australia 6017
VDM Consulting (WA) Pty Ltd
ABN 59 009 351 400
Tel: (+618) 9241 1800
Fax: (+618) 9241 1999

CLIENT: LANDCORP

PROJECT: PORT HEDLAND HOSPITAL DEMOLITION AND SITE REMEDIATION

DRAWING TITLE: EXISTING GENERAL STRUCUTURES, SERVICES, SURFACE TREATMENTS & IMPROVMENTS PLAN

SCALE	1:500	FILE	
HORIZONTAL		DESIGN	CJD
VERTICAL		DRAWN	JAS
SURVEY DATUM	AHD	CHECKED	BSS
WAPC No		DATE	JULY 11
CADFILE NAME	OP100114-237	DRAWING No.	OP100114-237
REV.	A	APPROVED	

THIS PLAN IS NOT TO BE USED FOR CONSTRUCTION UNLESS SIGNED BELOW

3.6 Geotechnical investigations to date have concentrated on the immediate area of the marina as investigated by MRA for the ToPH. Golder Associates prepared a geotechnical report in December 2009 entitled *Spoilbank Marina, Port Hedland (Reference C)*. Limited borehole drilling across the marina site at depths up to 15m encountered stratigraphic units as follows:

- Fill – fine to coarse grained sand, thickness up to 7m,
- Silty SAND – fine to coarse grained, medium dense, thickness up to 3m
- CALCARENITE ROCK – very low to high rock mass strength, erosional upper contact with karst features, thickness varies from 1.8m to 4.5m
- Silty SAND – fine to coarse grained, variable thickness from 4.0m
- CALCARENITE ROCK – thickness unknown

Figure 1 provides an example of a typical cross section for the proposed marina whereby all the above units are identified. The depression at the right hand side of this cross section indicates the existing marina.

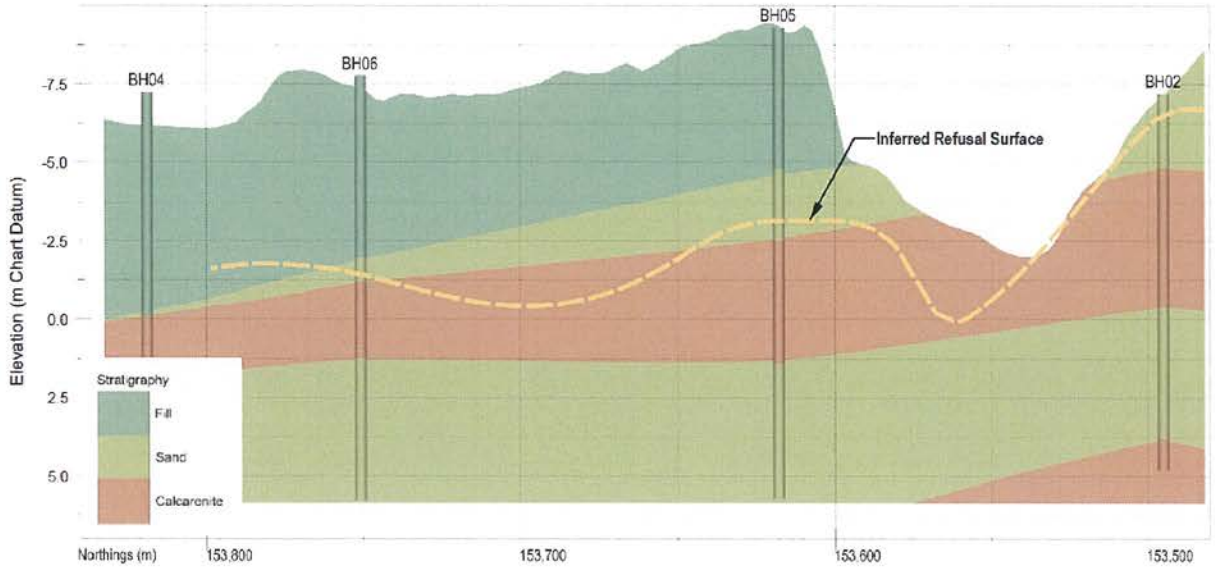


Figure 1 – Typical cross section across the marina site (extract from Golder 2009 report)

3.7 This information has been used to inform the opinions of development costs prepared for this report. However to obtain a better level of accuracy of geotechnical knowledge either for tender purposes, or to better refine cost estimates, further geotechnical testing needs to be undertaken for the finally planned entrance channel, and for any land-based development. The level of investigation undertaken will be dependent to a degree on the level of risk considered acceptable in the estimation. By spending say $200,000 to get a jack-up barge on site to provide full depth (of entrance channel) drilling would give a relatively high degree of certainty to estimates (or tender) – however, it may only cost an additional $200,000 in a Contract to pay any variation in Contract costs which may be required for unexpected excavation requirements.

Accordingly an allowance for additional geotechnical land based and marina tests is likely to be in the range $150,000 to $300,000; an allowance of $200,000 + GST is recommended in these preliminary estimates.

The additional investigations need to address obtaining more comprehensive knowledge of (*inter alia*):

- Dewatering – to assess if the basin is better constructed in the 'dry' by spear de-watering, open pumping with bunding or dredging below a certain depth.
- Acid sulphate soils – not identified in Golders report but are a potential risk. These should be investigated in conjunction with geotechnical assessments.
- Site soils to determine suitability of soils for re-use on site as engineered soils for foundations for breakwaters, hardstand, building foundations, road foundations. This may include settlement/consolidation assessments including necessity for wick drainage, prolonged settlement periods (could be 12 months or so) and ability of soils to store and absorb stormwater run-off.
- Rock strengths to better assess excavability and ability to use on-site materials for rock armour, breakwater construction, deep fills and the like.

3.8 Existing services are shown on accompanying plans as described in this section of the report. Relocation of the services to suit development as proposed will need to be carried out following consultation and agreement with service owners including:

- Town of Port Hedland for roadworks (and any drainage).
- Water Corporation of WA for water and sewerage services.
- Horizon Power for electricity infrastructure.
- Telstra and NBN Co. for telecommunications infrastructure.

Although Alintagas provides gas to the Boodarie Power Station, there are no reticulated gas supplies within the Town. Bottled LPG gas may be considered as an alternative supply if gas is required, however reticulation of gas to Spoilbank development is not considered to be economically viable.

4. ALTERNATIVE MARINA LOCATIONS AND MARINA DESIGN PARAMETERS

4.1 LandCorp commissioned VDM/MRA to review possible alternative marina sites within the Town of Port Hedland. MRA prepared the report entitled *Port Hedland Alternative Marina Locations Study* in April 2011. The Report R228 Rev 1 is noted as Reference B to this report.

4.2 In Summary

The study considered seven potential alternative marina locations at :

- Richardson Street (near the Town Centre and near the existing boat ramp)
- Spoilbank site
- Community Park (Cemetery Beach opposite the Pioneer Cemetery)
- Cooke Point North (Option A)
- Cooke Point South (Option B)
- East End Development Lock Option
- Pretty Pool

The prospect of developing a marina at each of the seven locations was considered as a very generalised high-level overview for comparison in terms of Scope for Residential Development, likely Environmental Impacts, Capital Cost, and probable Maintenance Costs over a 10 year period.

Richardson Street was discounted due to site limitations in terms of size, boat safety, dust and Port Hedland Port Authority concerns.

Two of the options were considered unacceptable from an environmental viewpoint and a further option was discounted due to perceived high environmental impact. Capital and Maintenance probable orders-of-cost were therefore considered for three of the seven options.

The initial comparison of Marina Sites is summarised below :

Location	**Scope for Residential Development**	**Environmental Impacts**	**Capital Cost**	**Maintenance Costs for 10 Years**
Richardson Street	Low	Low	NA	NA
Spoil Bank	Medium	Low	$87 million	$5.2 million
Community Park	Low	**Unacceptable**	NA	NA
Cooke Point Option A	Medium/low	Medium	$162 million	>$10.3 million
Cooke Point Option B	Medium/low	Medium	$171 million	>$17.2 million
East End Development	High	High	NA	NA
Pretty Pool	High	**Unacceptable**	NA	NA

The conclusion drawn from this study is therefore that the Spoilbank site is the most economical site for a marina in Port Hedland.

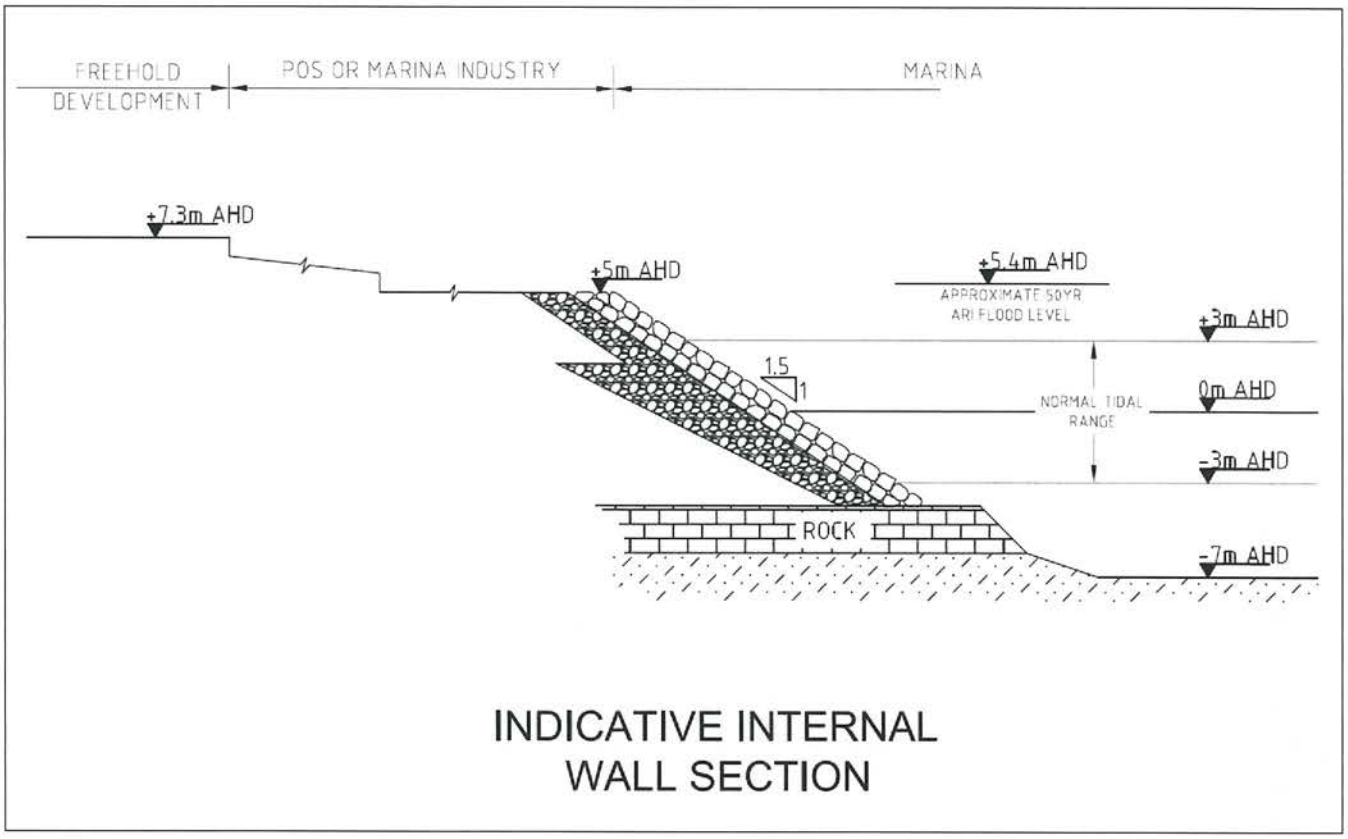
Figure 4.1 Alternative Marina Locations

4.3 MRA has reviewed the Port Hedland Coastal Vulnerability Study of 5 April 2011 prepared by Cardno for LandCorp. From the information contained in that study it has been concluded that an appropriate minimum level at which to set Freehold development adjacent to a marina is around R.L.7.3m AHD (this is comprised of a 5.9m AHD design water level plus a 0.9m allowance for climate change to 2110 and a 0.5m freeboard).

The study also suggests a 50 year ARI flood level at the Spoilbank of R.L.5.4m AHD, which includes an allowance for climate change to 2060.
In consideration of the normal tidal range of + 3m AHD to – 3m AHD MRA has established an indicative cross section for the development as shown on their attached sketch of 6 April 2011. Included also is Figure 9.2 from the Cardno Study which shows 100 year and 500 year ARI inundation extent predictions, coastal processes set back line, and approximate extent of wave inundation for Port Hedland.

4.4 The Facility Demand Study of February 2011 (Appendix B) conducted by MRA included the findings of work carried out by MRA for ToPH. Spoilbank Marina features developed included:

- Navigable entrance channel dredged to 3m below Chart Datum with navigation aids.
- Protection from ambient and cyclone waves provided by two rubble mound breakwaters and the Spoilbank.
- A sand trap to accumulate sand moving southwards on the western shore of the Spoilbank. This sand would need regular and ongoing removal by the marina operator.
- Floating boat pens for about 250 boats up to 20 m in length with associated hardstand and parking areas.
- Two (or four) lane public boat launching ramp for use at all tides together with associated parking for about 90 (to 180) cars with trailers.
- Access to the marina pens for the existing Port Hedland Yacht Club


FREEHOLD DEVELOPMENT
POS OR MARINA INDUSTRY
MARINA
+7.3m AHD
+5m AHD
+5.4m AHD
APPROXIMATE 50YR ARI FLOOD LEVEL
+3m AHD
1.5
1
0m AHD
NORMAL TIDAL RANGE
-3m AHD
ROCK
-7m AHD
INDICATIVE INTERNAL WALL SECTION

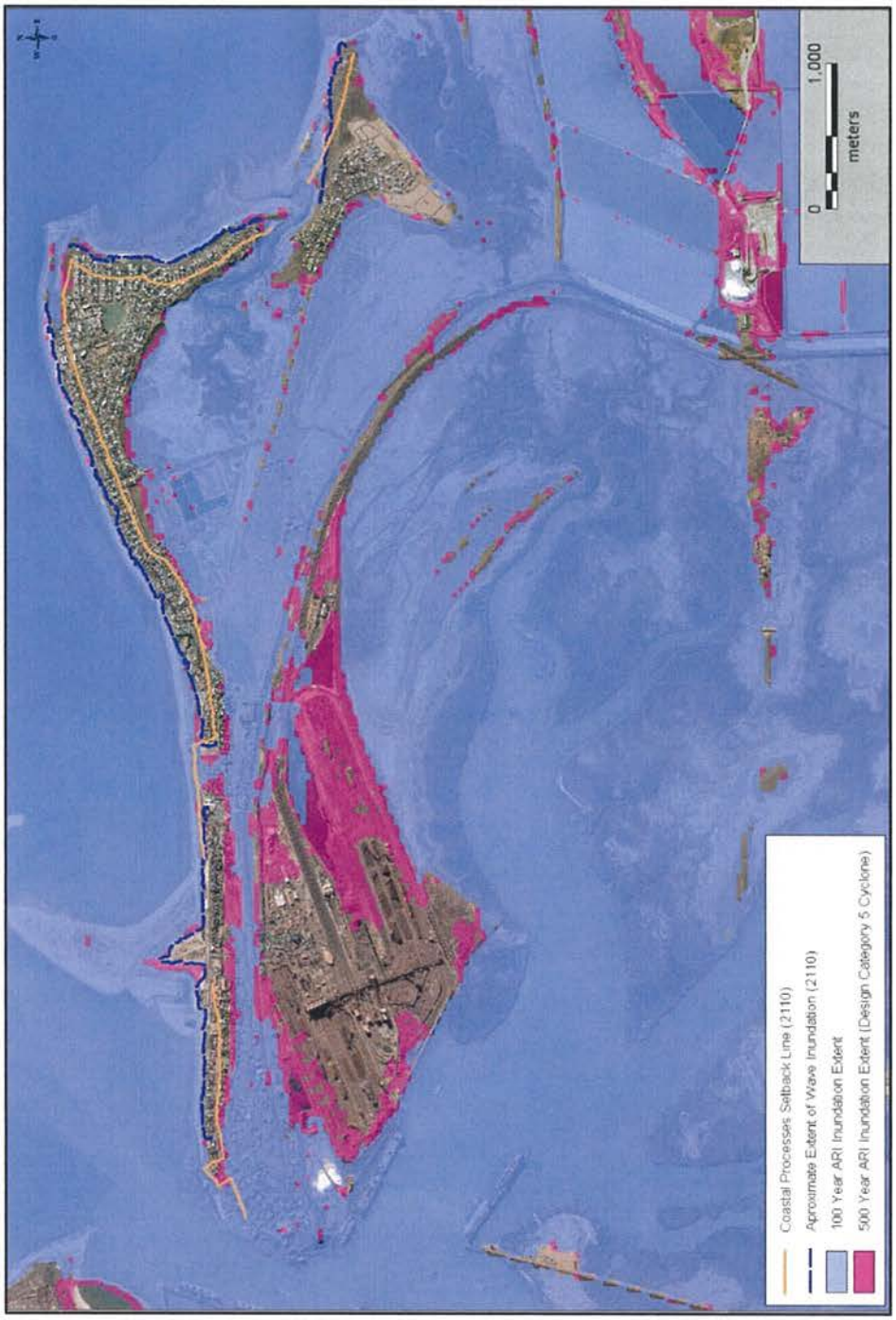


Figure 9.2: Port Hedland Coastal Processes Setback Summary -2110 Setback Level.

5. DEVELOPMENT PROPOSALS AND SERVICE DEMANDS

5.1 The three alternative development proposals prepared by RPS and CODA for feasibility consideration will impose differing demands on existing services. Whilst there will need to be specific negotiations with relevant authorities as identified in section 3 of this report when a specific development is selected, the following general conditions will apply.

5.2 An essential part of the development negotiations for a marina at the Spoilbank will be to establish the responsible authority, or authorities, to take ownership of the facilities, and to assume responsibility for on-going maintenance and replacement during the life-cycle of the development. Whilst the authorities noted in Section 3 of this report would be the logical owners and operators for 'normal' land-based uses, determination of the responsibility for operation and maintenance of the marina and associated infrastructure is a critical early requirement.

5.3 ROADWORKS AND STORMWATER MANAGEMENT

5.3.1 Agreement will need to be reached with the Town of Port Hedland in regard to specific road and drainage construction and management techniques if that authority is to take over these facilities.

5.3.2 Surface water drainage is currently managed by some detention on site, however in general terms there is no specific drainage management infrastructure and storm runoff flows along roadways for discharge to swales for infiltration or ultimate discharge to the sea.

5.3.3 The Cardno Coastal Vulnerability Study highlights the 1:100 ARI storm inundation effects. Developments within the Spoilbank and particularly to the south on Anderson St. need to be filled to ensure that minimum floor levels are maintained of 500mm above this flood level.

The Cardno Study predicts levels applicable for Anderson and Morgans Street are as follows:

- 50 year water level – 5.1m AHD
- 100 year water level – 5.6m AHD

noting that these levels include the 0.9m allowance for sea level rise as required by the West Australian Planning Commission. On the basis of these predictions the finished floor levels for dwellings on these streets should be set at 6.1m AHD. Floor levels in Spoilbank for permanent habitations should be set at 7.3m AHD minimum.

5.3.4 Sustainable urban drainage systems in the context of developments at Port Hedland will need to be developed in conjunction with the Town of Port Hedland, and to its approval. Considerations need to include:

- Directing flows and managing flow velocities to ensure safe and efficient discharge to receiving water bodies via structures which could include rock-pitched drain structures, concrete flumes and the like.
- Pollution and nutrient controls by direction of 'first-flush' runoff to holding absorption tanks or other structures.
- Individual building soak-wells or similar to accept initial low flows.
- Water harvesting to augment landscaping water supplies by direction of some runoff water to swales and the landscape structures before safe overflows to receiving waters.

The general drainage and earthworks philosophy needs to ensure that as a guiding principle storm-water runoff is directed away from built-form improvements along roadways,

paths and the like to discharge safely to swales and receiving water bodies with no harm in all storm events.

5.4 POTABLE WATER SUPPLIES

5.4.1 The Water Corporation of WA holds a licence to provide reticulated water to the Town of Port Hedland. It currently supplies water to existing lots within the subject development area. In particular it supplied the Port Hedland Hospital and adjacent residential sites. Water corporation planning reviews undertaken recently have included consideration of development projections as set out in Port Hedland planning document PH112. Water Corporation has therefore considered between 1,200 to 1,700 SRE's (Single Residential Equivalents) at Spoilbank and the Sutherland Precinct. The Water Corporation has now been advised of current planning considerations for the area to allow it to upgrade its demands for the subject area.

5.4.2 Water is sourced from borefields in the Yule and De Grey Rivers and is pumped to treatment and distribution for drinking water purposes for the Town of Port Hedland. This water is delivered under the East Pilbara Water Supply Scheme and the licensed allocation is currently 13.5GL per year. The Water Corporation supports the Pilbara Cities objectives with a view to increasing water availability to meet growing demands. Demand on the existing scheme was 9.5GL to March 2010, and the Water Corporation is at present undertaking a $3.1m water efficiency program in Port and South Hedland aimed at reducing total demand. In addition the Water Corporation plans to expand the Yule borefield and is seeking an extra 4GL per year allocation, with a further 1GL at De Grey. The scheme upgrades are at present underway to secure the additional 1GL however all this additional water is currently allocated and committed to developments already in receipt of WAPC or Ministerial approvals. Other source upgrades are not expected to be in place until 2014, and until that further supply upgrade is in place the Water Corporation would respond negatively to any application to WAPC for subdivision.

Provision of a development program for Spoilbank at the earliest opportunity would assist Water Corporation with its planning process.

Supply to meet additional demand imposed by Spoilbank development is thus expected to be available after 2014. Upgrading of pump stations and pressure mains has also been considered and $91m is allocated over the next four years for this purpose.

5.4.3 Nevertheless whilst reticulation mains and other infrastructure exists to supply the Spoilbank area, the Water Corporation will need to conduct an analysis of the final planned development to confirm what, if any, upgrades are required to provide adequate water supplies.

5.4.4 Provided that a relatively short dia. 250mm water main link in Howe Street (near Sutherland Street) is completed (by the Developer) at commencement of development then the existing water reticulation system can supply up to about 1,000 SRE's. Development beyond that number will require that the Developer up-size about 100m of dia. 300mm water main linking the reticulation at the eastern end of Sutherland Street, and ultimately that the Water Corporation construct a new elevated water storage at the tank site at its cost. Upgrading of supplies to the elevated storage would be carried out with other Water Corporation projects.

5.4.5 Internal water mains would be expected to be required to be fully developer funded, and state-wide standard headworks charges would be levied at sub divisional development stage with additional charges at building stage for high density development.

5.5 WASTE WATER DISPOSAL

5.5.1 The Water Corporation of WA is licensed to provide wastewater services at Port Hedland and the licence area includes the Spoilbank area. Port Hedland Hospital was serviced with a private pumping station delivering to the Water Corporation Scheme, it is understood that a sewerage upgrade is required to service the adjacent Mirvac Hotel Site. There are no reticulated sewerage services on the Spoilbank.

5.5.2 In January 2011 the State Government unveiled a $106m project to relocate the Port Hedland Wastewater Treatment Plant. This facility will be combined with the existing South Hedland plant and the Water Corporation plans to start transferring flows from the Port Hedland site to South Hedland by June 2014.

5.5.3 A $7.5m infill sewage programme to provide services to 250 residential lots east of Spoilbank is expected to be completed in 2012. These upgrades will be required to be completed before any further flows can be accepted from Spoilbank.

5.5.4 Subject to the size and nature of development proposed on Spoilbank is it expected that, with some upgrades, the wastewater scheme at Port Hedland can accommodate expected flows from Spoilbank.

5.5.5 Contributions to any required infrastructure upgrades, and to Water Corporation Wastewater headworks may be subject of negotiations with Water Corporation once development proposals are further defined, however standar sub divisional wastewater headworks will be levied at subdivision with additional charges at building stage for higher density development.

5.5.6 It is anticipated that the developer will be required to fully fund the cost of internal reticulation works. However, the cost of pumping stations, pressure mains and the like will be subject of negotiation with the Water Corporation. It may be possible to negotiate some joint funding with the Mirvac Hotel developers if early upgrades are required and to achieve a refund of any agreed prefunded works constructed for the Water Corporation under a Customer Constructed Works Agreement.

5.6 ELECTRICITY SUPPLIES

5.6.1 Electricity is supplied to Port Hedland by Horizon Power. Relatively recent overall system upgrades, and the fact that the demand imposed by the Hospital has now gone, indicates that there is adequate supply capacity in Port Hedland to meet expected demands by the Mirvac Hotel and Spoilbank developments.

5.6.2 Subject to actual demand by the development there will be a need for an additional high voltage feeder cable to be installed from the site along an appropriate 2km route through existing streets to a new circuit breaker to be installed at the zone sub-station. The zone substation is located west on the corner of Wilson and McKay Streets. As guidance the cost of the cabling is expected to be of the order of $400,000 plus installation costs and at new circuit at say $200,000. A specific proposal will need to be put to Horizon Power to confirm this assessment once development plans are formalized.

5.6.3 Internal power reticulation would be required to be fully funded by the developer.

5.6.4 Existing power infrastructure in the area is shown on VDM plans described in Section 3 of this report.

5.7 TELECOMMUNICATIONS

5.7.1 Telstra infrastructure exists in the area and the Hospital and other developments have been supplied with telecommunication services. The location of existing services is shown on the VDM service plans in Section 3 of the report.

5.7.2 A mobile phone tower exists on the corner of Sutherland St west and is shown on the site photographs.

5.7.3 Amplification and installation of telecommunication services for the Spoilbank development will now need to be negotiated with NBN Co and early communication is recommended.

5.8 GAS SUPPLIES

5.8.1 Alinta gas does not have a reticulated gas supply to the Town of Port Hedland. If a gas service is required for the Spoilbank Development bottled gas installations should be considered.

5.9 LANDSCAPING WATER SUPPLIES

5.9.1 The opportunities for harvesting ground or surface water near the site for irrigation of landscaping are extremely limited. Rainfall in the area is generally related to cyclones through the 'wet season' and is extremely erratic; certainly it can not be relied on for landscaping irrigation.

5.9.2 Water from mains supplies of potable water could be used sparingly and opportunities for 'shandying' treated wastewater with potable water at say 50:50 ratio should be be explored in conjunction with the Local Authority and the Water Corporation. It is noted that as the Water Corporation waste-water treatment plant is to be relocated to South Hedland treated water for re-use would need to be pumped back to Port Hedland and it is understood that Town of Port Hedland and Water Corporation are already in negotiations on developing such a scheme.

5.9.3 Other water sources for irrigation supplies may include a small localized de-salination plant and this could be investigated as the project proceeds.

6. EARTHWORKS AND DRAINAGE STRATEGY

6.1 Development of the marina proposed in any of the options considered will require major earthmoving works and construction of breakwaters and revetments. This work will include:

- Mobilization and site establishment of dredges, dewatering equipment , other earthmoving equipment including monitoring equipment to ensure compliance with environmental constraints such as dust control, dewatering controls and the like.
- Mobilization of a barge–mounted excavator suitable for dredging of the entrance channel and basin rock layers.
- Mobilization of a cutter suction dredge for entrance channel and harbor works with disposal of spoils within the immediate Spoilbank area.
- Supply and placement of core and armour rock to create breakwater, sand trap and revetments.

6.2 The preliminary geotechnical work already completed for Spoilbank is described in section 3 of this report as are the requirements and options for further geotechnical work. The preliminary nature of the geotechnical investigations to date highlights the uncertainties imposed on preliminary designs and estimates, and the need for further work as the project proceeds.

6.3 Dependent on the final development option chosen and dependent on detail ground surveys and design, there is likely to be between 750,000m³ to 800,000m³ of earthworks spoils excess to the minimum required to achieve the marina shapes. This assessment is based on minimum building floor levels of R.L.7.3m AHD.

Preliminary earthworks designs for the development options chosen allow for cut to fill of the existing earth form on Spoilbank to achieve development objectives. In addition it has been determined that about 500,000m³ of the excess from marina works could be used to fill development sites.

Estimates are based on the assumption that this volume of material is suitable for re-use on site as engineered fill. If this material is not suitable for re-use and the excess has to be removed from site and other material imported then there is a significant risk of substantial increase in costs of creating the development. Observations of the geotechnical data now available suggests that, with proper compaction techniques, the sands, silty sands and calcarenite observed on site can be re-used as engineered fill. Fill for development on Anderson Street requiring fill to meet 1:100 year flood protection requirements is assumed to be won from the Spoilbank area.

6.4 The development options considered are expected to yield between 200,000m³ to 250,000m³ of material surplus to construction requirements. Estimates assume that this material is placed on Spoilbank north of the area to be developed. An area of 10ha or more would enable this excess to be placed to depths less than about 2m over this area. This material could either be left in place or made available for re-use on appropriate sites elsewhere in Port Hedland. The MAPS aerial photograph shows this potential spoil disposal site.

6.5 MRA estimates described in section 3 of this report show that about 35,000m³ per year of sand accretes along the western shore of Spoilbank due to littoral drift. This material will need to be harvested to prevent excess build-up north of the entrance channel. The sand so harvested could be used at appropriate fill sites elsewhere in Port Hedland.

6.6 The irregular stormwater runoff volumes generated during the typical cyclonic weather patterns experienced at Port Hedland are large. The land-form created by the earthworks needs to ensure that surface runoffs are directed to flow safely away from the built-forms and to ensure that the safety of marina users is maintained at all times. Allowance is made in estimates for 'first flush' storm runoffs to be intercepted in appropriate drainage structures throughout the development, however these will need to be designed such that they are expected to 'fail' in normal cyclone events with assumed overflow paths to appropriate receiving waters.

7. PRELIMINARY DEVELOPMENT COSTS AND STAGING

7.1 For the purpose of feasibility assessments, and to assist the project team with evaluation of development options, preliminary order-of-magnitude development cost estimates have been prepared for the three alternatives as set out in section 2.6 of this report.

7.2 The estimates are based on preliminary designs carried out bearing in mind the opportunities and constraints set out in this report. The designs have been prepared on the assumption of conditions of sub-division which are expected to be enforced by WAPC upon a sub divisional development application, and allowance is made only to service lots as shown on the RPS/CODA plans with roads, footpaths, car bays, drainage, sewerage, water supply, power and telecommunications. No allowance is made for any built-form construction on lots so created.

7.3 No estimates are included nor allowances made for:

- Land acquisition or holding costs.
- Environmental or planning costs pre-construction.
- Marketing or selling costs.
- Geotechnical investigations only to the extent shown in the estimates.
- Landscaping estimates which have been prepared separately by Emerge Consultants.
- Importation of any earth fill which may prove necessary if site soils are unsuitable for re-use on site or for disposal on Spoilbank north of the development (Note that import of suitable material for engineering fill is currently about $34 to $45 per m^3 in Port Hedland dependent on availability) nor for disposal off-site of unsuitable materials.
- Acquisition of any existing dwellings or site improvements, nor compensation to existing owners.
- Construction of a sea protection wall east of the development on the assumption that the planning allows adequate set back so that such a wall is not required.
- Relocation or re-construction of the aquatic centre nor development of any other recreation facilities including any peripheral board-walks around the marina.

7.4 Stages 1 and 1A in each option are for re-development of land between Sutherland St and Anderson St which we will call the 'Sutherland Precinct'. Only one estimate is provided for 1A and 1B and although lot yields change costs at subdivision will be the same.

7.4.1 Development of this Precinct assumes that the existing Port Hedland Hospital building demolition is complete and that the site is left free of contaminants and old services. The current 'deconstruction' estimate is $10m and allowance should be made for a period of about 11 months from current documentation status to completion; the last 8 months for 'deconstruction' should commence no later than April in order to co-ordinate works with the cyclone season. The cost of this work is not included in the following estimates.

7.4.2 The planning options require rationalization of the Sutherland St road reserve, relocation and re-construction of services and re-construction of the road together with roundabouts as shown. In addition an allowance has been made for construction of brick-paved car parking bays adjacent the new road as shown in the estimates.

7.4.3 Allowance is made for construction of a new dual carriageway as an upgrade and extension of Morgans St adjacent to the Mirvac Site. The total cost of this including services and car bays but excluding GST and landscaping is estimated at about $1.4m; but it should be noted that this includes about $250,000 for electricity and a transformer. These "road" costs should be considered to be shared 50/50 with the Mirvac site.

7.4.4 No allowance is made for servicing the Mirvac site other than costs above.

7.5 The estimates assume that all earthworks are completed as one task when the marina is developed. Surplus soils are considered as being placed north of the development on the Spoilbank as described in section 6 of this report. Dependent on the suitability of surplus materials from earthworks it may be possible to sell some spoils to offset marina development costs. Current approximate 'royalty' rate for allowing others to access this surplus material (say 200,000m³) is advised by LandCorp to be about $5 per m³.

7.6 There will be ongoing dredging costs at the entry to the marina. These costs are outlined in MRA associated report of April 2011 – *Port Hedland Marina Locations Study Report R288 Rev 1*. This should be read in conjunction with this opinion of costs.

7.7 Water Corporation water and sewerage headworks charges are assumed to be standard state-wide headworks charges as advised by Water Corporation.

7.8 The following preliminary order of cost estimate have been prepared in conjunction with specialist coastal and port engineers MP Rogers and Associates Pty Ltd. Estimates are based on current expected market rates for construction in Port Hedland. Rates for construction elements have been derived from recent tender rates where available and these estimates have been augmented by recent evidence and opinions from two private contractors working in the area.

7.9 It should be noted that construction water supplies in the area are difficult to obtain and cause significant delays in construction and costs over works in areas where water is more readily available.

7.10 Quarry materials for road construction and the like are difficult and expensive to obtain, hence engagement of a suitable contractor in the early design process would be very beneficial in minimizing road costs.

7.11 Mobilization, materials transport, and worker accommodation costs each have a very significant impact on construction costs in Port Hedland. Allowance for these cost impacts are included in the Preliminaries sections in following estimates.

7.12 Estimates of each Option have been split into four separate construction stages with stage 1 being further split into 1A and 1B. 1B is the lots on Anderson and Morgans St which require significant fill and retaining to meet flood protection requirements. Stage 2 is development of the marina and associated initial infrastructure. (see section 7.4)

It should be noted that at this stage of the design process it is considered prudent to make a 15% contingency allowance; this allowance is included as an extra to all estimates.

7.13 The RPS/CODA planning options include allowance for a link road from the western end of Sutherland St at a new roundabout as a separate entrance into the marina boat ramps and other facilities. Preliminary engineering design of this link road indicates that this road can be constructed as shown with adequate gradients to suit its proposed purpose.

Options and detailed break downs of estimates follow.

7.13 Option 1A

The estimated marina construction cost for option 1A is the lowest of any of the three marina options. The base cost for the marina construction would be approximately $79.8 million including 5% consultancy fees and 15% contingencies.

An important consideration when reviewing this total cost for the marina construction is that talks are currently underway with the Port Hedland Port Authority regarding the potential for the Port to complete the dredging works for the entrance channel and marina at a reduced cost. A key reason for the Ports involvement would be that the construction of the Spoilbank marina would enable the Port to close down the existing Richardson Street boat ramp which is considered to pose significant safety issues due to interactions between recreational vessels and shipping traffic at the most constrained point of the entrance into Port Hedland Harbour. There are still many details to be sorted out, such as the ability of the dredge to cut through rock; however there is the potential that savings up to around $5 to $10 million could be possible.

There are some items shown on the option 1A plan that were not included in the base cost estimate but could be included in the initial construction of the marina if they were ultimately considered to be desirable and funding permits. The first of these items is an internal pocket beach on the northern side of the marina. The pocket beach would be a significant item and would require a large land area in order to achieve the beach slopes required for the beach to remain stable. The total marina construction cost with the internal pocket beach would be around $80.9 million.

The other item that could be included is an additional 2 lanes of boat ramp. Addition of these extra lanes (4 total) of boat ramp would help to meet the short to medium term demand, particularly if the Richardson Street boat ramp was to be shut down. The total cost of the marina construction including the additional two lanes of boat ramp would be $82.1 million.

If both the internal beach and the additional 2 lanes of boat ramp were to be built the total construction cost for the marina would be $83.2 million.

These estimates are detailed in the following Summary estimate.

LEGEND

1. Boat ramps (x4)
2. Trailer and car parking
3. Marina lease area to include:
   - boat-lifter and hardstand;
   - Outboard/diesel mechanic;
   - Chandler;
   - Fibreglass and shipwright;
   - Marine electronics;
   - Lunchbar;
   - Fuel jetty;
   - Boat Sales; and
   - Dive/fishing Shop and bait supply
4. Pedestrian boardwalk / promenade
5. Retail on ground floor with commercial on first floor and short stay accommodation above
6. Community / entry park / water play / amphitheatre / minor event space / night markets etc
7. Boat pens (Total 250 ultimate development - 50 in stage 1)
8. Lookout / platform on key pedestrian entries
9. Pedestrian connections in to marina edge
10. Short stay accommodation
11. Residential (Amendment #22 style - max 110sqm, 2 bedrooms and additional development requirements)
12. Hotel
13. Caravan park with permanent short stay units along western edge
14. Caravan park reception
15. Central facilities for caravan park
16. Pedestrian footpath to eastern beach
17. Resort style short stay accommodation
18. Existing Yacht club
19. Spend beach / informal boat launching
20. Public car park for aquatic centre
21. Major event space (Football / soccer / hockey / rugby pitches)
22. Eastern beach shelters
23. Sutherland Street partial closure to reduce road reserve
24. Possible Sutherland Street extension (not part of this project)
25. Residential development proposed by proponent
26. Relocated RSL
27. Relocated Aquatic Centre

OPTION 1A

Lot No.	Total Area	Retail Floor Area	Commercial Floor Area	Residential Yield @ 110sqm	Total Short Stay
Lots North of Sutherland Street					
1	0.39	0	0	0	0
2	1.37	0	0	0	205
3	1.03	500	500	0	160
4	1.13	1250	1250	0	211
5	0.19	0	0	0	0
6	5.90	0	0	0	0
7	1.05	1250	1250	0	168
8	0.25	0	0	0	0
9	0.59	0	0	0	0
10	0.26	0	0	0	0
11	0.75	0	0	0	0
12	0.05	0	0	0	0
13	0.11	0	0	0	0
14	0.95	0	0	0	0
TOTALS		3000	3000	0	744
Lots South of Sutherland Street					
15	0.35	0	0	35	0
16	0.56	0	0	0	97
17	1.15	0	0	0	169
18	1.17	0	0	0	166
19	3.00	0	0	0	225
20	0.98	0	0	0	130
21	0.18	0	0	0	23
TOTALS	7.39	0	0	35	810

MARINA		Total Short Stay
	stage 1	539
	stage 2	205
	TOTAL	744

SOUTH SUTHERLAND ST	
Short Stay	810
Residential	35

NOTE :
YIELD CALCULATIONS ARE SUBJECT TO +/- 10% CONTINGENCY AS FINAL YIELD NUMBERS WILL BE SUBJECT TO INDIVIDUAL DEVELOPER OUTCOMES.

Sewage Pumping Station

SUTHERLAND STREET

HOWE ST

MORGANS STREET

ACTON STREET

ANDERSON STREET

1A

1B

2 Staging by VDM

DRAFT

OPTION 1A

RPS

J905 VDM Consulting - Port Hedland Spoil Bank Marina

Construction Cost Estimate Modified RPS Layout 1A August 2011, Sections MRA D538-02-01 Rev D

Item	Activity	Quantity	Units	Unit Rate	Subtotal	Total for Item
1	**Preliminaries & Site Establishment**					$ 1,900,000
1.1	Insurance and preliminaries for marine contractor	1	item	$ 750,000	$ 750,000	
1.2	Site establishment for contractor	1	item	$ 350,000	$ 350,000	
1.3	Site clean-up for contractor	1	item	$ 200,000	$ 200,000	
1.4	Environmental compliance (during construction)	1	item	$ 600,000	$ 600,000	
2	**Entrance Channel**					$ 12,694,000
2.1	Mobilise barge mounted excavator or similar capable of dredging through rock layer	1	item	$ 250,000	$ 250,000	
2.2	Cut through rock portion of 40m wide channel with minimum 1V:5H batters including disposal of material on	116,000	m3	$ 83	$ 9,628,000	
2.3	Mobilise cutter suction dredge to site	1	item	$ 200,000	$ 200,000	
2.4	Cut remaining sand and silts for 40m wide channel with minimum 1V:5H batters disposing of material on shore	77,000	m3	$ 28	$ 2,156,000	
2.5	Mobilise pile driving frame for mounting on dredge barge	1	item	$ 60,000	$ 60,000	
2.6	Install navigation aids along entrance channel	4	item	$ 100,000	$ 400,000	
3	**Dredging/Excavation of Harbour Basin**					$ 9,960,000
3.1	Excavate harbour basin using hydraulic excavator and use material elsewhere on site	760,000	m3	$ 12	$ 9,120,000	
3.2	Employ cutter suction dredge to finish off excavation and achieve required levels	30,000	m3	$ 28	$ 840,000	
4	**Outer Breakwater & Sand Trap (Section A)**					$ 17,230,000
4.1	Supply and place core	155,000	t	$ 66	$ 10,230,000	
4.2	Supply and place armour (4-8t, 50%>6t)	35,000	t	$ 116	$ 4,060,000	
4.3	Supply and place armour (1-4t,50%>2t)	28,000	t	$ 105	$ 2,940,000	
5	**Inner Breakwater & Reclaimed Area (Section B)**					$ 12,594,100
5.1	Excavate slot for outer breakwater toe and place excavated material within reclaimed area or in a bund seaward of the works to provide some protection	30,000	m3	$ 11	$ 330,000	
5.2	Trim slope and supply and place geotextile	10,500	m2	$ 33	$ 346,500	
5.3	Supply and place core	80,500	t	$ 66	$ 5,313,000	
5.4	Supply and place armour (2.5-6t,50%>4t)	34,000	t	$ 116	$ 3,944,000	
5.5	Supply and place armour (0.3-1t,50%>0.4t)	8,200	t	$ 95	$ 779,000	
5.6	Place and compact fill material (from dredge stockpile)	156,800	m3	$ 12	$ 1,881,600	
6	**Internal Revetment (Section C)**					$ 6,072,800
6.1	Trim slope and supply and place geotextile	22,000	m2	$ 33	$ 726,000	
6.2	Supply and place core	35,000	t	$ 66	$ 2,310,000	
6.3	Supply and place armour (0.3-1t,50%>0.4t)	28,000	t	$ 95	$ 2,660,000	
6.4	Place and compact fill material (from dredge stockpile)	31,400	m3	$ 12	$ 376,800	
7	**Wharf, Pens, Boat Ramps & Parking/Hardstand**					$ 6,080,000
7.1	Fuelling facility	1	item	$ 750,000	$ 750,000	
7.2	Supply and install boat pens (50 in first stage)	50	item	$ 46,000	$ 2,300,000	
7.3	Two lane concrete boat ramp with floating finger jetty	1	item	$ 1,430,000	$ 1,430,000	
7.4	Bitumen trailer parking (doubles as cyclone hardstand)	10,000	m2	$ 160	$ 1,600,000	
	Subtotal 1				$ 66,530,900	$ 66,530,900
	Consultancy Fees	5%			$ 3,326,545	$ 3,326,545
	Contingencies	15%			$ 9,979,635	$ 9,979,635
	Total Estimated Cost				$ 79,837,080	$ 79,837,080

Including Internal Pocket Beach

8	**Internal Pocket Beach**					$ 905,310
8.1	Additional harbour excavation using hydraulic excavator	31,250	m3	$ 12	$ 375,000	
8.2	Trim slope and supply and place geotextile	2,070	m2	$ 33	$ 68,310	
8.3	Supply and place core	3,200	t	$ 66	$ 211,200	
8.4	Supply and place armour (0.3-1t,50%>0.4t)	2,640	t	$ 95	$ 250,800	
	Subtotal 2				$ 67,436,210	$ 67,436,210
	Consultancy Fees	5%			$ 3,371,811	$ 3,371,811
	Contingencies	15%			$ 10,115,432	$ 10,115,432
	Total Estimated Cost				$ 80,923,452	$ 80,923,452

Including Additional 2 Lanes of Boat Ramp (4 Total)

9	**Additional 2 Lanes of Boat Ramp**					$ 1,910,000
9.1	Two lane concrete boat ramp with floating finger jetty	1	item	$ 1,430,000	$ 1,430,000	
9.2	Additional bitumen trailer parking (doubles as cyclone hardstand)	3,000	m2	$ 160	$ 480,000	
	Subtotal 3				$ 68,440,900	$ 68,440,900
	Consultancy Fees	5%			$ 3,422,045	$ 3,422,045
	Contingencies	15%			$ 10,266,135	$ 10,266,135
	Total Estimated Cost				$ 82,129,080	$ 82,129,080

Including Internal Pocket Beach & Additional 2 Lanes of Boat Ramp (4 Total)

	Subtotal 1 + 2 +3				$ 69,346,210	$ 69,346,210
	Consultancy Fees	5%			$ 3,467,311	$ 3,467,311
	Contingencies	15%			$ 10,401,932	$ 10,401,932
	Total Estimated Cost				$ 83,215,452	$ 83,215,452

Notes
1. This estimate does not include environmental investigation and approval process.
2. Mobilisation costs for dredges could be reduced if equipment is already on site for other projects or if PHPA cutter suction dredge is available.
3. Assumes material from dredging and excavation can be placed on Spoil Bank areas.
4. Rates based on information for March 2011.
5. Assumes main breakwater is shifted south compared to that shown in the plan to reduce cost

VDM CONSULTING

Client:	Landcorp
File No.	OP100117-C0103
Date	13-Sep-11
Revised	4-Oct-11

SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage 1A

Developable Area 3.23ha (excludes Mirvac Site)

Residential	35
Short-Stay	432
Total Dwellings	467

		Quantity	Unit	Rate	Cost
1	**SITEWORKS**				
1.01	Preliminaries (incl below)	1	Item		$ -
1.02	Clearing and topsoil stripping/stockpiling (Done as part of PHH Demolition)		m^2		$ -
1.03	Cut to fill internally	1	Item	$ 135,000.00	$ 135,000
1.04	Proof rolling		m^2		$ -
1.05	Imported fill for development - from Spoilbank	5,000	m^3	$ 10.50	$ 52,500
1.06	Retaining walls	330	m	$ 620.00	$ 204,600
	Fees				
1.07	Geotechnical (initial investigation and sign-off)	1	Item	$ 10,000.00	$ 10,000
1.08	Environmental (no allowance)	1	Item	$ -	$ -
1.09	Survey	1	ea	$ 5,000.00	$ 5,000
1.1	Engineering (2.5%)	1	Item	$ 9,802.00	$ 9,802
	Sub Total				**$ 416,902**
1.11	Contingency 15%				$ 62,535
	Sub Total				**$ 479,437**
2	**LAND DEVELOPMENT**				
2.01	Preliminaries	1	Item	$ 1,972,475.00	$ 1,972,475
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)	1	Item	$ -	0
2.03	Prefunded Water Supply Works	1	Item	$ -	0
2.04	HV Electricity Feeder allowance Stage 1A	1	Item	$ 800,000.00	$ 800,000
2.05	Broadband head-end and expansion		Item	$ 80,000.00	$ 80,000
	Roads and lanes				
2.06	External (Sutherland & N/S link inc 80 car bays) + North of Mirvac site + 15 Bays	1	Item	$ 1,965,300.00	$ 1,965,300
2.07	Internal (inc Morgans)	1	Item	$ 759,200.00	$ 759,200
	Drainage				
2.08	External	1	Item	$ 120,000.00	$ 120,000
2.09	Internal	1	Item	$ 195,000.00	$ 195,000
	Sewerage reticulation				
2.1	External (Sutherland & N/S link)	1	Item	$ 97,800.00	$ 97,800
2.11	Internal	1	Item	$ 124,000.00	$ 124,000
	Water supply reticulation				
2.12	External (Sutherland & N/S link)	1	Item	$ 183,200.00	$ 183,200
2.13	Internal	1	Item	$ 86,600.00	$ 86,600
2.14	Public Utilities and Electricity (includes 6 x transformers/swtitchgear)	1	Item	$ 990,700.00	$ 990,700
2.15	Footpaths	1	Item	$ 96,000.00	$ 96,000
2.16	Car parks - included in roads	1	Item	$ -	0
	Landscaping (from Emerge)				
	Fees				
2.17	Local Authority (1.5% of roads & drainage)	1	Item	$ 47,032.50	$ 47,033
2.18	Survey (lots only)	4	ea	$ 2,500.00	$ 10,000
2.19	Engineering (6.2%)	1	Item	$ 463,157.05	$ 463,157
2.2	Geotechnical		Not Included		
2.21	Environmental		Not Included		
	Sub Total				**$ 7,990,465**
2.22	Contingency 15%				$ 1,198,570
	Sub Total				**$ 9,189,034**
3	**AUTHORITY CHARGES**				
	Single Residential Lots				
3.01	Water Corporation (sewer, water, December 2011 - $5,342/lot)	35	ea	$ 5,342.00	$ 186,970
	Short-Stay Lots				
3.02	Water Corporation (excludes building stage headworks)	3	ea	$ 5,342.00	$ 16,026
3.03	Western Power (allowance) (in 2.04)	1	Item		$ -
	Sub Total				**$ 202,996**
	Sub Total	**(1+2+3)**			**$ 9,871,468**
	GST				**$ 987,147**
	Total				**$ 10,858,614**

Notes:

1.This Estimate assumes that Port Hedland Hospital Demolition is completed (current total estimate about $10m)

2. To unit costs add 25% for preliminaries if comparing costs.

3. This estimate allows for full upgrade of Sutherland St. from Acton St to Howe St.

VDM CONSULTING

Client: Landcorp
File No. OP100117-C0103
Date 13-Sep-11
Revised 4-Oct-11

SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage 1B

Developable Area 1.16ha

Residential	0
Short-Stay	153
Total Dwellings	153

			Quantity	Unit	Rate	Cost
1	**SITEWORKS**					
1.01		Preliminaries (inc. below)	1	Item	$ -	$ -
1.02		Clearing and topsoil stripping/stockpiling	12,000	m^2	$ 1.20	$ 14,400
1.03		Proof rolling		Item	$ 20,000.00	$ 20,000
1.04		Imported fill for development from Spoilbank	1	Item	$ 231,000.00	$ 231,000
1.05		Retaining walls	1	Item	$ 538,000.00	$ 538,000
		Fees				
1.06		Geotechnical (initial investigation and sign-off)	1	Item	$ 20,000.00	$ 20,000
1.07		Environmental (no allowance)	1	Item	$ -	$ -
1.08		Survey	1	Item	$ 10,000.00	$ 10,000
1.09		Engineering (2.5%)	1	Item	$ 20,085.00	$ 20,085
		Sub Total				**$ 853,485**
1.1		Contingency 15%				$ 128,023
		Sub Total				**$ 981,508**
2	**LAND DEVELOPMENT**					
2.01		Preliminaries	1	Item	$ 797,700.00	$ 797,700
2.02		Prefunded Wastewater Works (Pump Station and Pressure Main)	1	Item	$ -	$ -
2.03		Prefunded Water Supply Works	1	Item	$ -	$ -
2.04		HV Electricity Feeder	1	Item	$ -	$ -
2.05		Broadband head-end and expansion		Included		
		Roads and lanes				
2.06		External (N/S & Morgans in 1A)	1	Item	$ -	$ -
2.07		Internal	1	Item	$ 226,000.00	$ 226,000
		Drainage				
2.08		External	1	Item	$ -	$ -
2.09		Internal	1	Item	$ -	$ -
		Sewerage reticulation				
2.1		External	1	Item	$ -	$ -
2.11		Internal	1	Item	$ -	$ -
		Water supply reticulation				
2.12		External	1	Item	$ -	$ -
2.13		Internal	1	Item	$ -	$ -
2.14		Public Utilities and Electricity	1	Item	$ 161,400.00	$ 161,400
2.15		Footpaths				
2.16		Car parks	1	Item	$ -	$ -
		Landscaping (from Emerge)				
		Fees				
2.17		Local Authority (1.5% of roads & drainage)	1	Item	$ 3,390.00	$ 3,390
2.18		Survey	2	ea	$ 2,500.00	$ 5,000
2.19		Engineering (6.2%)	1	Item	$ 73,476.20	$ 73,476
2.2		Geotechnical		Included		
2.21		Environmental		Included		
		Sub Total				**$ 1,266,966**
2.22		Contingency 15%				$ 190,045
		Sub Total				**$ 1,457,011**
3	**AUTHORITY CHARGES**					
		Single Residential Lots				
3.01		Water Corporation (sewer, water, December 2011 - $5,342/lot)	0	ea	$ 5,342.00	$ -
		Short-Stay Lots				
3.02		Water Corporation	2	ea	$ 5,342.00	$ 10,684
3.03		Western Power (allowance) (inc. in 1A)	1	Item		$ -
		Sub Total				**$ 10,684**
		Sub Total				**$ 2,449,203**
		GST				**$ 244,920**
		Total				**$ 2,694,123**

Note:

1. These costs assume Morgans upgrade and NS road construction completed with Stage 1A.

2. To unit costs add 25% for preliminaries if comparing costs.

VDM CONSULTING

Client:	Landcorp
File No.	OP100117
Date	13-Sep-11
Revised	4-Oct-11

SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage Option 1A - Stage 2

Developable Area 14.02ha

Residential	0
Short-Stay	379
Total Dwellings	379
Retail/Commercial	5000m²

		Quantity	Unit	Rate	Cost
1	**SITEWORKS**				
1.01	Preliminaries	1	Item	$ -	$ 492,060
1.02	Clearing and topsoil stripping/stockpiling	1,402,020	m^2	$ 1.20	$ 168,240
1.03	Cut/Fill from Spoilbank	1	m^3	$ 1,400,000.00	$ 1,400,000
1.04	Proof rolling	0	m^2	$ -	$ -
1.05	Imported fill for development	0	m^3	$ -	$ -
1.06	Retaining walls	0	m	$ -	$ -
	Fees				
1.07	Geotechnical (initial investigation and sign-off)	1	Item	$ 200,000.00	$ 200,000
1.08	Environmental (no allowance)	1	Item	$ -	$ -
1.09	Survey	1	Item	$ 30,000.00	$ 30,000
1.1	Engineering (2.5%)	1	Item	$ -	$ 51,507
	Sub Total				**$ 2,341,807**
1.11	Contingency 15%				$ 351,271
	Sub Total				**$ 2,693,078**
2	**LAND DEVELOPMENT**				
2.01	Preliminaries	1	Item	$ 2,441,250.00	$ 2,441,250
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)	1	Item	$ 1,796,000.00	$ 1,796,000
2.03	Extended Water Supply Works (Upgrade at tank - tank not included)	1	Item	$ 90,000.00	$ 90,000
2.04	HV Electricity Feeder (final allowance 2)	1	Item	$ 650,000.00	$ 650,000
2.05	Broadband head-end and expansion (inc. in 1A)		Included		
	Roads and lanes				
2.06	External (in. 1A)	1	Item		
2.07	Internal (inc. 58 car bays) - excluding western link	1	Item	$ 1,192,500.00	$ 1,192,500
	Western Link Only	1	Item	$ 387,600.00	$ 387,600
	Drainage				
2.08	External	1	Item	$ -	$ -
2.09	Internal (inc. 6 detention devices)	1	Item	$ 945,000.00	$ 945,000
	Sewerage reticulation				
2.1	External	1	Item	$ -	$ -
2.11	Internal	1	Item	$ 165,000.00	$ 165,000
	Water supply reticulation				
2.12	External	1	Item	$ -	$ -
2.13	Internal	1	Item	$ 100,800.00	$ 100,800
2.14	Public Utilities and electricity) inc 4 transformers		Item	$ 575,000.00	$ 575,000
2.15	Footpaths and pedestrian connections	1	Item	$ 190,400.00	$ 190,400
2.16	Retaining Walls (Sutherland Street)	1	Item	$ 396,000.00	$ 396,000
2.17	Car parks (less 10,000m² inc in Marina estimates) - temporary hardstand	22,348	m²	$ 80.00	$ 1,787,840
	- complete seal	22,348	m²	$ 50.00	$ 1,117,400
	Landscaping (from Emerge)				
	Fees				
2.18	Local Authority (1.5% of roads & drainage)	1	Item	$ -	$ -
2.19	Survey	10	ea	$ 2,500.00	$ 25,000
2.2	Engineering (6.2%)	1	Item	$ 769,261.35	$ 769,261
2.21	Geotechnical		Included		
2.22	Environmental		Not Included		
	Sub Total				**$ 12,629,051**
2.23	Contingency 15%				$ 1,894,358
	Sub Total				**$ 14,523,409**
3	**AUTHORITY CHARGES**				
	Single Residential Lots				
3.01	Water Corporation (sewer, water, December 2011 - $5,352/lot)	0	ea	$ 5,342.00	$ -
	Short-Stay Lots				
3.02	Water Corporation	6	Item	$ 5,342.00	$ 32,052
3.03	Western Power (allowance) (inc. in 2.04 and 2.14)	1	Item		$ -
	Sub Total				**$ 32,052**
	Sub Total	**(1+2+3)**			**$ 17,248,539**
	GST				**$ 1,724,854**
	Total				**$ 18,973,393**

Notes:

1. *Siteworks assume that earthworks from marina construction (795,000m³. Option 1A) is suitable for use as structural fill on developable area. Balance to be disposed of in northern part of Spoilbank over about 10ha to maximum 2m. high with stabilisation with 'topsoil' from developable areas.*
2. *If 'royalty' rate of $5/m³ for spoil is achieved then approxiamately $1,000,000 may be re-imbursed to project from sand sales if spoil is suitable.*
3. *Marina works must be completed before, or in conjunction with Stage 2.*
4. *No estimate provided for environmental, planning or similar costs.*
5. *No allowance for retaining walls or board walks at marina edge.*
6. *To unit costs add 25% for preliminaries if comparing costs.*

VDM CONSULTING

Client:	Landcorp
File No.	OP100117
Date	13-Sep-11
Revised	4-Oct-11

SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage Option 1A - Stage 3

Developable Area 6.93 ha

Residential	0
Short-Stay	160
Total Dwellings	160
Includes Caravan Park Site and Commercial	1000m²

			Quantity	Unit	Rate	Cost
1	**SITEWORKS**					
1.01	Preliminaries		1	Item	$ -	$ -
1.02	Clearing and topsoil stripping/stockpiling			m^2	$ -	$ -
1.03	Cut/Fill from Spoilbank			m^3	$ -	$ -
1.04	Proof rolling			m^2	$ -	$ -
1.05	Imported fill for development			m^3	$ -	$ -
1.06	Retaining walls			m	$ -	$ -
	Fees					
1.07	Geotechnical (initial investigation and sign-off)		1	Item	$ -	$ -
1.08	Environmental		1	Item	$ -	$ -
1.09	Survey		105	ea	$ -	$ -
1.1	Engineering (2.5%)		1	Item	$ -	$ -
		Sub Total				**$ -**
1.11	Contingency 15%					$ -
		Sub Total				**$ -**
2	**LAND DEVELOPMENT**					
2.01	Preliminaries		1	Item	$ 695,750.00	$ 695,750
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)		1	Item	$ -	$ -
2.03	Prefunded Water Supply Works		1	Item	$ -	$ -
2.04	HV Electricity Feeder		1	Item	$ -	$ -
2.05	Broadband head-end and expansion			Included		
	Roads and lanes					
2.06	External (Sutherland extension/upgrade)		1	Item	$ 275,000.00	$ 275,000
2.07	Internal		1	Item	$ 102,000.00	$ 102,000
	Drainage					
2.08	External		1	Item	$ -	$ -
2.09	Internal (Link to Stage 2 detention)		1	Item	$ 40,000.00	$ 40,000
	Sewerage reticulation					
2.1	External		1	Item	$ -	$ -
2.11	Internal		1	Item	$ 30,000.00	$ 30,000
	Water supply reticulation					
2.12	External		1	Item	$ -	$ -
2.13	Internal		1	Item	$ 13,000.00	$ 13,000
2.14	Public Utilities and Electricity (includes 1 x transformer)		1	Item	$ 117,000.00	$ 117,000
2.15	Footpaths including pedestrian access		1	Item	$ 206,000.00	$ 206,000
2.16	Retaining Walls		1	Item	$ -	$ -
2.17	Car parks		1	Item	$ -	$ -
	Landscaping (from Emerge)					
	Fees					
2.18	Local Authority (1.5% of roads & drainage)		1	Item	$ 4,125.00	$ 4,125
2.19	Survey		2	ea	$ 2,500.00	$ 5,000
2.2	Engineering (6.2%)		1	Item	$ 96,118.75	$ 96,119
2.21	Geotechnical			Included		
2.22	Environmental			Included		
		Sub Total				**$ 1,583,994**
2.23	Contingency 15%					$ 237,599
		Sub Total				**$ 1,821,593**
3	**AUTHORITY CHARGES**					
	Single Residential Lots					
3.01	Water Corporation (sewer, water, December 2011 - $5,342/lot)		0	ea	$ 5,342.00	$ -
	Short-Stay Lots					
3.02	Water Corporation		2	Item	$ 5,342.00	$ 10,684
3.03	Western Power (allowance) (inc. 2.04 of (2.14)		1	Item		$ -
		Sub Total				**$ 10,684**
		Sub Total	**(1+2+3)**			**$ 1,832,277**
		GST				**$ 183,228**
		Total				**$ 2,015,504**

Notes:

1. *Assumes all site preparation completed with marina and stage 2.*
2. *Assumes stage 2 completed.*
3. *Eastern beach access included this stage but no allowance for beach shelters.*
4. *No building headworks included for water and sewerage.*
5. *To unit costs add 25% for preliminaries if comparing costs.*

VDM CONSULTING

Client:	Landcorp
File No.	OP100117
Date	13-Sep-11
Revised	4-Oct-11

SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage Option 1A - Stage 4

Developable Area 1.76ha

Residential	0
Short-Stay	205
Total Dwellings	205

		Quantity	Unit	Rate	Cost
1	**SITEWORKS (Earthworks .... to - Major Event Space)**				
1.01	Preliminaries	1	Item	$ -	$ -
1.02	Clearing and topsoil stripping/stockpiling		m^2	$ -	$ -
1.03	Cut/Fill from Spoilbank		m^3	$ -	$ -
1.04	Proof rolling		m^2	$ -	$ -
1.05	Imported fill for development		m^3	$ -	$ -
1.06	Retaining walls		m	$ -	$ -
	Fees				
1.07	Geotechnical (initial investigation and sign-off)	1	Item	$ -	$ -
1.08	Environmental	1	Item	$ -	$ -
1.09	Survey	105	ea	$ -	$ -
1.1	Engineering (2.5%)	1	Item	$ -	$ -
	Sub Total				**$ -**
1.11	Contingency 15%				$ -
	Sub Total				**$ -**
2	**LAND DEVELOPMENT**				
2.01	Preliminaries	1	Item	$ 790,712.50	$ 790,713
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)	1	Item	$ -	$ -
2.03	Prefunded Water Supply Works	1	Item	$ -	$ -
2.04	HV Electricity Feeder	1	Item	$ -	$ -
2.05	Broadband head-end and expansion		Included		
	Roads and lanes				
2.06	External	1	Item	$ -	$ -
2.07	Internal	1	Item	$ 459,000.00	$ 459,000
	Drainage				
2.08	External	1	Item	$ -	$ -
2.09	Internal Storage/Detention	1	Item	$ 296,250.00	$ 296,250
	Sewerage reticulation				
2.1	External	1	Item	$ -	$ -
2.11	Internal	1	Item	$ 42,000.00	$ 42,000
	Water supply reticulation				
2.12	External	1	Item	$ -	$ -
2.13	Internal	1	Item	$ 30,000.00	$ 30,000
2.14	Public Utilities and Electricity (includes 2 x transformers)	1	Item	$ 263,600.00	$ 263,600
2.15	Footpaths and pedestrian access	1	Item	$ 72,000.00	$ 72,000
2.16	Retaining Walls	1	Item	$ -	$ -
2.17	Car parks (additional to MRA estimates)	2,700	m^2	$ 125.00	$ 337,500
	Landscaping (from Emerge)				
	Fees				
2.18	Local Authority (1.5% of roads & drainage)	1	Item	$ 12,408.75	$ 12,409
2.19	Survey	3	ea	$ 2,500.00	$ 7,500
2.2	Engineering (6.2%)	1	Item	$ 121,120.88	$ 121,121
2.21	Geotechnical		Included		
2.22	Environmental		Included		
	Sub Total				**$ 2,432,092**
2.23	Contingency 15%				$ 364,814
	Sub Total				**$ 2,796,906**
3	**AUTHORITY CHARGES**				
	Single Residential Lots				
3.01	Water Corporation (sewer, water, December 2011 - $5,342/lot)	0	ea	$ 5,342.00	$ -
	Short-Stay Lots				
3.02	Water Corporation	2	ea	$ 5,342.00	$ 10,684
3.03	Western Power (allowance) (INC. IN 2.04 & 2.14)	1	Item		
	Sub Total				**$ 10,684**
	Sub Total	**(1+2+3)**			**$ 2,807,590**
	GST				**$ 280,759**
	Total				**$ 3,088,349**

Notes:

1. *Assumes Stage 3 completed.*
2. *No allowance for beach shelters.*
3. *No allowance for Major Event Space development.*
4. *To unit costs add 25% for preliminaries if comparing costs.*

7.14 Option 2A

The estimated base construction cost for option 2A would be approximately $83.4 million including 5% consultancy fees and 15% contingencies. The main difference between this option and option 1A is the actual location of the marina basin. Option 2A locates the marina basin approximately 40m further north than in option 1A. This option is proposed in order to provide a greater area of land on the southern side of the marina that would be suitable for development. However, in order to provide this land area greater volumes of reclamation are required. Correspondingly, an increased length of internal breakwater is also required. These additional requirements account for the difference in cost between this option and option 1A.

As noted for option 1A, current talks with the Port Hedland Port Authority regarding their ability to provide dredging services at a reduced price could reduce the total cost of this option by up to around $5 to $10 million.

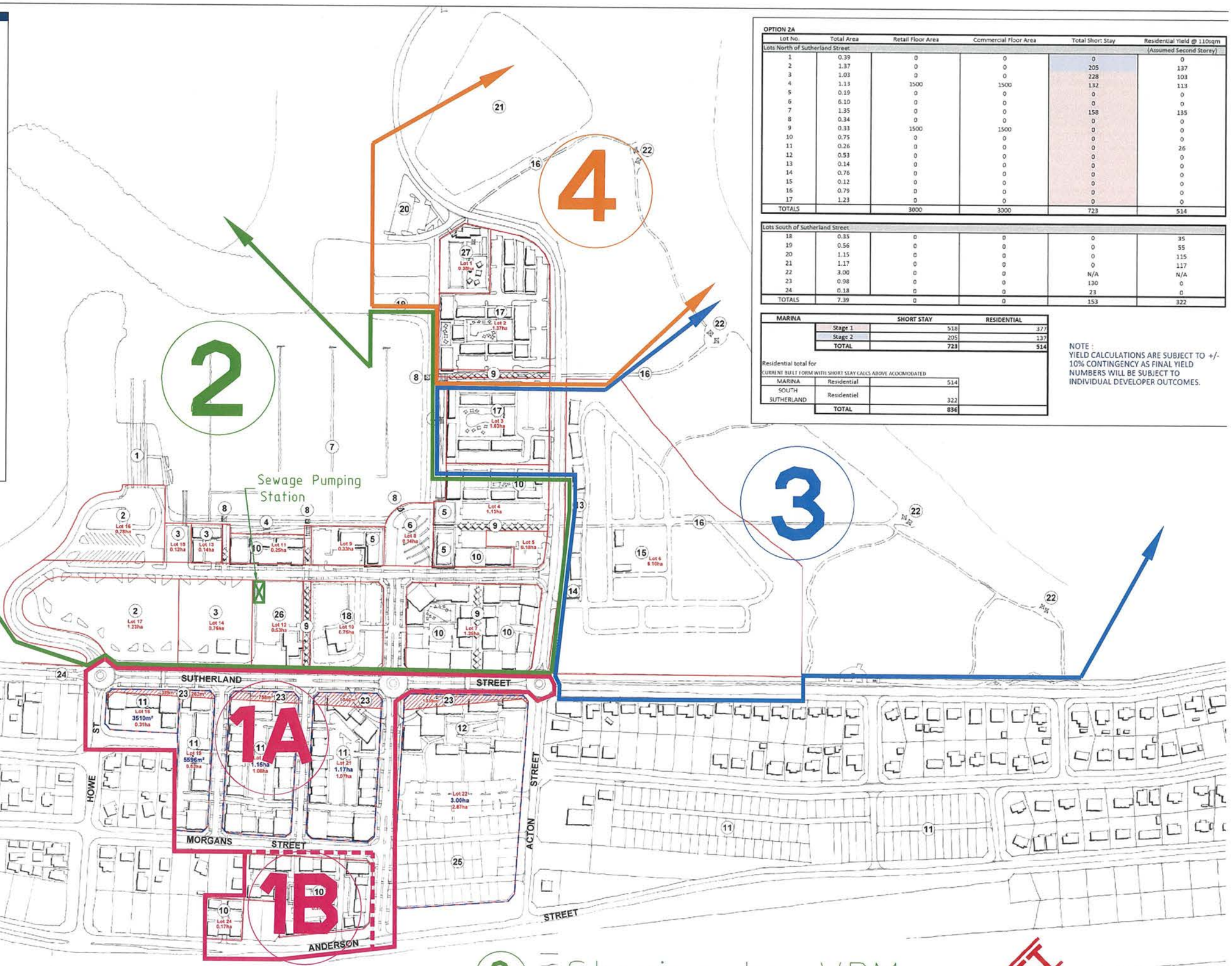
Inclusion of a pocket beach on the northern side of the marina would increase the total construction cost to around $84.4 million.

An additional 2 lanes of boat ramp (4 total) would increase the total cost of the marina construction to around $85.6 million.

If both the internal beach and the additional 2 lanes of boat ramp were to be built the total construction cost for the marina would be $86.7 million.

EGEND

1. Boat ramps (x4)
2. Trailer and car parking
3. Marina lease area to include:
   - boat-lifter and hardstand;
   - Outboard/diesel mechanic;
   - Chandler;
   - Fibreglass and shipwright;
   - Marine electronics;
   - Lunchbar
   - Fuel jetty;
   - Boat Sales; and
   - Dive/fishing Shop and bait supply
4. Pedestrian boardwalk / promenade
5. Retail on ground floor with commercial on first floor and short stay accommodation above
6. Community / entry park / amphitheatre / minor event space / night markets etc
7. Boat pens (Total 250 - 50 in stage 1)
8. Lookout / platform on key pedestrian entries
9. Pedestrian connections in to marina edge
10. Short stay accommodation
11. Residential (Amendment #22 style: max 110sqm, 2 bedrooms and additional development requirements)
12. Hotel
13. Caravan park with permanent short stay units along western edge
14. Caravan park reception
15. Central facilities for caravan park
16. Pedestrian footpath to eastern beach
17. Resort style short stay accommodation
18. Existing Yacht club
19. Spend beach / informal boat launching
20. Public car park for aquatic centre
21. Major event space (Football / soccer / hockey / rugby pitches)
22. Eastern beach shelters
23. Sutherland Street partial closure to reduce road reserve
24. Possible Sutherland Street extension (not part of this project)
25. Residential development proposed by proponent
26. Relocated RSL
27. Relocated Aquatic Centre



OPTION 2A

Lot No.	Total Area	Retail Floor Area	Commercial Floor Area	Total Short Stay	Residential Yield @ 110sqm
Lots North of Sutherland Street					(Assumed Second Storey)
1	0.39	0	0	0	0
2	1.37	0	0	205	137
3	1.03	0	0	228	103
4	1.13	1500	1500	132	113
5	0.19	0	0	0	0
6	6.10	0	0	0	0
7	1.35	0	0	158	135
8	0.34	0	0	0	0
9	0.33	1500	1500	0	0
10	0.75	0	0	0	0
11	0.26	0	0	0	26
12	0.53	0	0	0	0
13	0.14	0	0	0	0
14	0.76	0	0	0	0
15	0.12	0	0	0	0
16	0.79	0	0	0	0
17	1.23	0	0	0	0
TOTALS		3000	3000	723	514
Lots South of Sutherland Street					
18	0.35	0	0	0	35
19	0.56	0	0	0	55
20	1.15	0	0	0	115
21	1.17	0	0	0	117
22	3.00	0	0	N/A	N/A
23	0.98	0	0	130	0
24	0.18	0	0	23	0
TOTALS	7.39	0	0	153	322

MARINA	SHORT STAY	RESIDENTIAL
Stage 1	518	377
Stage 2	205	137
TOTAL	723	514

Residential total for
CURRENT BUILT FORM WITH SHORT STAY CALCS ABOVE ACCOMODATED

MARINA	Residential	514
SOUTH SUTHERLAND	Residentiel	322
	TOTAL	836

NOTE :
YIELD CALCULATIONS ARE SUBJECT TO +/- 10% CONTINGENCY AS FINAL YIELD NUMBERS WILL BE SUBJECT TO INDIVIDUAL DEVELOPER OUTCOMES.

2 Staging by VDM

DRAFT

OPTION 2A

RPS

J905 VDM Consulting - Port Hedland Spoil Bank Marina
Construction Cost Estimate RPS Layout 2A August 2011, Sections MRA D538-02-01 Rev D

Item	Activity	Quantity	Units	Unit Rate	Subtotal	Total for Item
1	**Preliminaries & Site Establishmer**					$ 1,900,000
1.1	Insurance and preliminaries for marine contractor	1	item	$ 750,000	$ 750,000	
1.2	Site establishment for contractor	1	item	$ 350,000	$ 350,000	
1.3	Site clean-up for contractor	1	item	$ 200,000	$ 200,000	
1.4	Environmental compliance (during construction)	1	item	$ 600,000	$ 600,000	
2	**Entrance Channe**					$ 12,694,000
2.1	Mobilise barge mounted excavator or similar capable of dredging through rock layer	1	item	$ 250,000	$ 250,000	
2.2	Cut through rock portion of 40m wide channel with minimu 1V:5H batters including disposal of material on shore	116,000	m3	$ 83	$ 9,628,000	
2.3	Mobilise cutter suction dredge to site	1	item	$ 200,000	$ 200,000	
2.4	Cut remaining sand and silts for 40m wide channel with minimum 1V:5H batters disposing of material on shore	77,000	m3	$ 28	$ 2,156,000	
2.5	Mobilise pile driving frame for mounting on dredge barge	1	item	$ 60,000	$ 60,000	
2.6	Install navigation aids along entrance channel	4	item	$ 100,000	$ 400,000	
3	**Dredging/Excavation of Harbour Basi**					$ 10,440,000
3.1	Excavate harbour basin using hydraulic excavator and use material elsewhere on site	800,000	m3	$ 12	$ 9,600,000	
3.2	Employ cutter suction dredge to finish off excavation and achieve required levels	30,000	m3	$ 28	$ 840,000	
4	**Outer Breakwater & Sand Trap (Section A**					$ 17,230,000
4.1	Supply and place core	155,000	t	$ 66	$ 10,230,000	
4.2	Supply and place armour (4-8t, 50%>6t)	35,000	t	$ 116	$ 4,060,000	
4.3	Supply and place armour (1-4t,50%>2t)	28,000	t	$ 105	$ 2,940,000	
5	**Inner Breakwater & Reclaimed Area (Section E**					$ 13,889,800
5.1	Excavate slot for outer breakwater toe and place excavate material within reclaimed area or in a bund seaward of the works to provide some protection	30,000	m3	$ 11	$ 330,000	
5.2	Trim slope and supply and place geotextile	12,000	m2	$ 33	$ 396,000	
5.3	Supply and place core	92,000	t	$ 66	$ 6,072,000	
5.4	Supply and place armour (2.5-6t,50%>4t)	38,200	t	$ 116	$ 4,431,200	
5.5	Supply and place armour (0.3-1t,50%>0.4t)	8,200	t	$ 95	$ 779,000	
5.6	Place and compact fill material (from dredge stockpile)	156,800	m3	$ 12	$ 1,881,600	
6	**Internal Revetment (Section C)**					$ 7,224,800
6.1	Trim slope and supply and place geotextile	22,000	m2	$ 33	$ 726,000	
6.2	Supply and place core	35,000	t	$ 66	$ 2,310,000	
6.3	Supply and place armour (0.3-1t,50%>0.4t)	28,000	t	$ 95	$ 2,660,000	
6.4	Place and compact fill material (from dredge stockpile)	127,400	m3	$ 12	$ 1,528,800	
7	**Wharf, Pens, Boat Ramps & Parking/Hardstand**					$ 6,080,000
7.1	Fuelling facility	1	item	$ 750,000	$ 750,000	
7.2	Supply and install boat pens (50 in first stage)	50	item	$ 46,000	$ 2,300,000	
7.3	Two lane concrete boat ramp with finger jetty	1	item	$ 1,430,000	$ 1,430,000	
7.4	Bitumen trailer parking (doubles as cyclone hardstand)	10,000	m2	$ 160	$ 1,600,000	
	Subtotal 1				$ 69,458,600	$ 69,458,600
	Consultancy Fees	5%			$ 3,472,930	$ 3,472,930
	Contingencies	15%			$ 10,418,790	$ 10,418,790
	Total Estimated Cost				$ 83,350,320	$ 83,350,320

Including Internal Pocket Beach

8	**Internal Pocket Beach**					$ 905,310
8.1	Additional harbour excavation using hydraulic excavator	31,250	m3	$ 12	$ 375,000	
8.2	Trim slope and supply and place geotextile	2,070	m2	$ 33	$ 68,310	
8.3	Supply and place core	3,200	t	$ 66	$ 211,200	
8.4	Supply and place armour (0.3-1t,50%>0.4t)	2,640	t	$ 95	$ 250,800	
	Subtotal 2				$ 70,363,910	$ 70,363,910
	Consultancy Fees	5%			$ 3,518,196	$ 3,518,196
	Contingencies	15%			$ 10,554,587	$ 10,554,587
	Total Estimated Cost				$ 84,436,692	$ 84,436,692

Including Additional 2 Lanes of Boat Ramp (4 Total)

9	**Additional 2 Lanes of Boat Ram**					$ 1,910,000
9.1	Two lane concrete boat ramp with floating finger jetty	1	item	$ 1,430,000	$ 1,430,000	
9.2	Additional bitumen trailer parking (doubles as cyclone hardstand)	3,000	m2	$ 160	$ 480,000	
	Subtotal 3				$ 71,368,600	$ 71,368,600
	Consultancy Fees	5%			$ 3,568,430	$ 3,568,430
	Contingencies	15%			$ 10,705,290	$ 10,705,290
	Total Estimated Cost				$ 85,642,320	$ 85,642,320

Including Additional 2 Lanes of Boat Ramp (4 Total) & Northern Boat Ramp

	Subtotal 1 + 2 +3				$ 72,273,910	$ 72,273,910
	Consultancy Fees	5%			$ 3,613,696	$ 3,613,696
	Contingencies	15%			$ 10,841,087	$ 10,841,087
	Total Estimated Cost				$ 86,728,692	$ 86,728,692

Notes 1. This estimate does not include environmental investigation and approval process.
2. Mobilisation costs for dredges could be reduced if equipment is already on site for other projects or if PHPA cutter suction dredge is available.
3. Assumes material from dredging and excavation can be placed on Spoil Bank areas.
4. Rates based on information for March 2011.

VDM CONSULTING

Client:	Landcorp
File No.	OP100117-C0103
Date	13-Sep-11
Revised	4-Oct-11

SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage 1A

Developable Area 3.23ha (excludes Mirvac Site)

Residential	35
Short-Stay	432
Total Dwellings	467

		Quantity	Unit	Rate	Cost
1	**SITEWORKS**				
1.01	Preliminaries (incl below)	1	Item		$ -
1.02	Clearing and topsoil stripping/stockpiling (Done as part of PHH Demolition)		m^2		$ -
1.03	Cut to fill internally	1	Item	$ 135,000.00	$ 135,000
1.04	Proof rolling		m^2		$ -
1.05	Imported fill for development - from Spoilbank	5,000	m^3	$ 10.50	$ 52,500
1.06	Retaining walls	330	m	$ 620.00	$ 204,600
	Fees				
1.07	Geotechnical (initial investigation and sign-off)	1	Item	$ 10,000.00	$ 10,000
1.08	Environmental (no allowance)	1	Item	$ -	$ -
1.09	Survey	1	ea	$ 5,000.00	$ 5,000
1.1	Engineering (2.5%)	1	Item	$ 9,802.00	$ 9,802
	Sub Total				**$ 416,902**
1.11	Contingency 15%				$ 62,535
	Sub Total				**$ 479,437**
2	**LAND DEVELOPMENT**				
2.01	Preliminaries	1	Item	$ 1,972,475.00	$ 1,972,475
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)	1	Item	$ -	0
2.03	Prefunded Water Supply Works	1	Item	$ -	0
2.04	HV Electricity Feeder allowance Stage 1A	1	Item	$ 800,000.00	$ 800,000
2.05	Broadband head-end and expansion		Item	$ 80,000.00	$ 80,000
	Roads and lanes				
2.06	External (Sutherland & N/S link inc 80 car bays) + North of Mirvac site + 15 Bays	1	Item	$ 1,965,300.00	$ 1,965,300
2.07	Internal (inc Morgans)	1	Item	$ 759,200.00	$ 759,200
	Drainage				
2.08	External	1	Item	$ 120,000.00	$ 120,000
2.09	Internal	1	Item	$ 195,000.00	$ 195,000
	Sewerage reticulation				
2.1	External (Sutherland & N/S link)	1	Item	$ 97,800.00	$ 97,800
2.11	Internal	1	Item	$ 124,000.00	$ 124,000
	Water supply reticulation				
2.12	External (Sutherland & N/S link)	1	Item	$ 183,200.00	$ 183,200
2.13	Internal	1	Item	$ 86,600.00	$ 86,600
2.14	Public Utilities and Electricity (includes 6 x transformers/swtitchgear)	1	Item	$ 990,700.00	$ 990,700
2.15	Footpaths	1	Item	$ 96,000.00	$ 96,000
2.16	Car parks - included in roads	1	Item	$ -	0
	Landscaping (from Emerge)				
	Fees				
2.17	Local Authority (1.5% of roads & drainage)	1	Item	$ 47,032.50	$ 47,033
2.18	Survey (lots only)	4	ea	$ 2,500.00	$ 10,000
2.19	Engineering (6.2%)	1	Item	$ 463,157.05	$ 463,157
2.2	Geotechnical		Not Included		
2.21	Environmental		Not Included		
	Sub Total				**$ 7,990,465**
2.22	Contingency 15%				$ 1,198,570
	Sub Total				**$ 9,189,034**
3	**AUTHORITY CHARGES**				
	Single Residential Lots				
3.01	Water Corporation (sewer, water, December 2011 - $5,342/lot)	35	ea	$ 5,342.00	$ 186,970
	Short-Stay Lots				
3.02	Water Corporation (excludes building stage headworks)	3	ea	$ 5,342.00	$ 16,026
3.03	Western Power (allowance) (in 2.04)	1	Item		$ -
	Sub Total				**$ 202,996**
	Sub Total	**(1+2+3)**			**$ 9,871,468**
	GST				**$ 987,147**
	Total				**$ 10,858,614**

Notes:

1. This Estimate assumes that Port Hedland Hospital Demolition is completed (current total estimate about $10m)

2. To unit costs add 25% for preliminaries if comparing costs.

3. This estimate allows for full upgrade of Sutherland St. from Acton St to Howe St.

VDM CONSULTING

Client: Landcorp
File No. OP100117-C0103
Date 13-Sep-11
Revised 4-Oct-11

SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage 1B

Developable Area 1.16ha

Residential 0
Short-Stay 153
Total Dwellings 153

		Quantity	Unit	Rate	Cost
1	**SITEWORKS**				
1.01	Preliminaries (inc. below)	1	Item	$ -	$ -
1.02	Clearing and topsoil stripping/stockpiling	12,000	m^2	$ 1.20	$ 14,400
1.03	Proof rolling		Item	$ 20,000.00	$ 20,000
1.04	Imported fill for development from Spoilbank	1	Item	$ 231,000.00	$ 231,000
1.05	Retaining walls	1	Item	$ 538,000.00	$ 538,000
	Fees				
1.06	Geotechnical (initial investigation and sign-off)	1	Item	$ 20,000.00	$ 20,000
1.07	Environmental (no allowance)	1	Item	$ -	$ -
1.08	Survey	1	Item	$ 10,000.00	$ 10,000
1.09	Engineering (2.5%)	1	Item	$ 20,085.00	$ 20,085
	Sub Total				**$ 853,485**
1.1	Contingency 15%				$ 128,023
	Sub Total				**$ 981,508**
2	**LAND DEVELOPMENT**				
2.01	Preliminaries	1	Item	$ 797,700.00	$ 797,700
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)	1	Item	$ -	$ -
2.03	Prefunded Water Supply Works	1	Item	$ -	$ -
2.04	HV Electricity Feeder	1	Item	$ -	$ -
2.05	Broadband head-end and expansion		Included		
	Roads and lanes				
2.06	External (N/S & Morgans in 1A)	1	Item	$ -	$ -
2.07	Internal	1	Item	$ 226,000.00	$ 226,000
	Drainage				
2.08	External	1	Item	$ -	$ -
2.09	Internal	1	Item	$ -	$ -
	Sewerage reticulation				
2.1	External	1	Item	$ -	$ -
2.11	Internal	1	Item	$ -	$ -
	Water supply reticulation				
2.12	External	1	Item	$ -	$ -
2.13	Internal	1	Item	$ -	$ -
2.14	Public Utilities and Electricity	1	Item	$ 161,400.00	$ 161,400
2.15	Footpaths				
2.16	Car parks	1	Item	$ -	$ -
	Landscaping (from Emerge)				
	Fees				
2.17	Local Authority (1.5% of roads & drainage)	1	Item	$ 3,390.00	$ 3,390
2.18	Survey	2	ea	$ 2,500.00	$ 5,000
2.19	Engineering (6.2%)	1	Item	$ 73,476.20	$ 73,476
2.2	Geotechnical		Included		
2.21	Environmental		Included		
	Sub Total				**$ 1,266,966**
2.22	Contingency 15%				$ 190,045
	Sub Total				**$ 1,457,011**
3	**AUTHORITY CHARGES**				
	Single Residential Lots				
3.01	Water Corporation (sewer, water, December 2011 - $5,342/lot)	0	ea	$ 5,342.00	$ -
	Short-Stay Lots				
3.02	Water Corporation	2	ea	$ 5,342.00	$ 10,684
3.03	Western Power (allowance) (inc. in 1A)	1	Item		$ -
	Sub Total				**$ 10,684**
	Sub Total				**$ 2,449,203**
	GST				**$ 244,920**
	Total				**$ 2,694,123**

Note:

1. These costs assume Morgans upgrade and NS road construction completed with Stage 1A.

2. To unit costs add 25% for preliminaries if comparing costs.

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Client:	Landcorp
File No.	OP100117
Date	13-Sep-11
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SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage Option 2A - Stage 2

Developable Area 7.96ha

Residential	274
Short-Stay	290
Total Dwellings	564
Commercial & Retail	6000m²

		Quantity	Unit	Rate	Cost
1	**SITEWORKS (Earthworks only to - Major Event Space)**				
1.01	Preliminaries	1	Item	$ 501,400.00	$ 501,400
1.02	Clearing and topsoil stripping/stockpiling	171,300	m^2	$ 1.20	$ 205,560
1.03	Cut/Fill from Spoilbank	1	item	$ 1,400,000.00	$ 1,400,000
1.04	Proof rolling		m^2	$ -	$ -
1.05	Imported fill for development		m^3	$ -	$ -
1.06	Retaining walls		m	$ -	$ -
	Fees				
1.07	Geotechnical (initial investigation and sign-off)	1	Item	$ 200,000.00	$ 200,000
1.08	Environmental (no allowance)	1	Item	$ -	$ -
1.09	Survey	1	Item	$ 30,000.00	$ 30,000
1.1	Engineering (2.5%)	1	Item	$ 52,700.00	$ 52,700
	Sub Total				**$ 2,389,660**
1.11	Contingency 15%				$ 358,449
	Sub Total				**$ 2,748,109**
2	**LAND DEVELOPMENT**				
2.01	Preliminaries	1	Item	$ 2,630,390.00	$ 2,630,390
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)	1	Item	$ 1,796,000.00	$ 1,796,000
2.03	External Water Supply Works	1	Item	$ 90,000.00	$ 90,000
2.04	HV Electricity Feeder (final allowance Stage 2)	1	Item	$ 650,000.00	$ 650,000
2.05	Broadband head-end and expansion (inc. in 1A)		Included		
	Roads and lanes				
2.06	External (in 1A)	1	Item	$ -	$ -
2.07	Internal (inc. 56 car bays) - excluding western link.	1	Item	$ 1,225,600.00	$ 1,225,600
	Western Link Only	1	Item	$ 346,800.00	$ 346,800
	Drainage				
2.08	External	1	Item	$ -	$ -
2.09	Internal Storage/Detention (inc. 7 detention devices)	1	Item	$ 1,065,000.00	$ 1,065,000
	Sewerage reticulation				
2.1	External	1	Item	$ -	$ -
2.11	Internal	1	Item	$ 172,000.00	$ 172,000
	Water supply reticulation				
2.12	External	1	Item	$ -	$ -
2.13	Internal	1	Item	$ 116,600.00	$ 116,600
2.14	Public Utilities and Electricity (includes 5 x transformers)	1	Item	$ 673,800.00	$ 673,800
2.15	Footpaths and pedestrian accesses	1	Item	$ 229,600.00	$ 229,600
2.16	Retaining Walls (sutherland St)	1	Item	$ 396,000.00	$ 396,000
2.17	Car parks (additional to MRA estimates) - temporary hardstand	20,500	m^2	$ 80.00	$ 1,640,000
	Complete Seal	20,500	m^2	$ 50.00	$ 1,025,000
	Landscaping (from Emerge)				
	Fees				
2.18	Local Authority (1.5% of roads & drainage)	1	Item	$ 37,803.00	$ 37,803
2.19	Survey	13	ea	$ 2,500.00	$ 32,500
2.2	Engineering (6.2%)	1	Item	$ 560,789.38	$ 560,789
2.21	Geotechnical		Included		
2.22	Environmental		Not Included		
	Sub Total				**$ 12,687,882**
2.23	Contingency 15%				$ 1,903,182
	Sub Total				**$ 14,591,065**
3	**AUTHORITY CHARGES**				
	Single Residential Lots				
3.01	Water Corporation (sewer, water, December 2011 - $5,342/lot)	6	ea	$ 5,342.00	$ 32,052
	Short-Stay Lots				
3.02	Water Corporation	4	ea	$ 5,342.00	$ 21,368
3.03	Western Power (allowance) (INC. IN 2.04 & 2.14)	1	Item		$ -
	Sub Total				**$ 53,420**
	Sub Total	**(1+2+3)**			**$ 17,392,594**
	GST				**$ 1,739,259**
	Total				**$ 19,131,853**

Notes:

1. *Siteworks assume that earthworks from marina construction (795,000m ³. Option 1A) is suitable for use as structural fill on developable area. Balance to be disposed of in northern part of Spoilbank over about 10ha to maximum 2m. high with stabilisation with 'topsoil' from developable areas.*
2. *If 'royalty' rate of $5/m ³ for spoil is achieved then approxiamately $1,000,000 may be re-imbursed to project from sand sales if spoil is suitable.*
3. *Marina works must be completed before, or in conjunction with Stage 2.*
4. *No estimate provided for environmental, planning or similar costs.*
5. *No allowance for retaining walls on board walks at marina edge.*
6. *To visit costs add 25% fir preliminaries if comparing costs.*

VDM CONSULTING

Client: Landcorp
File No. OP100117
Date 13-Sep-11
Revised

SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage Option 2A - Stage 3

Developable Area 7.13ha

Residential 103
Short-Stay 228
Total Dwellings 331
Includes Caravan Park

			Quantity	Unit	Rate	Cost
1	**SITEWORKS**					
1.01	Preliminaries		1	Item	$ -	$ -
1.02	Clearing and topsoil stripping/stockpiling		0	m^2	$ -	$ -
1.03	Cut/Fill from Spoilbank		1	item	$ -	$ -
1.04	Proof rolling			m^2	$ -	$ -
1.05	Imported fill for development			m^3	$ -	$ -
1.06	Retaining walls			m	$ -	$ -
	Fees					
1.07	Geotechnical (initial investigation and sign-off)		1	Item	$ -	$ -
1.08	Environmental (no allowance)		1	Item	$ -	$ -
1.09	Survey		1	Item	$ -	$ -
1.1	Engineering (2.5%)		1	Item	$ -	$ -
		Sub Total				**$ -**
1.11	Contingency 15%					$ -
		Sub Total				**$ -**
2	**LAND DEVELOPMENT**					
2.01	Preliminaries		1	Item	$ 714,575.00	$ 714,575
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)		1	Item	$ -	$ -
2.03	External Water Supply Works		1	Item	$ -	$ -
2.04	HV Electricity Feeder (final allowance Stage 2)		1	Item	$ -	$ -
2.05	Broadband head-end and expansion (inc. in 1A)			Included		
	Roads and lanes					
2.06	External (Sutherland inc. 15 car bays, 1 roundabout)		1	Item	$ 275,400.00	$ 275,400
2.07	Internal (inc. 56 car bays)		1	Item	$ 102,000.00	$ 102,000
	Drainage					
2.08	External		1	Item	$ -	$ -
2.09	Internal (Connect to Stage 2 detention)		1	Item	$ 37,500.00	$ 37,500
	Sewerage reticulation					
2.1	External		1	Item	$ -	$ -
2.11	Internal		1	Item	$ 22,000.00	$ 22,000
	Water supply reticulation					
2.12	External		1	Item	$ -	$ -
2.13	Internal		1	Item	$ 19,000.00	$ 19,000
2.14	Public Utilities and Electricity (includes 1 x transformers)		1	Item	$ 197,000.00	$ 197,000
2.15	Footpaths and pedestrian accesses		1	Item	$ 205,400.00	$ 205,400
2.16	Retaining Walls		1	Item	$ -	$ -
2.17	Car parks		1	Item	$ -	$ -
	Landscaping (from Emerge)					
	Fees					
2.18	Local Authority (1.5% of roads & drainage)		1	Item	$ 9,304.50	$ 9,305
2.19	Survey		2	ea	$ 2,500.00	$ 5,000
2.2	Engineering (6.2%)		1	Item	$ 97,518.25	$ 97,518
2.21	Geotechnical			Included		
2.22	Environmental			Not Included		
		Sub Total				**$ 1,684,698**
2.23	Contingency 15%					$ 252,705
		Sub Total				**$ 1,937,402**
3	**AUTHORITY CHARGES**					
	Single Residential Lots					
3.01	Water Corporation (sewer, water, December 2011 - $5,342/lot)		0	ea	$ 5,342.00	$ -
	Short-Stay Lots					
3.02	Water Corporation		2	ea	$ 5,342.00	$ 10,684
3.03	Western Power (allowance) (INC. IN 2.04 & 2.14)		1	Item		$ -
		Sub Total				**$ 10,684**
		Sub Total	**(1+2+3)**			**$ 1,948,086**
		GST				**$ 194,809**
		Total				**$ 2,142,895**

Notes:

1. *Assumes all site preparation completed with marina and stage 2.*
2. *Assumes stage 2 completed.*
3. *Eastern beach access included this stage but no allowance for beach shelters.*
4. *No building headworks included for water and sewerage.*
5. *To unit costs add 25% for preliminaries if comparing costs.*

VDM CONSULTING

Client: Landcorp
File No. OP100117
Date 13-Sep-11
Revised

SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage Option 2A - Stage 4

Developable Area 2.08ha

Residential	137
Short-Stay	205
Total Dwellings	342

		Quantity	Unit	Rate	Cost
1	**SITEWORKS (Earthworks only to major event space)**				
1.01	Preliminaries	1	Item	$ -	$ -
1.02	Clearing and topsoil stripping/stockpiling		m^2	$ -	$ -
1.03	Cut/Fill from Spoilbank	1	item	$ -	$ -
1.04	Proof rolling		m^2	$ -	$ -
1.05	Imported fill for development		m^3	$ -	$ -
1.06	Retaining walls		m	$ -	$ -
	Fees				
1.07	Geotechnical (initial investigation and sign-off)	1	Item	$ -	$ -
1.08	Environmental (no allowance)	1	Item	$ -	$ -
1.09	Survey	1	Item	$ -	$ -
1.1	Engineering (2.5%)	1	Item	$ -	$ -
	Sub Total				**$ -**
1.11	Contingency 15%				$ -
	Sub Total				**$ -**
2	**LAND DEVELOPMENT**				
2.01	Preliminaries	1	Item	$ 854,212.50	$ 854,213
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)	1	Item	$ -	$ -
2.03	External Water Supply Works	1	Item	$ -	$ -
2.04	HV Electricity Feeder (final allowance Stage 2)	1	Item	$ -	$ -
2.05	Broadband head-end and expansion (inc. in 1A)		Included		
	Roads and lanes				
2.06	External (Sutherland inc. 15 car bays, 1 roundabout)	1	Item	$ -	$ -
2.07	Internal (inc. 56 car bays)	1	Item	$ 693,000.00	$ 693,000
	Drainage				
2.08	External	1	Item	$ -	$ -
2.09	Internal (2 x detention storages))	1	Item	$ 296,250.00	$ 296,250
	Sewerage reticulation				
2.1	External	1	Item	$ -	$ -
2.11	Internal	1	Item	$ 52,000.00	$ 52,000
	Water supply reticulation				
2.12	External	1	Item	$ -	$ -
2.13	Internal	1	Item	$ 40,000.00	$ 40,000
2.14	Public Utilities and Electricity (includes 2 x transformers)	1	Item	$ 263,600.00	$ 263,600
2.15	Footpaths and pedestrian accesses	1	Item	$ 72,000.00	$ 72,000
2.16	Retaining Walls	1	Item	$ -	$ -
2.17	Car parks (in addition to MRA estimates)	10,000	m^2	$ 125.00	$ 1,250,000
	Landscaping (from Emerge)				
	Fees				
2.18	Local Authority (1.5% of roads & drainage)	1	Item	$ 15,918.75	$ 15,919
2.19	Survey	3	ea	$ 2,500.00	$ 7,500
2.2	Engineering (6.2%)	1	Item	$ 140,805.88	$ 140,806
2.21	Geotechnical		Included		
2.22	Environmental		Not Included		
	Sub Total				**$ 3,685,287**
2.23	Contingency 15%				$ 552,793
	Sub Total				**$ 4,238,080**
3	**AUTHORITY CHARGES**				
	Single Residential Lots				
3.01	Water Corporation (sewer, water, December 2011 - $5,342/lot)	3	ea	$ 5,342.00	$ 16,026
	Short-Stay Lots				
3.02	Water Corporation (inc in 3.01)	0	ea	$ 5,342.00	$ -
3.03	Western Power (allowance) (INC. IN 2.04 & 2.14)	0	Item		$ -
	Sub Total				**$ 16,026**
	Sub Total	**(1+2+3)**			**$ 4,254,106**
	GST				**$ 425,411**
	Total				**$ 4,679,517**

Notes:

1. *Assumes Stage 3 completed.*
2. *No allowance for beach shelters.*
3. *No allowance for Major Event Space development.*
4. *To unit costs add 25% for preliminaries if comparing costs.*

7.15 Option 3A

The marina for option 3A is essentially the same as for option 2A, with the exception of the internal breakwater on the western side of the marina, which has been widened in order to allow for the creation of a prominent potential development area on the breakwater. The estimated base construction cost for option 3A would be approximately $92.1 million including 5% consultancy fees and 15% contingencies. The total difference in the cost of the marina construction for option 3A compared to option 2A arises as a result of this change to the internal breakwater width.

As noted previously, current talks with the Port Hedland Port Authority regarding their ability to provide dredging services at a reduced price could reduce the total cost of this option by up to around $5 to $10 million.

Inclusion of a pocket beach on the northern side of the marina would increase to total construction cost to around $93.2 million.

An additional 2 lanes of boat ramp (4 total) would increase the total cost of the marina construction to around $94.4 million.

If both the internal beach and the additional 2 lanes of boat ramp were to be built the total construction cost for the marina would be $95.5 million.

GEND

- Boat ramps
- Trailer and car parking
- Marina lease area to include;
  - Boat lifter and hardstand;
  - Outboard/ diesel mechanic;
  - Chandler;
  - Fiberglass and shipwright;
  - Marine electronics
  - Lunchbar;
  - Fuel jetty;
  - Boat Sales; and
  - Dive/ fishing Shop and bait supply
- Pedestr an boardwalk/ promenade
- Retail on the ground floor with commercial on the first floor and short stay accomodation above
- Community/ entry park/ water play/ minor event space/ night markets etc.
- Boat pens (total 250- 50 in stage one)
- Lookout/ platform on key pedestrian entries
- Pedestr an connections into marina edge
- Short stay accomodation and/or residential development
- Residential (amendment #22 style max 110sqm, 2 bedrooms and additional development requirements)
- Hotel
- Pedestian footpath to eastern beach
- Short stay accomodation
- Relocated Yatch club
- Spend beach/ informal boat launching
- Public car park for aquatic centre/ yatch club/ beach access
- Future additional/ overflow car parking for yatch club and toilet parking for future boat ramp
- Major event space (Football/ socces/ hockey/ rugby pitches)
- Sutherland Street partial closure to reduce road reserve
- Possible Sutholand Street extension
- Residential development proposed by proponent
- Relocated RSL
- Relocated Aquatic Centre
- Additional informal boat ramp

Sewage Pumping Station

1A

1B

2

3

4

OPT 3A

LOT NO	TOTAL AREA (m2)	MAX NO OF STOREYS	RETAIL FLOOR AREA (m2)	COMMERCIAL FLOOR AREA (m2)	TOTAL S.S	RES YIELD @ 100m2 (PR 1.0)	MIN NO. CARP BAYS	CARPARK AREA (m2)	PARKING @ GRADE	BASEM MULTI
LOTS NORTH OF SUTHERLAND RD										
1	3980	2	0	0	0	43	43	1473	59	
2	5010	2	0	0	0	53	53	7856	114	
3	5890	6	2200	2500	213	0	213	2768		2
4	13860	4	0	0	297	0	297	8177		3
5	3010	4	1300	1300	77	0	77	1054	42	
6	7190	4	0	0	184	0	184	4530		2
7	2730	3	0	1700	59	0	59	956	38	
8	6490	4	0	0	169	0	169	4089		2
9	8160	2	0	0	0	81	81	4080	163	
12	3020	2	0	0	0	30	30	1570	63	
TOTALS			3500	5500	999	707				
LOTS SOUTH OF SUTHERLAND RD										
16	3510	2	0	0	0	25	25	1404	56	
17	5596	2	0	0	0	30	30	2238	90	
18	11500	2	0	0	0	86	86	4600	184	
19	11700	2	0	0	0	98	98	4680	187	
20	30000	2	0	0	0	0	n/a	12000	480	
21	9700	2	0	0	130	0	130	3880	155	
22	1700	2	0	0	23	0	23	680	27	
TOTALS					153	739				

		SHORT STAY	RESIDENTIAL	STAGE TOTAL UNITS	COMMERCIAL (m2)	RETAIL (m2)	CAR PA
Lot 5-8*	stage 1	489	0	489	9000	1300	5
Lot 3	stage 2	213	0	213	2500	2200	2
Lot 4	stage 3	297	0	297	0	0	3
Lot 1,2,9,12	stage 4	0	207	207	0	0	3
	TOTAL	999	207	1206	5500	3500	15

* NOTE lot 5 and 7 additional car parking provided in lot 6 and 8

2 Staging by VDM

NORTH

SPOILBANK: MARINA

LANDCORP

MARINA OPT.3A

1:250 A1100B

1:500 02/09/2011

KW

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CODA STUDIO PTY LTD ACN 119 667 300

J905 VDM Consulting - Port Hedland Spoil Bank Marina

Construction Cost Estimate CODA layout 3A August 2011, Sections MRA D538-02-01 Rev D

Item	Activity	Quantity	Units	Unit Rate	Subtotal	Total for Item
1	**Preliminaries & Site Establishment**					$ 1,900,000
1.1	Insurance and preliminaries for marine contractor	1	item	$ 750,000	$ 750,000	
1.2	Site establishment for contractor	1	item	$ 350,000	$ 350,000	
1.3	Site clean-up for contractor	1	item	$ 200,000	$ 200,000	
1.4	Environmental compliance (during construction)	1	item	$ 600,000	$ 600,000	
2	**Entrance Channel**					$ 12,694,000
2.1	Mobilise barge mounted excavator or similar capable of dredging through rock layer	1	item	$ 250,000	$ 250,000	
2.2	Cut through rock portion of 40m wide channel with minimum 1V:5H batters including disposal of material on shore	116,000	m3	$ 83	$ 9,628,000	
2.3	Mobilise cutter suction dredge to site	1	item	$ 200,000	$ 200,000	
2.4	Cut remaining sand and silts for 40m wide channel with minimum 1V:5H batters disposing of material on shore	77,000	m3	$ 28	$ 2,156,000	
2.5	Mobilise pile driving frame for mounting on dredge barge	1	item	$ 60,000	$ 60,000	
2.6	Install navigation aids along entrance channel	4	item	$ 100,000	$ 400,000	
3	**Dredging/Excavation of Harbour Basin**					$ 10,440,000
3.1	Excavate harbour basin using hydraulic excavator and use material elsewhere on site	800,000	m3	$ 12	$ 9,600,000	
3.2	Employ cutter suction dredge to finish off excavation and achieve required levels	30,000	m3	$ 28	$ 840,000	
4	**Outer Breakwater & Sand Trap (Section A)**					$ 17,230,000
4.1	Supply and place core	155,000	t	$ 66	$ 10,230,000	
4.2	Supply and place armour (4-8t, 50%>6t)	35,000	t	$ 116	$ 4,060,000	
4.3	Supply and place armour (1-4t,50%>2t)	28,000	t	$ 105	$ 2,940,000	
5	**Inner Breakwater & Reclaimed Area (Section B)**					$ 18,312,200
5.1	Excavate slot for outer breakwater toe and place excavated material within reclaimed area or in a bund seaward of the works to provide some protection	60,000	m3	$ 11	$ 660,000	
5.2	Trim slope and supply and place geotextile	15,600	m2	$ 33	$ 514,800	
5.3	Supply and place core	104,400	t	$ 66	$ 6,890,400	
5.4	Supply and place armour (2.5-6t,50%>4t)	42,000	t	$ 116	$ 4,872,000	
5.5	Supply and place armour (0.3-1t,50%>0.4t)	8,200	t	$ 95	$ 779,000	
5.6	Place and compact fill material (from dredge stockpile)	383,000	m3	$ 12	$ 4,596,000	
6	**Internal Revetment (Section C)**					$ 10,072,800
6.1	Trim slope and supply and place geotextile	33,000	m2	$ 33	$ 1,089,000	
6.2	Supply and place core	52,500	t	$ 66	$ 3,465,000	
6.3	Supply and place armour (0.3-1t,50%>0.4t)	42,000	t	$ 95	$ 3,990,000	
6.4	Place and compact fill material (from dredge stockpile)	127,400	m3	$ 12	$ 1,528,800	
7	**Wharf, Pens, Boat Ramps & Parking/Hardstand**					$ 6,080,000
7.1	Fuelling facility	1	item	$ 750,000	$ 750,000	
7.2	Supply and install boat pens (50 in first stage)	50	item	$ 46,000	$ 2,300,000	
7.3	Two lane concrete boat ramp with finger jetty	1	item	$ 1,430,000	$ 1,430,000	
7.4	Bitumen trailer parking (doubles as cyclone hardstand)	10,000	m2	$ 160	$ 1,600,000	
	Subtotal 1				**$ 76,729,000**	**$ 76,729,000**
	Consultancy Fees	**5%**			**$ 3,836,450**	**$ 3,836,450**
	Contingencies	**15%**			**$ 11,509,350**	**$ 11,509,350**
	Total Estimated Cost				**$ 92,074,800**	**$ 92,074,800**

Including Northern Internal Pocket Beach

8	**Internal Pocket Beach**					$ 905,310
8.1	Additional harbour excavation using hydraulic excavator	31,250	m3	$ 12	$ 375,000	
8.2	Trim slope and supply and place geotextile	2,070	m2	$ 33	$ 68,310	
8.3	Supply and place core	3,200	t	$ 66	$ 211,200	
8.4	Supply and place armour (0.3-1t,50%>0.4t)	2,640	t	$ 95	$ 250,800	
	Subtotal 2				**$ 77,634,310**	**$ 77,634,310**
	Consultancy Fees	**5%**			**$ 3,881,716**	**$ 3,881,716**
	Contingencies	**15%**			**$ 11,645,147**	**$ 11,645,147**
	Total Estimated Cost				**$ 93,161,172**	**$ 93,161,172**

Including Additional 2 Lanes of Boat Ramp (4 Total)

9	**Additional 2 Lanes of Boat Ramp**					$ 1,910,000
9.1	Two lane concrete boat ramp with floating finger jetty	1	item	$ 1,430,000	$ 1,430,000	
9.2	Additional bitumen trailer parking (doubles as cyclone hardstand)	3,000	m2	$ 160	$ 480,000	
	Subtotal 3				**$ 78,639,000**	**$ 78,639,000**
	Consultancy Fees	**5%**			**$ 3,931,950**	**$ 3,931,950**
	Contingencies	**15%**			**$ 11,795,850**	**$ 11,795,850**
	Total Estimated Cost				**$ 94,366,800**	**$ 94,366,800**

Including Northern Internal Pocket Beach & Additional 2 Lanes of Boat Ramp (4 Total)

	Subtotal 1 + 2 +3				**$ 79,544,310**	**$ 79,544,310**
	Consultancy Fees	**5%**			**$ 3,977,216**	**$ 3,977,216**
	Contingencies	**15%**			**$ 11,931,647**	**$ 11,931,647**
	Total Estimated Cost				**$ 95,453,172**	**$ 95,453,172**

Notes 1. This estimate does not include environmental investigation and approval process.
2. Mobilisation costs for dredges could be reduced if equipment is already on site for other projects or if PHPA cutter suction dredge is available.
3. Assumes material from dredging and excavation can be placed on Spoil Bank areas.
4. Rates based on information for March 2011.

VDM CONSULTING

Client: Landcorp
File No. OP100117-C0103
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SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage 1A

Developable Area 3.23ha (excludes Mirvac Site)

Residential	35
Short-Stay	432
Total Dwellings	467

		Quantity	Unit	Rate	Cost
1	**SITEWORKS**				
1.01	Preliminaries (incl below)	1	Item		$ -
1.02	Clearing and topsoil stripping/stockpiling (Done as part of PHH Demolition)		m^2		$ -
1.03	Cut to fill internally	1	Item	$ 135,000.00	$ 135,000
1.04	Proof rolling		m^2		$ -
1.05	Imported fill for development - from Spoilbank	5,000	m^3	$ 10.50	$ 52,500
1.06	Retaining walls	330	m	$ 620.00	$ 204,600
	Fees				
1.07	Geotechnical (initial investigation and sign-off)	1	Item	$ 10,000.00	$ 10,000
1.08	Environmental (no allowance)	1	Item	$ -	$ -
1.09	Survey	1	ea	$ 5,000.00	$ 5,000
1.1	Engineering (2.5%)	1	Item	$ 9,802.00	$ 9,802
	Sub Total				**$ 416,902**
1.11	Contingency 15%				$ 62,535
	Sub Total				**$ 479,437**
2	**LAND DEVELOPMENT**				
2.01	Preliminaries	1	Item	$ 1,972,475.00	$ 1,972,475
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)	1	Item	$ -	0
2.03	Prefunded Water Supply Works	1	Item	$ -	0
2.04	HV Electricity Feeder allowance Stage 1A	1	Item	$ 800,000.00	$ 800,000
2.05	Broadband head-end and expansion		Item	$ 80,000.00	$ 80,000
	Roads and lanes				
2.06	External (Sutherland & N/S link inc 80 car bays) + North of Mirvac site + 15 Bays	1	Item	$ 1,965,300.00	$ 1,965,300
2.07	Internal (inc Morgans)	1	Item	$ 759,200.00	$ 759,200
	Drainage				
2.08	External	1	Item	$ 120,000.00	$ 120,000
2.09	Internal	1	Item	$ 195,000.00	$ 195,000
	Sewerage reticulation				
2.1	External (Sutherland & N/S link)	1	Item	$ 97,800.00	$ 97,800
2.11	Internal	1	Item	$ 124,000.00	$ 124,000
	Water supply reticulation				
2.12	External (Sutherland & N/S link)	1	Item	$ 183,200.00	$ 183,200
2.13	Internal	1	Item	$ 86,600.00	$ 86,600
2.14	Public Utilities and Electricity (includes 6 x transformers/swtitchgear)	1	Item	$ 990,700.00	$ 990,700
2.15	Footpaths	1	Item	$ 96,000.00	$ 96,000
2.16	Car parks - included in roads	1	Item	$ -	0
	Landscaping (from Emerge)				
	Fees				
2.17	Local Authority (1.5% of roads & drainage)	1	Item	$ 47,032.50	$ 47,033
2.18	Survey (lots only)	4	ea	$ 2,500.00	$ 10,000
2.19	Engineering (6.2%)	1	Item	$ 463,157.05	$ 463,157
2.2	Geotechnical		Not Included		
2.21	Environmental		Not Included		
	Sub Total				**$ 7,990,465**
2.22	Contingency 15%				$ 1,198,570
	Sub Total				**$ 9,189,034**
3	**AUTHORITY CHARGES**				
	Single Residential Lots				
3.01	Water Corporation (sewer, water, December 2011 - $5,342/lot)	35	ea	$ 5,342.00	$ 186,970
	Short-Stay Lots				
3.02	Water Corporation (excludes building stage headworks)	3	ea	$ 5,342.00	$ 16,026
3.03	Western Power (allowance) (in 2.04)	1	Item		$ -
	Sub Total				**$ 202,996**
	Sub Total	**(1+2+3)**			**$ 9,871,468**
	GST				**$ 987,147**
	Total				**$ 10,858,614**

Notes:

1.This Estimate assumes that Port Hedland Hospital Demolition is completed (current total estimate about $10m)

2. To unit costs add 25% for preliminaries if comparing costs.

3. This estimate allows for full upgrade of Sutherland St. from Acton St to Howe St.

VDM CONSULTING

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SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage 1B

Developable Area 1.16ha

Residential	0
Short-Stay	153
Total Dwellings	153

		Quantity	Unit	Rate	Cost
1	**SITEWORKS**				
1.01	Preliminaries (inc. below)	1	Item	$ -	$ -
1.02	Clearing and topsoil stripping/stockpiling	12,000	m^2	$ 1.20	$ 14,400
1.03	Proof rolling		Item	$ 20,000.00	$ 20,000
1.04	Imported fill for development from Spoilbank	1	Item	$ 231,000.00	$ 231,000
1.05	Retaining walls	1	Item	$ 538,000.00	$ 538,000
	Fees				
1.06	Geotechnical (initial investigation and sign-off)	1	Item	$ 20,000.00	$ 20,000
1.07	Environmental (no allowance)	1	Item	$ -	$ -
1.08	Survey	1	Item	$ 10,000.00	$ 10,000
1.09	Engineering (2.5%)	1	Item	$ 20,085.00	$ 20,085
	Sub Total				**$ 853,485**
1.1	Contingency 15%				$ 128,023
	Sub Total				**$ 981,508**
2	**LAND DEVELOPMENT**				
2.01	Preliminaries	1	Item	$ 797,700.00	$ 797,700
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)	1	Item	$ -	$ -
2.03	Prefunded Water Supply Works	1	Item	$ -	$ -
2.04	HV Electricity Feeder	1	Item	$ -	$ -
2.05	Broadband head-end and expansion		Included		
	Roads and lanes				
2.06	External (N/S & Morgans in 1A)	1	Item	$ -	$ -
2.07	Internal	1	Item	$ 226,000.00	$ 226,000
	Drainage				
2.08	External	1	Item	$ -	$ -
2.09	Internal	1	Item	$ -	$ -
	Sewerage reticulation				
2.1	External	1	Item	$ -	$ -
2.11	Internal	1	Item	$ -	$ -
	Water supply reticulation				
2.12	External	1	Item	$ -	$ -
2.13	Internal	1	Item	$ -	$ -
2.14	Public Utilities and Electricity	1	Item	$ 161,400.00	$ 161,400
2.15	Footpaths				
2.16	Car parks	1	Item	$ -	$ -
	Landscaping (from Emerge)				
	Fees				
2.17	Local Authority (1.5% of roads & drainage)	1	Item	$ 3,390.00	$ 3,390
2.18	Survey	2	ea	$ 2,500.00	$ 5,000
2.19	Engineering (6.2%)	1	Item	$ 73,476.20	$ 73,476
2.2	Geotechnical		Included		
2.21	Environmental		Included		
	Sub Total				**$ 1,266,966**
2.22	Contingency 15%				$ 190,045
	Sub Total				**$ 1,457,011**
3	**AUTHORITY CHARGES**				
	Single Residential Lots				
3.01	Water Corporation (sewer, water, December 2011 - $5,342/lot)	0	ea	$ 5,342.00	$ -
	Short-Stay Lots				
3.02	Water Corporation	2	ea	$ 5,342.00	$ 10,684
3.03	Western Power (allowance) (inc. in 1A)	1	Item		$ -
	Sub Total				**$ 10,684**
	Sub Total				**$ 2,449,203**
	GST				**$ 244,920**
	Total				**$ 2,694,123**

Note:

1. These costs assume Morgans upgrade and NS road construction completed with Stage 1A.

2. To unit costs add 25% for preliminaries if comparing costs.

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SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage Option 3A - Stage 2

Developable Area 8.427ha

Residential	0
Short-Stay	999
Total Dwellings	999

Includes 9000m³ Retail/Commercial

		Quantity	Unit	Rate	Cost
1	**SITEWORKS (Earthworks only to major event space)**				
1.01	Preliminaries	1	Item	$ 507,000.00	$ 507,000
1.02	Clearing and topsoil stripping/stockpiling	189,700	m^2	$ 1.20	$ 227,640
1.03	Cut/Fill from Spoilbank	1	Item	$ 1,400,000.00	$ 1,400,000
1.04	Proof rolling		Item	$ -	$ -
1.05	Imported fill for development		m^3	$ -	$ -
1.06	Retaining walls		m	$ -	$ -
	Fees				
1.07	Geotechnical (initial investigation and sign-off)	1	Item	$ 200,000.00	$ 200,000
1.08	Environmental (no allowance)	0	Item	$ -	$ -
1.09	Survey	1	Item	$ 30,000.00	$ 30,000
1.1	Engineering (2.5%)	1	Item	$ -	$ 53,400
	Sub Total				**$ 2,418,040**
1.11	Contingency 15%				$ 362,706
	Sub Total				**$ 2,780,746**
2	**LAND DEVELOPMENT**				
2.01	Preliminaries	1	Item	$ 2,630,835.00	$ 2,630,835
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)	1	Item	$ 1,796,000.00	$ 1,796,000
2.03	External Water Supply Works	1	Item	$ 90,000.00	$ 90,000
2.04	HV Electricity Feeder (final allowance Stage 2)	1	Item	$ 650,000.00	$ 650,000
2.05	Broadband head-end and expansion (inc. in 1A)		Included		
	Roads and lanes				
2.06	External (in 1A) plus one roundabout	1	Item	$ 80,000.00	$ 80,000
2.07	Internal - (excluding western link inc. 58 car bays)	1	Item	$ 1,296,600.00	$ 1,296,600
	Western Link Only	1	Item	$ 346,800.00	$ 346,800
	Drainage				
2.08	External	1	Item	$ -	$ -
2.09	Internal (Includes 6 storage/detentions)	1	Item	$ 832,500.00	$ 832,500
	Sewerage reticulation				
2.1	External	1	Item	$ -	$ -
2.11	Internal	1	Item	$ 185,000.00	$ 185,000
	Water supply reticulation				
2.12	External	1	Item	$ -	$ -
2.13	Internal	1	Item	$ 98,700.00	$ 98,700
2.14	Public Utilities and Electricity (Inc. 5 transformers)	1	Item	$ 633,100.00	$ 633,100
2.15	Footpaths and pedestrian accesses	1	Item	$ 330,800.00	$ 330,800
2.16	Retaining Walls (Sutherland Street)	1	Item	$ 396,000.00	$ 396,000
2.17	Car parks (Less allowances in MRA estimate) - temporary hardstand	20,770	m^2	$ 80.00	$ 1,661,600
	- complete seal	20,770	m^2	$ 50.00	$ 1,038,500
	Landscaping (from Emerge)				
	Fees				
2.18	Local Authority (1.5% of roads & drainage)	1	Item	$ 38,098.50	$ 38,099
2.19	Survey	14	ea	$ 2,500.00	$ 35,000
2.2	Engineering (6.2%)	1	Item	$ 559,211.17	$ 559,211
2.21	Geotechnical		Included		
2.22	Environmental		Not Included		
	Sub Total				**$ 12,698,745**
2.23	Contingency 15%				$ 1,904,812
	Sub Total				**$ 14,603,556**
3	**AUTHORITY CHARGES**				
	Single Residential Lots				
3.01	Water Corporation (sewer, water, December 2011 - $5,342/lot)	0	ea	$ 5,342.00	$ -
	Short-Stay Lots				
3.02	Water Corporation	6	ea	$ 5,342.00	$ 32,052
3.03	Western Power (allowance) (INC. IN 2.04 & 2.14)	0	Item		$ -
	Sub Total				**$ 32,052**
	Sub Total				**$ 17,416,354**
	GST				**$ 1,741,635**
	Total				**$ 19,157,990**

Notes:

1. *Siteworks assume that earthworks from marina construction (795,000m³. Option 1A) is suitable for use as structural fill on developable area. Balance to be disposed of in northern part of Spoilbank over about 10ha to maximum 2m. high with stabilisation with 'topsoil' from developable areas.*
2. *If 'royalty' rate of $5/m³ for spoil is achieved then approxiamately $1,000,000 may be re-imbursed to project from sand sales if spoil is suitable.*
3. *Marina works must be completed before, or in conjunction with Stage 2.*
4. *No estimate provided for environmental, planning or similar costs.*
5. *No allowance for retaining walls on board walks at marina edge.*
6. *To visit costs add 25% fir preliminaries if comparing costs.*

VDM CONSULTING

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SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage Option 3A - Stage 3

Developable Area 6.077ha

Residential	177
Short-Stay	0
Total Dwellings	177

			Quantity	Unit	Rate	Cost
1	**SITEWORKS (Earthworks only to major event space)**					
1.01	Preliminaries		1	Item	$ -	$ -
1.02	Clearing and topsoil stripping/stockpiling		0	m^2	$ -	$ -
1.03	Cut/Fill from Spoilbank		0	Item	$ -	$ -
1.04	Proof rolling			Item	$ -	$ -
1.05	Imported fill for development			m^3	$ -	$ -
1.06	Retaining walls			m	$ -	$ -
	Fees					
1.07	Geotechnical (initial investigation and sign-off)		1	Item	$ -	$ -
1.08	Environmental (no allowance)		0	Item	$ -	$ -
1.09	Survey		1	Item	$ -	$ -
1.1	Engineering (2.5%)		1	Item	$ -	$ -
		Sub Total				**$ -**
1.11	Contingency 15%					$ -
		Sub Total				**$ -**
2	**LAND DEVELOPMENT**					
2.01	Preliminaries		1	Item	$ 896,325.00	$ 896,325
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)		1	Item	$ -	$ -
2.03	External Water Supply Works		1	Item	$ -	$ -
2.04	HV Electricity Feeder (final allowance Stage 2)		1	Item	$ -	$ -
2.05	Broadband head-end and expansion (inc. in 1A)			Included		
	Roads and lanes					
2.06	External (Sutherland extension /upgrade)		1	Item	$ 275,000.00	$ 275,000
2.07	Internal (inc. 56 car bays)		1	Item	$ 647,700.00	$ 647,700
	Drainage					
2.08	External		1	Item	$ -	$ -
2.09	Internal (2 x detention storages)		1	Item	$ 240,000.00	$ 240,000
	Sewerage reticulation					
2.1	External		1	Item	$ -	$ -
2.11	Internal		1	Item	$ 48,000.00	$ 48,000
	Water supply reticulation					
2.12	External		1	Item	$ -	$ -
2.13	Internal		1	Item	$ 59,200.00	$ 59,200
2.14	Public Utilities and Electricity (Inc. 2 transformers)		1	Item	$ 160,000.00	$ 160,000
2.15	Footpaths and pedestrian accesses		1	Item	$ 155,400.00	$ 155,400
2.16	Retaining Walls		1	Item	$ -	$ -
2.17	Car parks (Less allowances in MRA estimate)		0	m^2	$ -	$ -
	Landscaping (from Emerge)					
	Fees					
2.18	Local Authority (1.5% of roads & drainage)		1	Item	$ 19,771.50	$ 19,772
2.19	Survey		7	ea	$ 2,500.00	$ 17,500
2.2	Engineering (6.2%)		1	Item	$ 153,860.75	$ 153,861
2.21	Geotechnical			Included		
2.22	Environmental			Not Included		
		Sub Total				**$ 2,672,757**
2.23	Contingency 15%					$ 400,914
		Sub Total				**$ 3,073,671**
3	**AUTHORITY CHARGES**					
	Single Residential Lots					
3.01	Water Corporation (sewer, water, December 2011 - $5,342/lot)		5	ea	$ 5,342.00	$ 26,710
	Short-Stay Lots					
3.02	Water Corporation		0	ea	$ 5,342.00	$ -
3.03	Western Power (allowance) (INC. IN 2.04 & 2.14)		0	Item		$ -
		Sub Total				**$ 26,710**
		Sub Total	**(1+2+3)**			**$ 3,100,381**
		GST				**$ 310,038**
		Total				**$ 3,410,419**

Notes:

1. *Assumes all site preparation completed with marina and stage 2.*
2. *Assumes stage 2 completed.*
3. *Eastern beach access included this stage but no allowance for beach shelters.*
4. *No building headworks included for water and sewerage.*
5. *To unit costs add 25% for preliminaries if comparing costs.*

VDM CONSULTING

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SPOILBANK MARINA DEVELOPMENT
Preliminary Order-of-Magnitude Indicative Development Costs

Stage Option 3A - Stage 4

Developable Area 4.472ha

Residential 30
Short-Stay 0
Total Dwellings 30

		Quantity	Unit	Rate	Cost
1	**SITEWORKS (Earthworks only to major event space)**				
1.01	Preliminaries	1	Item	$ -	$ -
1.02	Clearing and topsoil stripping/stockpiling	0	m^2	$ -	$ -
1.03	Cut/Fill from Spoilbank	0	Item	$ -	$ -
1.04	Proof rolling		Item	$ -	$ -
1.05	Imported fill for development		m^3	$ -	$ -
1.06	Retaining walls		m	$ -	$ -
	Fees				
1.07	Geotechnical (initial investigation and sign-off)	1	Item	$ -	$ -
1.08	Environmental (no allowance)	0	Item	$ -	$ -
1.09	Survey	1	Item	$ -	$ -
1.1	Engineering (2.5%)	1	Item	$ -	$ -
	Sub Total				**$ -**
1.11	Contingency 15%				$ -
	Sub Total				**$ -**
2	**LAND DEVELOPMENT**				
2.01	Preliminaries	1	Item	$ 743,250.00	$ 743,250
2.02	Prefunded Wastewater Works (Pump Station and Pressure Main)	1	Item	$ -	$ -
2.03	External Water Supply Works	1	Item	$ -	$ -
2.04	HV Electricity Feeder (final allowance Stage 2)	1	Item	$ -	$ -
2.05	Broadband head-end and expansion (inc. in 1A)		Included		
	Roads and lanes				
2.06	External (Sutherland extension /upgrade)	1	Item	$ -	$ -
2.07	Internal (inc. 56 car bays)	1	Item	$ 357,000.00	$ 357,000
	Drainage				
2.08	External	1	Item	$ -	$ -
2.09	Internal (1 x detention storages)	1	Item	$ 120,000.00	$ 120,000
	Sewerage reticulation				
2.1	External	1	Item	$ -	$ -
2.11	Internal	1	Item	$ 44,000.00	$ 44,000
	Water supply reticulation				
2.12	External	1	Item	$ -	$ -
2.13	Internal	1	Item	$ 33,600.00	$ 33,600
2.14	Public Utilities and Electricity (Inc. 1 transformers)	1	Item	$ 198,400.00	$ 198,400
2.15	Footpaths and pedestrian accesses	1	Item	$ 220,000.00	$ 220,000
2.16	Retaining Walls	1	Item	$ -	$ -
2.17	Car parks (Less these included in MRA estimates)	1	m^2	$ 220,000.00	$ 220,000
	Landscaping (from Emerge)				
	Fees				
2.18	Local Authority (1.5% of roads & drainage)	1	Item	$ 10,455.00	$ 10,455
2.19	Survey	3	ea	$ 2,500.00	$ 7,500
2.2	Engineering (6.2%)	1	Item	$ 106,407.50	$ 106,408
2.21	Geotechnical		Included		
2.22	Environmental		Not Included		
	Sub Total				**$ 2,060,613**
2.23	Contingency 15%				$ 309,092
	Sub Total				**$ 2,369,704**
3	**AUTHORITY CHARGES**				
	Single Residential Lots				
3.01	Water Corporation (sewer, water, December 2011 - $5,342/lot)	3	ea	$ 5,342.00	$ 16,026
	Short-Stay Lots				
3.02	Water Corporation	0	ea	$ 5,342.00	$ -
3.03	Western Power (allowance) (INC. IN 2.04 & 2.14)	0	Item		$ -
	Sub Total				**$ 16,026**
	Sub Total	**(1+2+3)**			**$ 2,385,730**
	GST				**$ 238,573**
	Total				**$ 2,624,303**

Notes:

1. *Assumes Stage 3 completed.*
2. *No allowance for beach shelters.*
3. *No allowance for Major Event Space development.*
4. *To unit costs add 25% for preliminaries if comparing costs.*

7.16 The estimates prepared for options 1A, 2A and 3A are summarized in the following table.

Spoilbank Marina Project
Summary Preliminary Probable Orders-of-Cost 4 October 2011
Based on RPS and CODA Plans

Marina Works	Stage 1A	Stage 1B	Stage 2 Marina & Entry	Stage 3	Stage 4	TOTAL
Option 1A	$ 9,871,468	$ 2,392,327	$ 17,248,539	$ 1,832,277	$ 2,807,590	$ 116,281,281
Marina			$ 82,129,080			
Option 2B Marina	$ 9,871,468	$ 2,392,327	$ 17,392,594	$ 1,948,086	$ 4,254,106	$ 119,552,815
Marina			$ 85,642,320			
Option 3A Marina	$ 9,871,468	$ 2,392,327	$ 17,416,354			
Marina			$ 94,366,800	$ 3,100,381	$ 2,385,730	$ 129,533,060

Notes:

1. Marina costs are for marina plus additional 2 lanes of Boat Ramp (4 Total). No internal pocket beach included.
2. GST is not included in these estimates.

7.17 The estimates have been prepared on the basis of development in accordance with the RPS and CODA plans as presented. If the hospital site is developed as a separate site (that is separate to, and in advance of 1A and 1B) with partial demolition only sufficient to allow for:

- Construction of the North-South road adjacent to the Mirvac Site, Anderson to Sutherland.
- Construction of Sutherland Street and relocation of services to allow for the full RPS design (including car bays) – from Acton Street to Howe Street.
- Upgrading of Morgans Street adjacent the hospital site.
- Demolition & make safe of the north-eastern hospital building, car parks, driveways, out buildings, private sewage pump station.
- Excluding landscaping and provision of broadband head end.
- Excluding survey, council, planning, engineering fees and marketing fees, holding costs.

Description	Cost
Sutherland full length & N/S Road	$1,965,300
Drainage	$120,000
Sewerage	$97,800
Water Supply	$183,200
Public Utilities (inc. 2 x Transformers)	$384,500
Morgans St upgrade/retaining, drainage & fill	$830,000
Preliminaries & Mobilisation	$1,095,200
Sub Total (excl. GST)	*$4,676,000*
Partial Demolition Allowance (estimated separately)	*$1,519,300*
Total Port Hospital Site (exc. fees & other as above) (exc. GST)	***$6,195,300***

7.18 If the hospital site "subdivision" including water upgrade is complete then the balance "lot" use 11 on the corner of Howe and Sutherland St could be completed for an Order-of-Cost estimate to upgrade Howe St plus adjacent road for say $250,000 + GST (excludes fees), although subject to negotiations with authorities, this site may be able to be separated in advance of the Hospital Site.

This estimate is for construction with other works as mobilisation for such a small amount of work would be unlikely to be viable. Creation of the lot would involve amalgamation of existing lots hence no additional headworks charges are included.

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