SECTION 38 REFERRAL – SUPPORTING INFORMATION DOCUMENT

CAPE PRESTON EAST PROJECT

IRON ORE HOLDINGS LTD

2 November 2012

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Acknowledgement

Some material presented in this report has been prepared and presented to the EPA in proposals assessed under the *Environmental Protection Act* 1986 for the purposes of environmental approval for other projects.

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1 INTRODUCTION

Iron Ore Holdings (IOH) is seeking to obtain approval under Part IV of the *Environmental Protection Act 1986* (EP Act) for the development of a new export facility on the eastern side of Cape Preston, in the Pilbara region of Western Australia. The export facility will be used to transport ore from IOH's mining operations to market in China. The export facility is known as the Cape Preston East Project (the Project) and is the subject of this referral under Section 38 of the EP Act.

This document is intended to support the referral of the Project under Section 38 of the EP Act and therefore describes a "Proposal" under the EP Act. It provides additional information about the Proposal, existing environment and potential impacts. It should be read together with the referral form (provided in Appendix 1), table of legislation relevant to the Proposal (Appendix 2), and the draft Environmental Scoping Document (Appendix 3).

2 BACKGROUND INFORMATION

2.1 PROPONENT DETAILS

IOH owns a diverse portfolio of iron ore projects within the Pilbara region of Western Australia. Since listing on the ASX in May 2005, IOH has been implementing a successful strategy of proving up hematite, channel iron deposits (CID) and magnetite resources on its Pilbara tenements.

The export facilities and access roads will be constructed under a 100% owned subsidiary company of IOH for the purpose of allowing future multi-user access to these facilities with no implication on the mining operations.

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2.2 PROPOSAL

IOH proposes to design, construct and operate iron ore export facilities at Cape Preston East in the Pilbara region of WA. The land and key facilities will be vested in the Dampier Port Authority under the *Port Authorities Act 1999*. The Proposal covers the facilities required to support a 20 Mtpa transhipment export operation.

2.2.1 Location

The Project area is located on the east side of Cape Preston, approximately 60 km south-west of Dampier in the Pilbara region of Western Australia (Figure 1). The Pilbara is rich in iron ore resources, but has a limited number of locations suitable for the development of export facilities.

2.2.2 Tenure and Management

The Proposal will be located on land and waters set aside by the State under Section 19 of the *Mining Act 1978*, a section that excludes the specified land from the *Mining Act 1978* with the stated purpose of S19/315, to "reserve the land for the development of a multi-user port". In addition to this land, a corridor of land connecting to the North West Coastal Highway will be resumed by the State for the purpose of public access to Cape Preston East. The land will be vested in the Dampier Port Authority (DPA) under the *Port Authorities Act 1999.*

The central and western portions of Cape Preston are in the process of being developed for the purposes of iron ore mining, processing and export under the terms of the *Iron Ore Processing (Mineralogy Pty Ltd) Agreement Act* 2002 (IOPAA). This Proposal is not related to any proposals or operations under the IOPAA except to the extent that the land containing the approved existing causeway will be surrendered to the State under the provisions made in the IOPAA.

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7690000

7680000

INDIAN OCEAN

Cape Preston

NAVIGATION AIDS

CYCLONE MOORING

TRESTLE JETTY

STOCKYARD

EXISTING ROAD TO BE UTILISED

PORT SERVICES AREA

PROJECT AREA

PORT ACCESS ROAD

CENTRAL SERVICES FACILITY

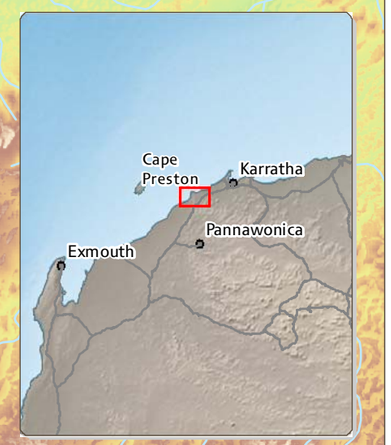
Forty Mile Beach

To Karratha 50km

Fortescue River

Fortescue River Road

North West Coastal Highway



North West Coastal Highway to Cape Preston Overview

Legend

- North West Coastal Highway
- Minor Road
- Secondary Road
- Existing Causeway & Road
- Watercourse
- Mineralogy PTY Ltd Tenement
- Project Area

N

0 1 2

Kilometres

Scale (A3): 1:120,000

Datum: Geocentric Datum of Australia 1994

Projection: Map Grid Australia, Zone 50

Sources: Topography: Geoscience Australia, GEODATA Topo 250KV3, © Commonwealth of Australia, 2006, DEM: GA SRTM, 1sec v1.3

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Figure 1: Cape Preston East location, layout and tenure

3 EXISTING ENVIRONMENT

The existing environment at Cape Preston is currently changing with development under a series of projects operated under the IOPAA. These projects have completed substantial environmental baseline investigations that have been utilised to prepare the description below.

3.1 TERRESTRIAL ENVIRONMENT

The Proposal area is within the Roebourne sub-region of the Pilbara bioregion as per the Interim Biogeographic Regionalisation of Australia. The vegetation found within the Roebourne sub-region is broadly described into four separate categories based on setting (Kendrick and Stanley 2001):

- Coastal plains consisting of a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* or *A. pyrifolia* and *A. Inaequilatera;*
- Uplands that are dominated with *Triodia* hummock grasslands;
- Ephemeral drainage lines that support *Eucalyptus victrix* or *Corymbia hamersleyana* woodlands; and
- Marine alluvial flats and river deltas that support samphire, *Sporobolus* and mangrove communities.

Numerous flora and vegetation surveys have been completed within the Cape Preston area since 2001. These include:

- Austeel Biological Survey Phase 1 (Biota Environmental and MF Trudgen and Associates 2001, also referred to as HGM 2001);
- Cape Preston Iron Ore Development, Seasonal Biological Survey – Threatened Flora (Maunsell AECOM Australia Pty Ltd 2003);
- Balmoral South Environmental Impact Assessment, Flora and Fauna Survey, Balmoral South (Maunsell AECOM Australia Pty Ltd 2006);
- Flora and Vegetation Survey of Cape Preston Potential Campsites and Airstrips (Mattiske Consulting 2007);
- General Purpose Leases G 08/52 and G08/53 Additional Vegetation Survey and Mapping (Astron Environmental Services 2007);
- Balmoral North [Stage 5) and Balmoral South Stage 2 (Stage 4) Flora and Vegetation Assessment (AECOM 2009);
- Sino Iron Project – Cape Preston Mapping and Surveying of Groundwater Dependent Ecosystems (GDEs) (Astron 2009a); and
- Mineralogy Expansion Proposal, Desktop Vegetation and Flora Study (Astron 2009b).

Vegetation surveys completed to date cover the Cape area (including the area proposed for stockpiles and ancillary facilities), but do not cover the area required for the access road or road service facilities (Figure 2).

A total of 639 flora species from 73 families have been recorded. The condition of the vegetation has been largely affected by pastoral grazing, and weeds are present in the area and flora diversity of the Expansion Proposal area was found to be relatively low (Strategen, 2009).

No species listed as Declared Rare Flora under State legislation or threatened flora under Federal legislation have been recorded in the area during site surveys (Strategen, 2009).

Vegetation communities of highest local conservation value were those within the mangroves, dunes, creeklines and floodplains. Minor flowlines, stony plains and clayey plains were also identified as being of moderate to high significance. The vegetation of the rivers and major creeks in the area, mostly within the River and Paraburdoo land systems, are considered significant as this type of vegetation is limited in extent and provides connectivity through the landscape (Maunsell 2008).

Numerous fauna investigations have been carried out previously in the Cape Preston area (Figure 3):

- Austeel Biological Survey Phase 1 (HGM et al. 2001);
- Shorebird Survey of Cape Preston (Hassell 2002);
- Balmoral South Environmental Impact Assessment, Flora and Fauna Survey (Maunsell AECOM 2006);
- Fauna Survey Cape Preston Iron Ore Precinct (Phoenix 2009a); and
- Report on Shorebird Numbers and Shorebird Values at Cape Preston (Bennelongia, 2008).

On-ground surveys conducted by Phoenix in 2009 recorded 132 bird, 84 reptile, 24 native mammal and three amphibian species. Of those species recorded, 32 are listed either under the *Wildlife Conservation Act 1950* and/or the *Environment Protection and Biodiversity Conservation Act 1999*, with a majority of these species being listed as Migratory.

Seven potential Short Range Endemic (SRE) species were also recorded in the Cape Preston area (Phoenix, 2009) (Survey sites are shown in Figure 4). Phoenix prepared habitat maps for these species for the Mineralogy Expansion Project. Four of the recorded SREs species were noted as having a minor area of potential habitat that could be impacted by the CPE Project. Based on these habitat maps the CPE Project is expected to impact less than 0.1% of the potential habitat extent of each of these SRE species in the Cape Preston area.

Phoenix (2009b) defined seven fauna habitats throughout the Cape Preston area: cracking clays; dunes; hilltop/hill slopes/rocky outcrops; mangrove/beach; samphire; stony spinifex plain with or without low shrub; and woodland drainage areas (Figure 5). Of these, only the mangrove/beach environment was considered to be of high fauna habitat conservation significance (Strategen 2009). The cracking clays, dunes, drainage lines and samphire were considered to be of moderate conservation significance as fauna habitat.

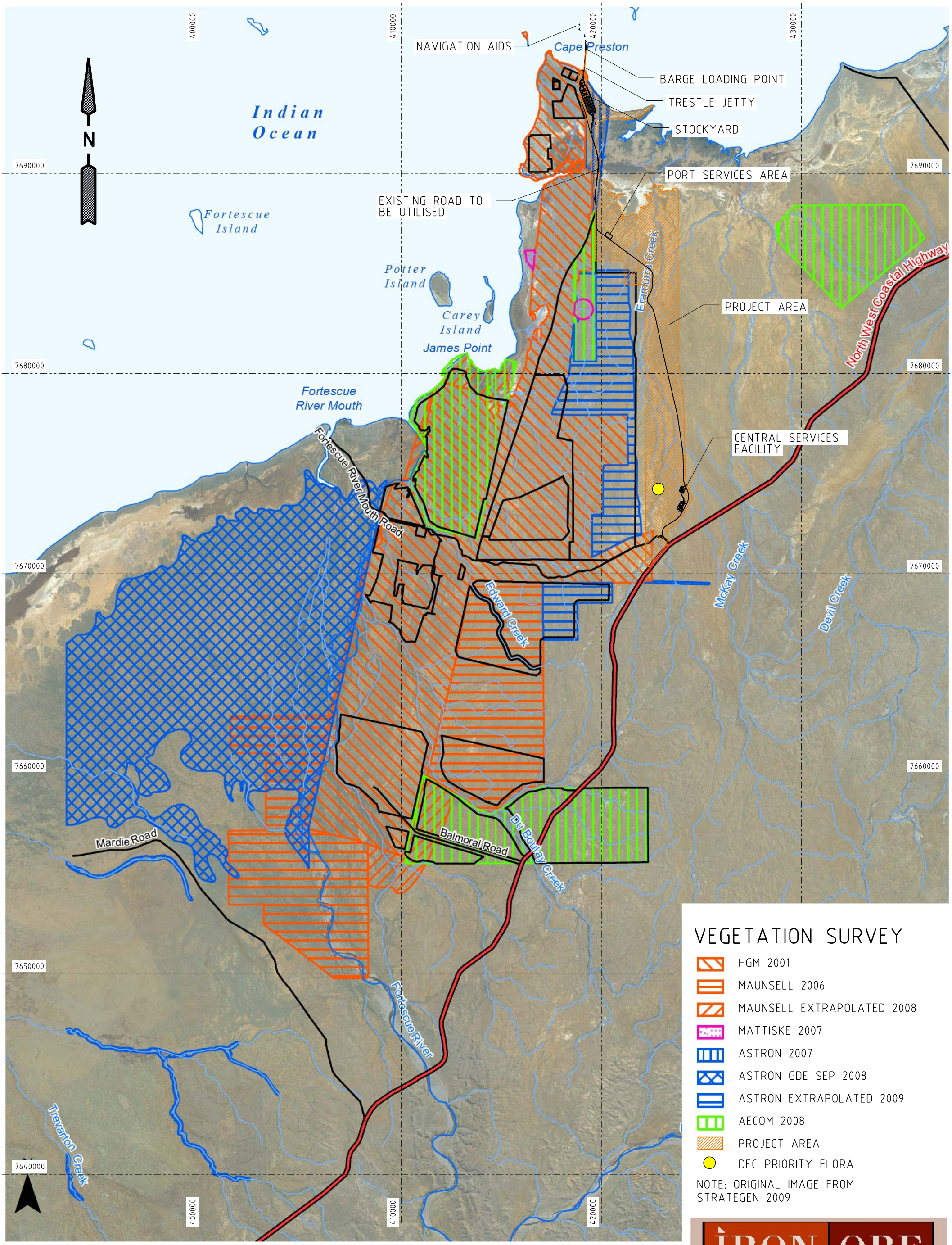

Figure 2: Completed vegetation surveys

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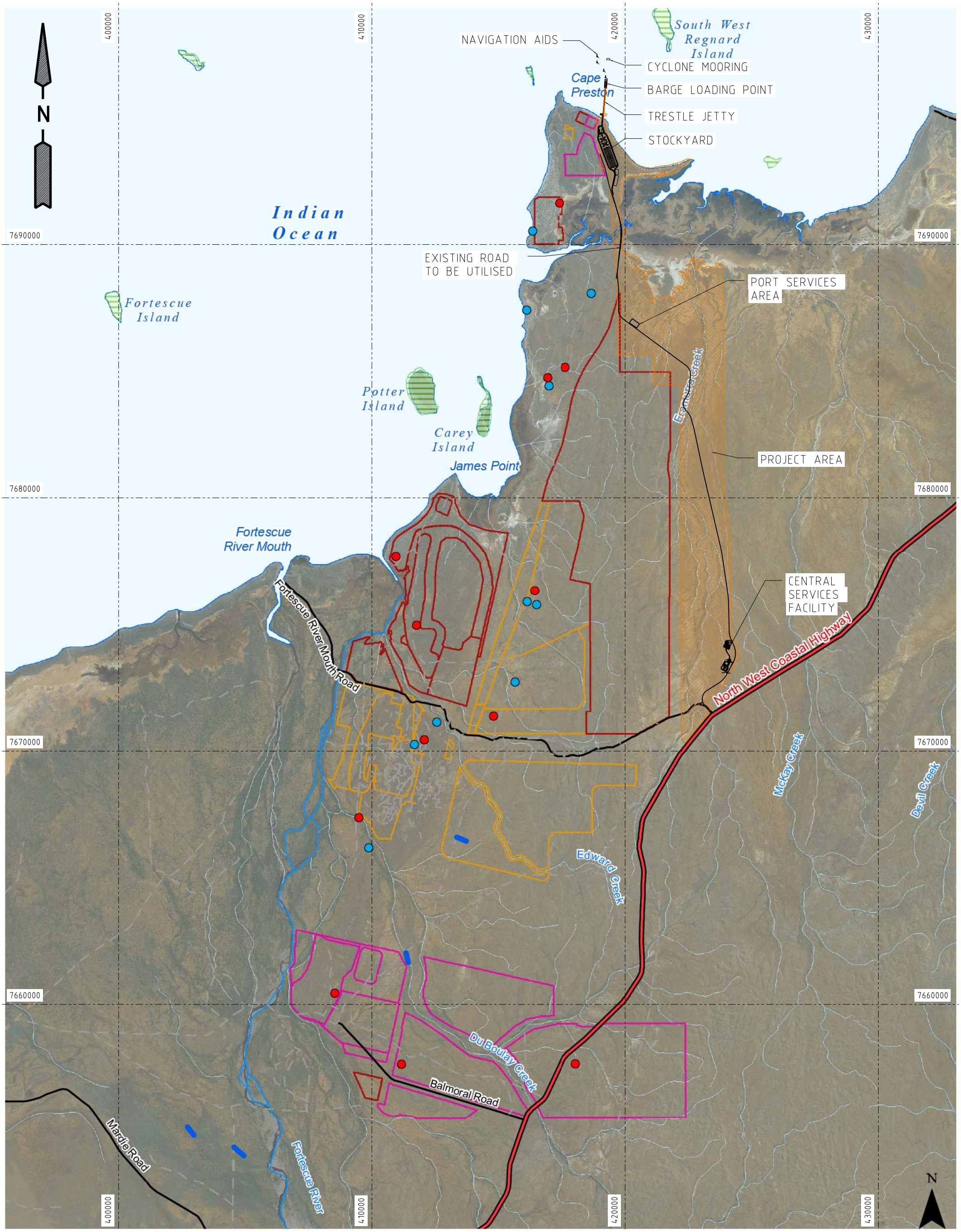

Figure 3: Fauna sampling sites

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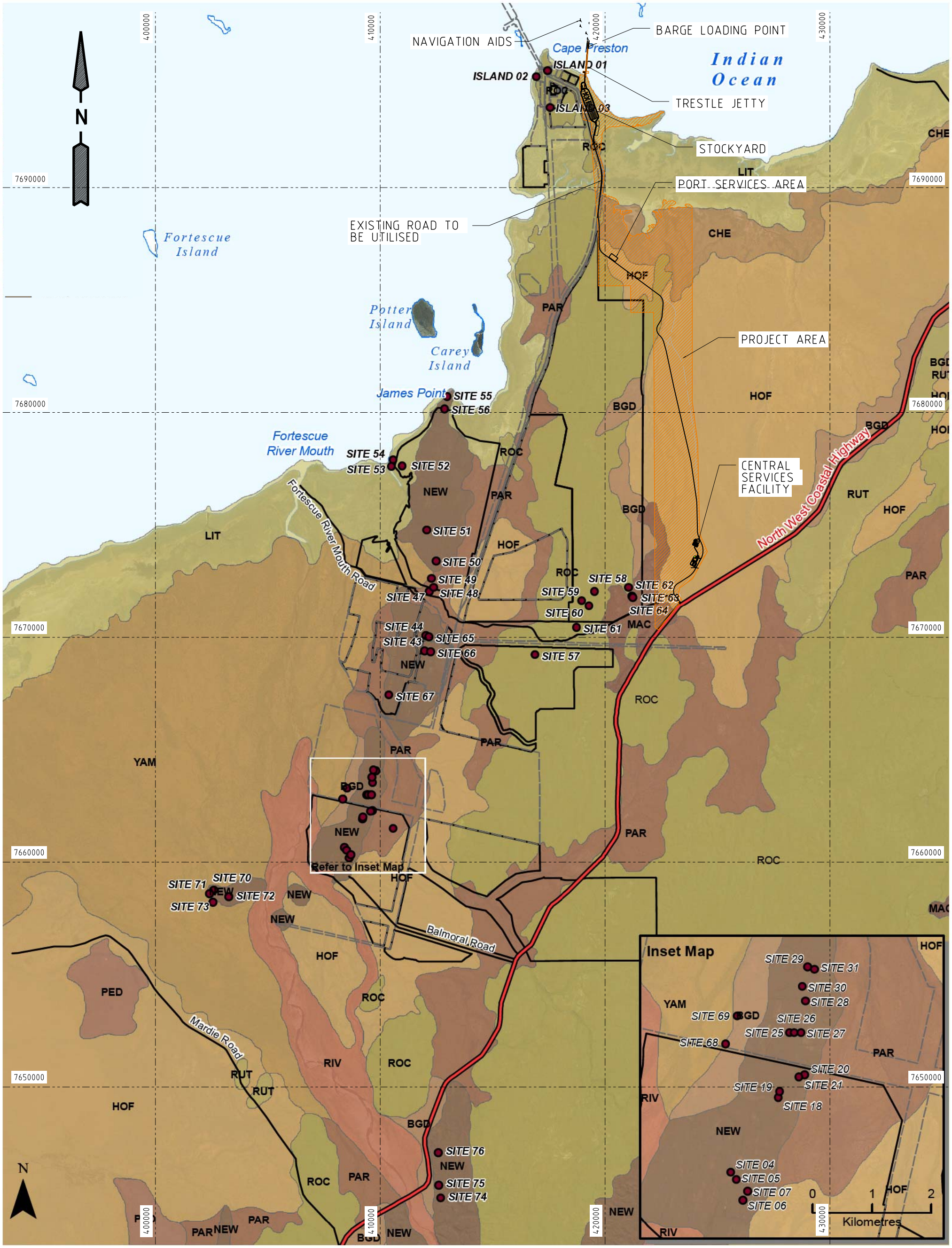

PILBARA LAND SYSTEM

- BGD, BOOLGEEDA
- CHE, CHEERAWARRA
- HOF, HORSEFLAT
- LIT, LITTORAL
- MAC, MACROY
- NEW, NEWMAN
- PAR, PARABURDOO
- PED, PEEDAMULLA
- RIV, RIVER
- ROC, ROCKLEA
- RUT, RUTH
- YAM, YAMERINA

- SRE SURVEY SITE
- PRINCIPAL ROAD
- MINOR ROAD
- PROJECT AREA

NOTE: ORIGINAL IMAGE FROM STRATEGEN 2009

Figure 4: Short Range Endemic survey sites

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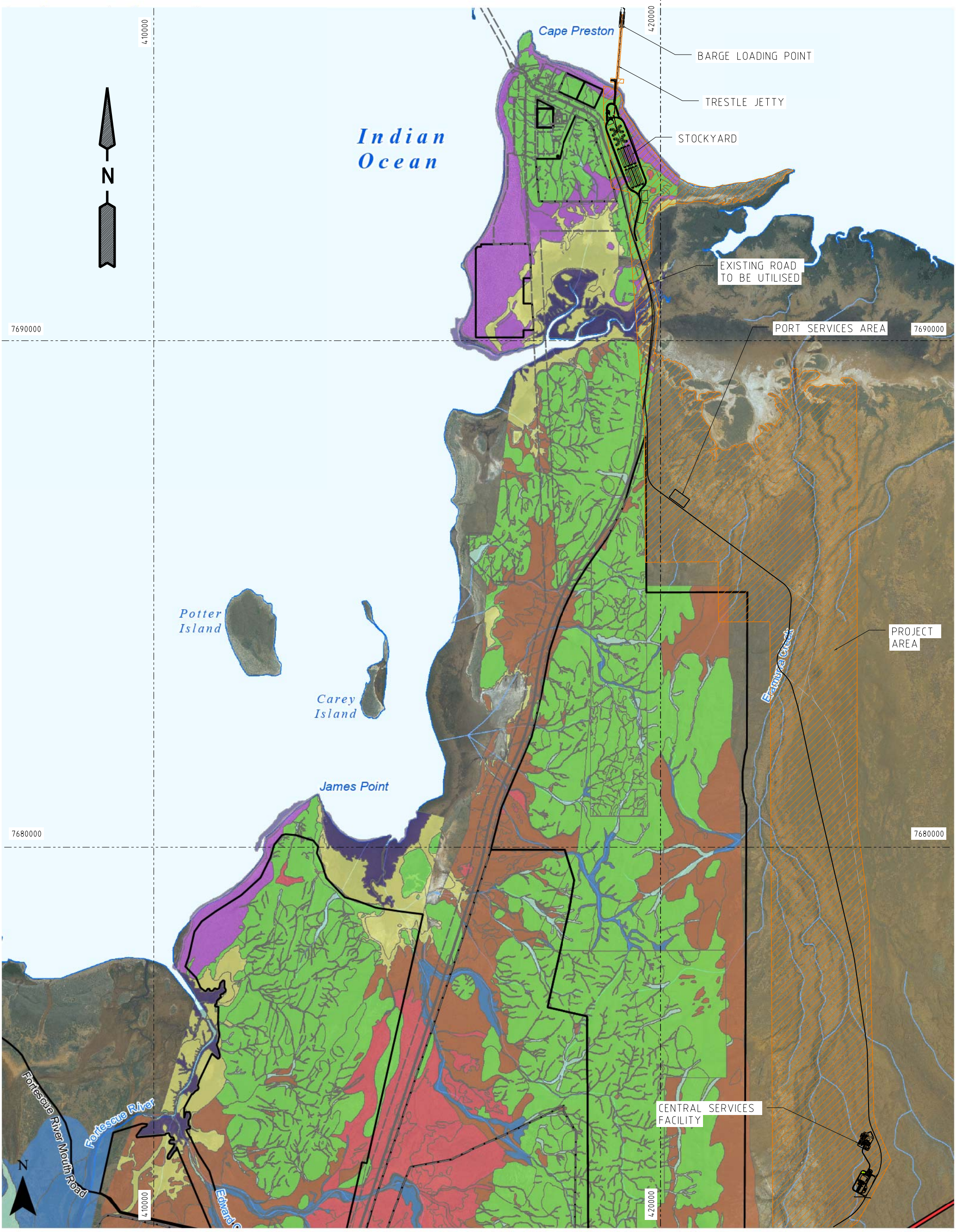

- CRACKING CLAY
- DUNES
- HILLTOP/ HILL SLOPES/ ROCKY OUTCROPS
- MAJOR DRAINAGE LINE/ CREEKLINE
- MANGROVE/ BEACH
- MINOR DRAINAGE LINE
- SAMPHIRE
- STONY SPINIFEX PLAIN WITH OR WITHOUT LOW SHRUB
- PROJECT AREA

NOTE: ORIGINAL IMAGE FROM STRATEGEN 2009

Figure 5: Fauna habitat

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3.2 MARINE ENVIRONMENT

The Cape Preston marine environment experiences a combination of strong tidal currents, episodically strong winds and relatively shallow bathymetry which results in a well flushed marine environment. Water quality sampling undertaken by URS (2008b) shows little evidence of stratification even at neap tides, with high levels of dissolved oxygen at all times. The turbidity in the region is at times high, due to the episodic high volume river flows, dominant marine sediment types, strong local winds, large tides and common occurrences of cyanobacterial blooms (URS, 2009). Nutrient concentrations have been found to be slightly above ANZECC & ARMCANZ (2000) guideline values (HGM, 2002).

A basalt outcrop occurs at the Cape and anchors the coastline which is further protected by a shallow shelving rock platform offshore (GEMS 2008). The major source of energy responsible for distribution of sediment in the region is cyclone induced storm waves. The Cape itself is an erosional area whilst sediment is transported down both the eastern and western coastlines of the Cape. On the western side it accumulates in the lee of Preston Spit to form aggrading sand dunes. On the eastern side of the Cape, the beach has been shown to have been relatively stable over the last 40 years and acts purely as a sediment transport corridor to the tidal flats which occur further east (GEMS, 2008).

During non-storm periods, there is a low volume northerly sediment transport along the west coast of the Cape in summer driven by prevailing westerly winds. This coast is protected during the winter from the easterly winds which prevail at this time of year and little to no sediment transport occurs (GEMS, 2008).

Low volumes of sediment transport may occur along the eastern side of the Cape during winter, and a similar reversal probably occurs during the summer sea breezes from the northwest quarter (Strategen, 2009).

The distribution of marine benthic habitats in the Cape Preston region has been mapped by CALM (2000), Maunsell (2006) and most recently by URS in November 2008. The URS survey extent covers the area proposed for the Cape Preston East Port (Figure 6). Mapping of the distribution of marine habitats in the vicinity of Cape Preston is partly based on a review of past mapping in the area, but is mainly based on recent field surveys and aerial inspections by URS (Le Provost, 2008).

The seafloor and intertidal zone habitats around Cape Preston consist of:

- Barren sand/rubble veneered limestone pavement;
- Algal dominated limestone pavement;
- Sand/mud flats to the east of Cape Preston;
- Low to moderate percentage coral cover along a wide belt on the western side of the Cape Preston platform and a narrow band along the west and north side of Preston Island;

- Mangrove system on the tidal flats that join Cape Preston with the mainland and on the western shoreline and embayments between the creek and the mouth of the Fortescue River; and
- Algal mats - occurring predominantly on high tidal flats north of Mangrove Creek and in the upper reaches of Mangrove Creek.

Cape Preston benthic habitat with an overlay of the indicative CPE Proposal infrastructure is shown in Figure 6.

Sampling of aquatic fauna was carried out for the original Sino Iron Project (HGM 2000). The tip of Cape Preston is characteristic of benthic communities on rocky shores and in shallow waters with reasonably large water movements. Prawns, corals, sponges, ascidians and zoanthids comprise the diverse benthic fauna community.

The Cape Preston beaches are not expected to be highly significant for nesting marine turtles. Numbers of turtles nesting were not in regionally or nationally significant numbers compared with other flatback turtle rookeries in the Pilbara region, for example, over 1,700 flatback turtles nest annually at Mundabullangana, north-east of Cape Preston (Pendoley, 2009). This conclusion is supported by previous survey results, which report a similarly low incidence of nesting activity. The overall incidence of nesting activity (tracks and body holes) for all species was 34 occurrences in 2000 (CALM, 2000), 40 occurrences in 2002/2003 (Maunsell, 2004), zero occurrences in 2004 (CALM, 2005), 31 occurrences in 2006 (DEC, 2006) and 45 occurrences in 2009 (Pendoley).

The survey information available indicates that the different turtle species show some preference for different nesting beaches despite the low numbers. The northern end of the western beach is a favoured nesting area for hawksbill turtles (*Eretmochelys imbricate*), the south-eastern beaches are favoured by the green turtle (*Chelonia mydas*) and south western beaches by flatback turtles (*Natator depressus*) (Pendoley 2009). A map summarising the turtle nesting data is shown in the draft ESD in Appendix 3.

In the Dampier Archipelago/Cape Preston region, small numbers of dugongs (*Dugong dugon*) have been sighted in the shallow, warm waters in bays and between islands, including at East Lewis Island, Cape Preston, Regnard Bay, Nickol Bay and west of Keast Island.

Humpback whales migrate along the WA coast in winter and early spring but usually pass more than 20 km from the coastline along the 40 m depth contour. The whales are not known to aggregate in the waters off Cape Preston, but it is possible that individuals pass through the area (Strategen, 2009).

URS conducted an introduced marine pests (IMP) survey at Cape Preston in 2009 and found no marine pest species listed by the National IMP Coordination Group (URS, 2009).

MARINE HABITATS

INTERTIDAL

- SAND/MUD FLATS
- SAND/RUBBLE VENEERED LIMESTONE PAVEMENT
- ALGAE DOMINATED LIMESTONE PAVEMENT

SUBTIDAL

- PATCHY SEAGRASS
- SAND VENEERED LIMESTONE PAVEMENT
- ALGAE DOMINATED LIMESTONE PAVEMENT (INCLUDING LOW % CORAL & SPONGE COVER)
- DEEP SAND/SILT

CORAL COMMUNITIES

- LESS THAN 10% CORAL COVERAGE
- MORE THAN 25% CORAL COVERAGE
- 10 - 25% CORAL COVERAGE

- PROJECT AREA

NOTE: ORIGINAL IMAGE FROM STRATEGEN 2009

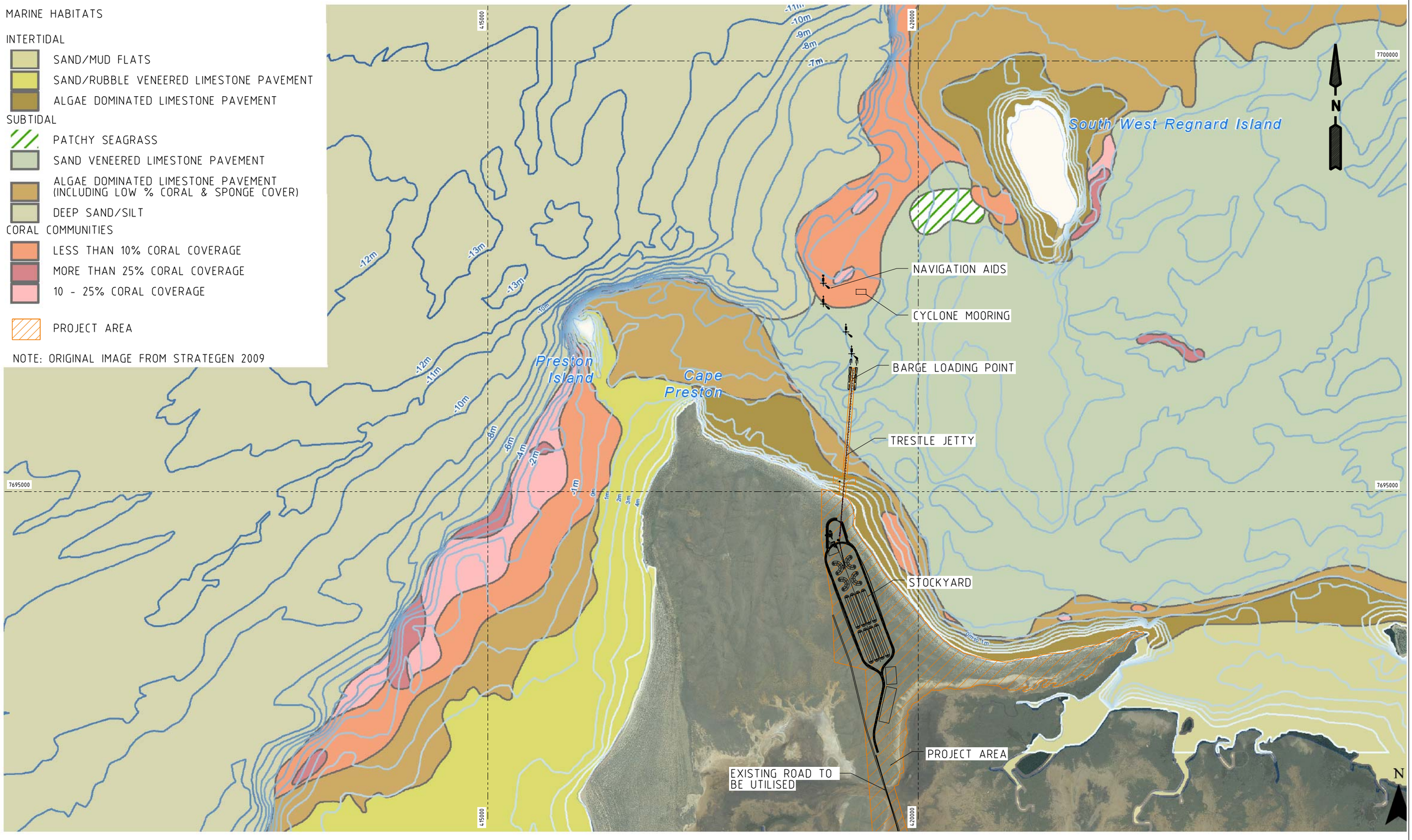

Figure 6: Cape Preston benthic habitats (from Strategen, 2009)

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4 PROPOSAL DESCRIPTION

Port options along the coastline from Onslow to Dampier were considered for the export of ore. The most favourable option, based on pre-existing environmental and government assessments, was a new barge loading facility at Cape Preston immediately east of Mineralogy's facility. This is largely due to access to deep water at Cape Preston making dredging and a long trestle jetty structure unnecessary.

The CPE Project will include the following:

- Stockyard on Cape Preston to support up to 20 Mtpa throughput;
- Trestle jetty to support barge loading facilities for up to 20 Mtpa of iron ore export extending approximately 1.5 km offshore from a small (approximately 200 m) rock supporting structure on the shoreline;
- 6 GL/year desalination plant including ocean intake and outfall;
- Access road from the Great Northern Highway. The access across the tidal creek to Cape Preston will be via the existing causeway; and
- Associated supporting infrastructure (power supply, laydown areas and offices).

The facilities outlined above are presented in Figure 1.

The export facility is currently designed to be independent of the Mineralogy port currently located at Cape Preston. The proposal area at Cape Preston is classified under Section 19 of the *Mining Act 1978*, a section that excludes the specified land from the *Mining Act 1978* with the stated purpose of S19/315, to reserve the land for the development of a multi-user port. The existing causeway shown in Figure 1 will be used for access to Cape Preston. The land on which it is based is scheduled to be resumed by the State to facilitate the future development of multi-user / common-user port facilities at Cape Preston (outside of the IOPAA area).

4.1 STOCKYARD

The stockyard design is expected to initially contain approximately 400,000 tonnes and will meet the capacity required to load 180,000 tonne Cape size vessels. Side discharge trucks will unload adjacent to the stockpile and front end loaders will rehandle or reclaim product as required.

The stockyard design allows for progressive expansion, providing appropriate port-side storage as production increases. As the port expands towards 20 Mtpa it is envisaged that the layout will contain four to eight individual stockpiles with a total capacity of approximately 2.5 Mt in a configuration to be agreed with the Dampier Port Authority (DPA). A mix of radial and rail mounted stackers will form the stockpiles, from which front end loaders or mechanical reclaimers will feed two load-out conveyors as shown in Figure 7 below.

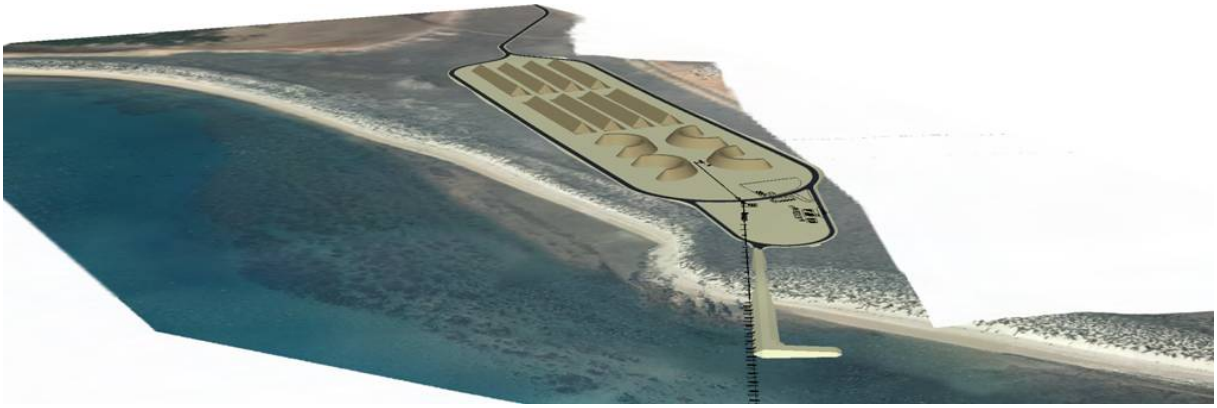

Figure 7: Cape Preston East Port – indicative stockyard location and layout

4.2 IRON ORE EXPORT INFRASTRUCTURE

The trestle jetty will extend from the end of a small (approximately 200 m long) rock breakwater that will extend from the shoreline across the intertidal zone. The breakwater will include a launching ramp for emergency response vessels (Figure 8), which will be designed according to more detailed coastal process and project investigations. The trestle jetty will be approximately 1.5 km in length, and will extent to 6 - 7 m deep water. The departure point for the trestle jetty and launching ramp is on a basalt outcrop area that forms a natural inflection point in the coastline.

Dredging is not required as a natural channel will be utilised (Figure 9), using the shallow draft requirements of the purpose built transhipment barge (Figure 10).

The jetty will be narrow with no road access, but will instead provide for an overhead rail-mounted travelling maintenance platform. The jetty will be sized to enable two parallel running conveyors to be installed – one for the single IOH user, while second for the multi-user stage. The current indicative design incorporates two piles at 30 m spacing, with approximately 8.5 m wide box-plate crosshead and tubular truss to support conveyors. Raking piles are included in every tenth bent to stabile the structure.

At the end of the jetty conveyor will be a fixed slewing type barge loader supported on a piled structure. The loader platform will provide tie downs for the loader and support for a substation and fuel loading facilities. The loader will be capable of operating over half the transhipment vessel length, the vessel will move twice during a loading operation.

It is envisaged that six independent berthing and mooring dolphins will be required to enable satisfactory loading of the barge. The design includes dolphins consisting of four piles with fenders and bollards.

Navigation markers will be installed at the edge of the barge channel to mark the surrounding shallower seafloor (Figure 11). A vessel tracking system will be installed by DPA and electronic navigation aids such as radar will assist vessel movements further with a safe course and determining its distance and position with respect to the loading point. Radio will be used as a

means for two way communication between the port-based personnel and the vessels, and hence will assist further with navigation.

A 15,000 tonne payload self-powered transhipment vessel (as shown in Figure 10), will be loaded and transport ore to Cape or Panamax bulk cargo ships moored in deep water (>20 m) approximately 12 km offshore. Several designated anchorage locations will be used from the existing array of anchorages under the management of DPA.

The construction phase is scheduled over 20 months, and two 2 cyclone seasons. A cyclone mooring is therefore planned to be installed for construction vessels and will be retained for use by operations.

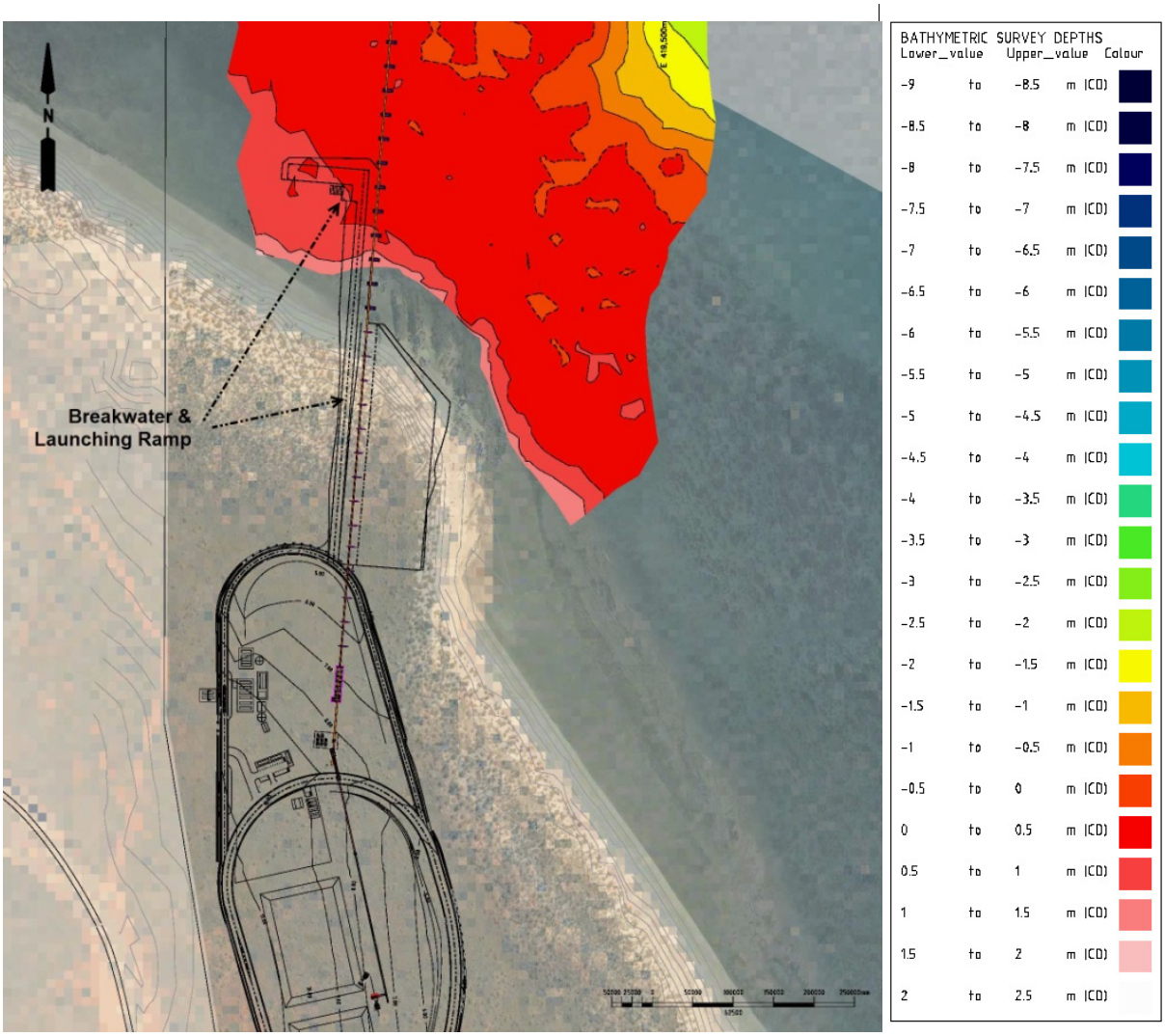

Figure 8: Indicative breakwater and launching ramp

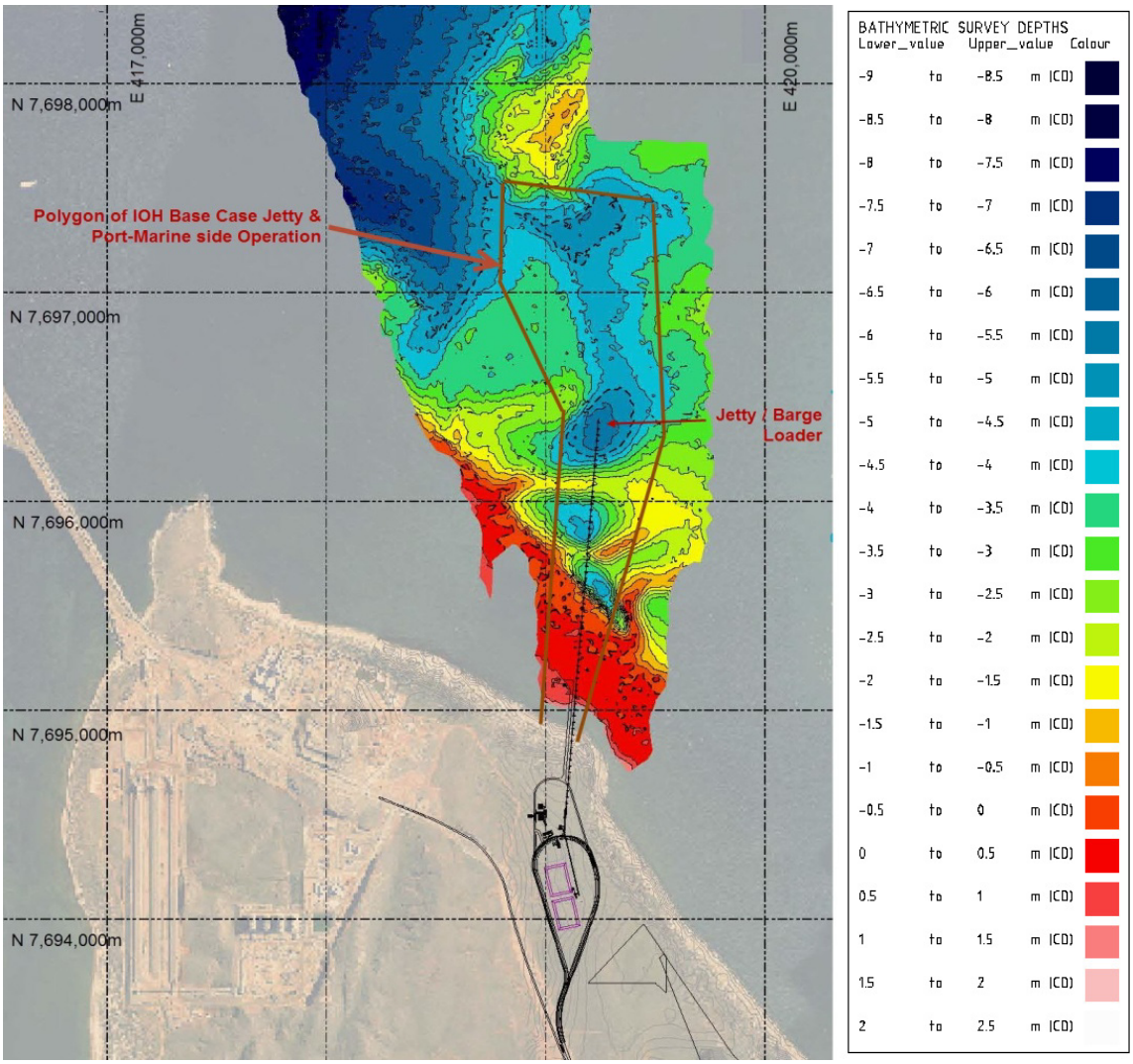

Figure 9: Indicative export facilities layout and detailed bathymetry

Figure 10: Typical self-powered transhipment vessel

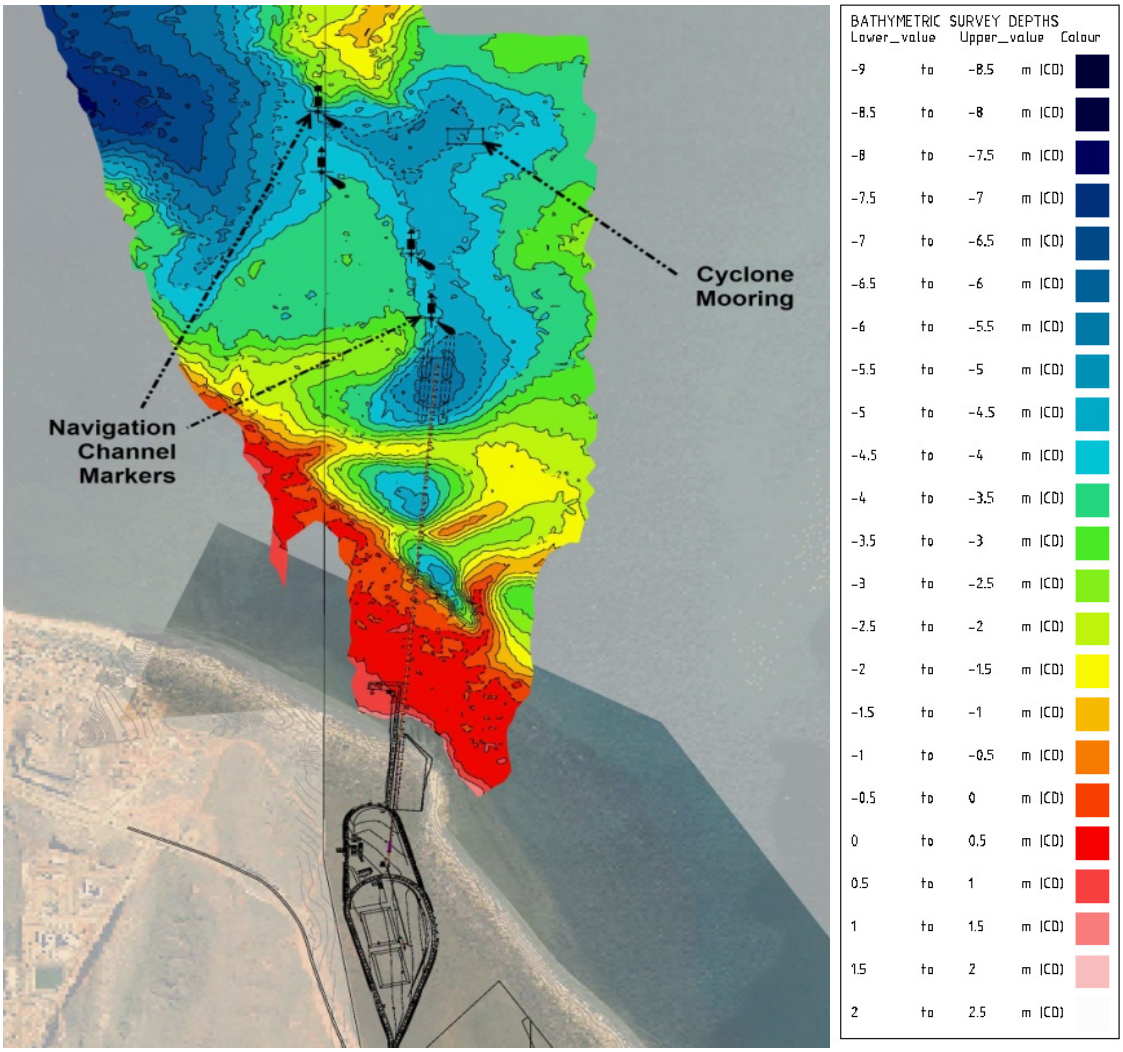

Figure 11: Navigation channel

4.3 DESALINATION PLANT

The desalination plant will be sized to produce approximately 6 GL/yr of fresh water for use as dust suppression water and other uses across the Project. The inlet will be located on the trestle jetty, approximately 1 km from shore, where the water depth is sufficient to ensure reliable clean supply.

The desalination process will involve membrane filtration to separate sand, ocean debris, water impurities, biological growth and refined particles, whereas reverse osmosis will be used for salt separation.

To prevent membrane damage and clogging, the intake water will be treated with chlorine to disinfect the water, and suspended solids will be removed from the water prior to entering the membrane filtration unit. A buffer tank will be used to pre-treat the intake water prior to entering the membrane filtration unit; the tank will allow for the delay in time for discharge water to be pre-treated, with the desalination plant in stand-by mode.

A buffer tank will be used to neutralise the discharge water prior to release from the ocean outfall. The discharge outfall will be piped to the end of the load out jetty, approximately 1.5 km from shore. The outfall location is sufficiently far from the approved and planned desalination outfalls from the Cape Preston projects that there will be no interaction between the mixing zones. The throughput of the CPE desalination plant will be less than 15% of the approved Sino Iron desalination plant.

4.4 SUPPORTING INFRASTRUCTURE

Power will be provided via diesel generator sets. Modular designs will be used to allow for gradual expansion of capacity. Approval is being sought for a total capacity of 12 MW.

Fuel will be stored adjacent to the stockyard in self-bunded horizontal tanks, or a designated bunded bulk fuel facility. Diesel fuel delivery will occur either from vessel or from Dampier or Port Hedland by triple road tankers with a nominal capacity of 100 kL. Fuel will be distributed to the power station, mobile vehicle supply tanks and the transhipment vessel via dual skin pipe leak containment systems.

Waste will be managed and disposed of onsite, at a designated landfill facility, expected to be located in proximity to the Central Services Area (see below).

Two services areas are envisaged that will accommodate IOH and DPA facilities as well as allow for potential future users. The areas are planned to support accommodation, administration, workshops and support infrastructure including:

- A 350-person accommodation camp for construction and operation personnel;
- DPA offices;
- IOH regional administration building;
- Induction and training centre;
- Gate house and emergency response / first aid facility;
- Road train maintenance workshop;
- Light vehicle and general maintenance workshop;
- Truck and light vehicle wash facility;
- Warehouse and secure storage compound;
- Refuse and recycling facility;
- Fuel farm;
- Power supply; and
- Communications infrastructure.

The Central Services Area layout is designed to separate the long haul trucking from other activities. The most frequent activity for trucking will be refuelling and maintenance. Entry to all other areas at the site will be past the gate house and visitors reception.

5 POTENTIAL IMPACTS

Environmental factors relevant to the Proposal have been separated into three categories; key, secondary and other. 'Key' factors have the potential to be significantly impacted by the Proposal. 'Secondary' factors are not expected to be significantly impacted by the Proposal, but additional studies are proposed to verify this expectation. 'Other' factors are clearly not expected to be significantly impacted by the Proposal, and therefore no additional studies are planned.

Table 1 details the environmental factors considered to be relevant to the Proposal.

Table 1: Relevant environmental factors

Factor	Environmental Objective	Activity/Impact	Management	Significance
Key Environmental Factors				
Marine & Coastal Zones	To maintain the integrity, ecological functions and environmental values of the seabed and coast. To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards	• Potential impact on benthic primary producer habitat • Disturbance of coastal zone • Marine pollution • Marine noise from pile driving • IMPs • Coastal erosion or accretion • Pollution • Desalination wastewater outfall for 6 GL/yr plant • Sediment loading • Light spill on turtle beaches	The design of the Proposal minimises the footprint in the marine and coastal zone and avoids known significant BPPH (such as coral, mangroves and seagrass). Management controls for the activities/impacts are well known and able to be implemented in this Proposal. Refer to Section 5.1 where management is described in detail. Project Construction and Operations Environmental Management Plans will be prepared to address this factor.	This is considered to be the key environmental factor with limited potential for significant impacts. The Proposal unavoidably intersects the marine and coastal zone. The Pilbara marine environment includes scattered areas of significant BPPH. The footprint area of the Proposal and immediate surrounds are being re-surveyed to confirm their condition and conservation significance. Based on existing survey data, no direct impact on significant BPPH is required. As no dredging is required, there is also a low risk of indirect impacts. The Proposal is located approximately 2 km from SE Regnard Island which is part of the Great Sandy Island Nature Reserve. The Proposal is located adjacent to the approved export facilities at Cape Preston. It has low potential for significant incremental environmental impact as it is of relatively small scale. The area has been investigated and modelled for coastal processes and is not noted for high sediment loads. Impacts on coastal processes not expected to be significant. No mangroves are to be impacted. The existing environment is currently free of IMP. International vessels will be largely restricted to anchorage well offshore. Turtle nesting surveys have been completed at Cape Preston and show that usage is low. Within the Cape Preston area, the section of beach traversed by the trestle and breakwater is noted as supporting approximately 10-30 usages over the surveys (Strategen 2009).

Factor	Environmental Objective	Activity/Impact	Management	Significance
Secondary Environmental Factors				
Terrestrial Flora and Vegetation	To maintain the abundance, diversity, geographic distribution and productivity of flora at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.	• Ground disturbance – clearing of native vegetation • Indirect impacts through a range of mechanisms	Management controls for the activities/impacts are well known and able to be implemented in this Proposal. Refer to Section 5.2 where management is described in detail. Project Construction and Operations Environmental Management Plans will be prepared to address this factor.	Over 35,000 ha of land intersecting and adjacent to the CPE Project Area has been surveyed and mapped. No DRF or TECs have been recorded in previous surveys. Surveys of the Mineralogy Expansion Proposal Area identified that there may be two potential PECs in the area, within the Stony Plains Land System. Further survey work will be completed to clarify the status of these potential PECs and the extent of any potential disturbance from the Proposal. Isolated occurrences with low numbers of Priority Flora have been recorded throughout the surveyed area. A Level 1 survey of the Project Area is being completed to confirm the low significance of this factor.
Terrestrial Fauna	To maintain the abundance, diversity, geographic distribution and productivity of flora at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.	• Ground disturbance – clearing of fauna habitat • Indirect impacts through a range of mechanisms • Vehicle strike	Refer to Section 5.2 where management is described in detail. Project Construction and Operations Environmental Management Plans will be prepared to address this factor.	Over 35,000 ha of land intersecting and adjacent to the CPE Project Area has been surveyed and mapped. Habitat maps based on land systems cover the Project Area. SREs have been assessed and only minimal impact to potential habitat is expected (i.e. less than 0.1%). No critical fauna habitat or populations are noted. A Level 1 survey is being completed to confirm the low significance of this factor.
Other Environmental Factors				
Surface water	To maintain the quantity of water so that existing and potential environmental values, including ecosystem maintenance, are protected. To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements	• Crossing of ephemeral creeks • Runoff from stockpiles and operations areas • Hydrocarbon spillage • Diversion of stormwater flows causing secondary impacts	• Implementation of designed culverts for all ephemeral creek crossings • Use existing causeway to access the Cape	The key surface water features include a tidal creek (which will not be impacted as the existing crossing is used) and small ephemeral creeks that require road crossings. Creek crossings can be managed to prevent impact to flow regimes, and these features are common along the Pilbara coast and are not noted to be of regional or local significance.

Factor	Environmental Objective	Activity/Impact	Management	Significance
	and acceptable standards			
Groundwater	To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards	The Proposal does not require the sustained abstraction of groundwater (sources may be used for initial construction), therefore the potential impacts are limited to groundwater pollution via pollutant spills.	• Regulation under Part V of the EP Act and Dangerous Goods Act • Location of hydrocarbon storage infrastructure away from watercourses • Bunding and other industry standard controls.	No significant groundwater resources known in the area. The minimal storage of hazardous materials and prevention/response capabilities are expected to minimise the potential for impacts to groundwater.
Air Quality	To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards	• Pollution from dust from stockpiles and roads • Point source emission from 12 MW power station	• Water trucks and sprays on key dust emission points • Dust suppression sprays during ore transfer • Chemical suppressants (if required) • Selection of appropriate power supply options to ensure efficiency • Locate site away from larger power station airsheds associated with the IOPAA projects	The area is remote with no residents in close proximity. There is some potential for nuisance dust, however with management controls implemented this is expected to be minor and localised. The emissions produced from the small power plant will be minor and will be sufficiently mixed in the surrounding airshed. Modelling completed for adjacent projects has identified that the airshed can support four or more power stations of much greater scale (400 MW+) than proposed for CPE. The Proposal is therefore not expected have a significant impact on air quality.
Noise	To protect the amenity of nearby residents from noise impacts resulting from activities associated with the proposal by ensuring the noise levels meet statutory requirements and acceptable standards.	• Ore transfer • Shipping activities • Earthmoving activities • Vehicle movements	No additional management proposed, given the remote location.	The area is remote with no residents in close proximity. There is some potential for noise to impact the local fauna, however this is not expected to be significant as the area is not critical habitat for any conservation significant species and is already being used for the adjacent export facilities.
Waste	Principal of waste minimisation. Use of waste hierarchy.	Waste is expected to be limited to general inert and putrescible waste, and small volumes of batteries/waste oil etc.	• All waste will be segregated and removed from site via an authorised waste contractor • Any future landfill would be subject to Part V EP Act approvals	Given the small quantities of waste expected to be produced, the potential impacts of waste are not expected to be significant.
Heritage	To ensure that changes to the biophysical environment do not	General ground	• Native Title agreements and heritage protocols	Considerable heritage work has been completed at Cape Preston and surrounds, and there are several

Factor	Environmental Objective	Activity/Impact	Management	Significance
	adversely affect historical and cultural associations and comply with relevant heritage legislation.	disturbance	• Heritage surveys and consultation prior to disturbance • Section 18 process if site avoidance not possible • Internal ground disturbance approval process	DIA registered sites in the area (Figure 12). This work will be extended to the Project Area. Existing processes are in place to manage this factor.
Social	**Visual Amenity**: To ensure that aesthetic values are considered and measures are adopted to reduce visual impacts on the landscape as low as reasonably practicable. **Recreation**: To ensure that existing and planned recreational uses are not compromised.	The Proposal area is not extensively used by the public and is not visible from main tourist routes or settlements. There are no public facilities. Public access will be limited in some operational areas.	• No additional visual controls proposed • Public access will be defined by DPA • Access arrangements for Traditional Owners will be considered	The Proposal will not prevent public access to the Fortescue River mouth, Forty Mile Beach or extensive offshore areas. The Project area is not extensively used by the public. No significant visual amenity impacts expected
Rehabilitation and closure	To ensure, as far as practicable, that rehabilitation achieves a stable and functioning landform which is consistent with the surrounding landscape and other environmental values.	Potential closure issues associated with the Proposal include: • Ongoing use of/responsibility for infrastructure • Disturbance areas • Contamination • Coastal processes	• The jetty and associated facilities is expected to be an asset to the state and therefore will not be removed. • Other infrastructure can be removed from site if not required • Comply with the requirements of the Contaminated Sites Act • Topsoil will be stripped and stored onsite for rehabilitation	No significant closure impacts are expected, no new landforms are proposed and the majority of the export facility is expected to remain as a State asset.

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7690000

7680000

INDIAN OCEAN

NAVIGATION AIDS
CYCLONE MOORING
TRESTLE JETTY
STOCKYARD
Cape Preston
EXISTING ROAD TO BE UTILISED
PORT SERVICES AREA
PROJECT AREA
PORT ACCESS ROAD
CENTRAL SERVICES FACILITY
Forty Mile Beach
Devil Creek ADCDP Onshore Gas Supply Pipeline
To Karratha 50km
Dampier to Bunbury Natural Gas Pipeline
North West Coastal Highway
Fortescue River
Fortescue River Road

Cape Preston
Karratha
Pannawonica
Exmouth

North West Coastal Highway to Cape Preston Overview

Figure 12: DIA registered sites

N

0 1 2
Kilometres

Legend

- North West Coastal Highway
- Minor Road
- Secondary Road
- Existing Causeway & Road
- Watercourse
- Mineralogy PTY Ltd Tenement
- Project Area
- Aboriginal Heritage Sites

Scale (A3): 1:120,000

Datum: Geocentric Datum of Australia 1994

Projection: Map Grid Australia, Zone 50

Sources: Topography: Geoscience Australia, GEODATA Topo 250KV3, © Commonwealth of Australia, 2006, DEM: GA SRTM, 1sec v1.3

File: 001\053_MW03661_Rev A (SP 25/10/2012)

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5.1 KEY ENVIRONMENTAL FACTORS

The marine and coastal zone is considered to be the key environmental factor associated with the development of the Proposal. Management of the potential impacts, and the expected residual impacts are discussed in the sections below.

Aspects and Impacts

Various aspects during construction and operation of the Project have the potential to directly or indirectly impact on conservation significant marine fauna and the general marine and coastal zone:

- Disturbance of marine benthic, intertidal and coastal habitats;
- Increased use of vessels and equipment, with associated risks of IMPs being introduced , or marine pollution from spills, anti-fouling and other marine treatments, or wastes and runoff;
- Increased use of vessels and equipment, with associated risks of IMPs being introduced;
- Marine pollution as a result of spills from vessels;
- Marine pollution from anti-fouling and other marine treatments;
- Marine pollution from wastes, runoff or spillage;
- Fauna entrapment within desalination intake;
- Interference with turtle nesting activity and hatchling success rates via light spill;
- Interference with a range of conservation significant marine fauna movement, feeding or reproductive success through marine noise during construction, sediment loads during construction or repeated vessel movements;
- Long-term coastal erosion or accretion due to the presence of a breakwater;
- Localised alteration of marine water quality parameters as a result of desalination outfall discharge; and
- Increased sediment loads from construction activities and vessel movements.

Proposed Management

Management actions to be implemented during construction and operation of the Project include:

- Update existing benthic habitat baseline surveys in selected areas;
- Monitor water and sediment quality;
- Develop the disturbance footprint to the minimum required to ensure safe and adequate construction and operation;
- Prepare and implement hull fouling and ballast water management plan based on existing industry standards;
- Prepare and implement IMP management plan based on existing industry standards;
- Prepare and implement oil spill contingency plan, and ensure appropriate response capability;
- Implement industry standard desalination intake fauna entrapment controls, such as screens and low velocity intake;

- Prepare and implement desalination outfall management plan, and ensure appropriate response materials are available;
- Implement ground disturbance procedure for the marine and coastal environment;
- Prepare and implement management plans for controlling waste, runoff and spillage;
- Prepare and implement controls for light spill and monitor turtle activity on the beach adjacent to the Project;
- Locate land-based infrastructure a sufficient distance inland from turtle nesting beaches where practicable;
- Avoid impacts on mangroves, samphires and algal mats by utilising the existing causeway across the tidal creek;
- Prepare and implement industry standard management controls for marine noise during construction
- Minimise impacts on the dune system by placing infrastructure inland with a single exit point to the marine environment;
- Prepare and implement management plans for controlling waste, runoff and spillage; and
- Monitor beach profiles and wrack around the solid breakwater, remove, relocate, bypass or dispose of significant accumulations, compensate for significant deficits.

Expected Residual Impacts

The Proposal is small scale compared to most Pilbara export facilities. Development of the Project is expected to require the disturbance of approximately 3 ha of benthic and intertidal area for construction of the trestle jetty and breakwater. Impacts on coastal erosion and accretion processes are expected to be minimal as the marine structure are based on an existing coastal inflection point.

Indirect impacts from marine noise are expected to be limited to the construction phase (approximately 20 months). Marine noise, IMP and water quality risks and impacts are expected to be minimised to insignificant levels via a series of industry standard management actions described in management plans.

The Proposal does not require dredging, blasting, or the disturbance of coral communities or mangroves.

Based on the above, it is expected that the implementation of the Proposal will not result in significant impacts to marine fauna and marine benthic, intertidal and coastal habitats, or marine water quality.

5.2 SECONDARY ENVIRONMENTAL FACTORS

The sections below identify the aspects that are not expected to be significantly impacted by the Proposal. Additional studies will be conducted to verify this expectation.

5.2.1 Terrestrial Vegetation and Flora

Aspects and Impacts

Various aspects during construction and operation of the Project have the potential to directly or indirectly impact on vegetation and flora:

- Clearing of approximately 320 ha of vegetation; and
- Earthmoving or construction activities, leading to transfer of weeds during introduction of new weed species, or spread of existing species, and an increase in the potential for flooding or erosion, leading to smothering of vegetation.

Proposed Management

Management actions to be implemented during construction and operation of the Project include:

- Conduct additional vegetation and flora surveys over area not yet surveyed;
- Identify the status and map the extent of the potential PECs identified in Strategen (2009);
- Develop the disturbance footprint to the minimum required to ensure safe and adequate construction and operation;
- Avoid disturbance to any recorded Priority Flora species where practicable, and apply appropriate buffers if required;
- Implement ground disturbance procedure;
- Implement weed management procedure;
- Design and implement suitable access regimes to protect vegetation and flora; and
- Apply water or dust suppressants to disturbed areas and ore transfer/storage areas to minimise dust generation.

Expected Residual Impacts

Development of the Project is expected to require the disturbance of approximately 320 ha of vegetation. Current surveys have not identified DRF or TECs at Cape Preston, and Priority Flora species are scattered and low in number. The status and the extent of the potential PECs will be determined during proposed surveys, and disturbance to these areas will be defined and minimised where practicable.

No species of flora, or any vegetation communities are expected to be impacted to a level where their conservation status is affected.

Based on the above, it is expected that the implementation of the Proposal will not result in significant impacts to the abundance, diversity, geographic distribution and productivity of flora and vegetation at species and ecosystem levels.

5.2.2 Terrestrial fauna

Aspects and Impacts

Various aspects during construction and operation of the Project have the potential to directly or indirectly impact on terrestrial fauna and associated habitat:

- Clearing of approximately 320 ha of potential fauna habitat;
- Indirect impacts from dust or noise; and
- Direct collisions from vehicle movements.

Based on current fauna habitat assessments, no significant fauna habitat will be disturbed.

Proposed Management

Management actions to be implemented during construction and operation of the Project include:

- Conduct additional terrestrial fauna surveys over area not yet surveyed;
- Develop the disturbance footprint to the minimum required to ensure safe and adequate construction and operation;
- Implement ground disturbance procedure;
- Apply industry standard controls for noise and dust;
- Record and report vehicle strike incidents; and
- Enforce vehicle speed limits.

Expected Residual Impacts

Development of the Project is expected to require the disturbance of approximately 320 ha, however recent surveys have not identified significant terrestrial fauna habitat at Cape Preston.

Ground disturbance may result in the death of less mobile species, as they may not be able to relocate to nearby habitat.

The majority of fauna habitat at Cape Preston is widespread in the region (Strategen, 2009), and disturbance to Dune System habitat will be minimal on a local and regional scale. No impact is expected on samphires or algal mats as the existing causeway will be used.

Four species of SREs recorded in the Phoenix 2009 survey were noted as having a minor area of potential habitat impacted by the CPE Project. Phoenix prepared habitat maps for these species for the Mineralogy Expansion Project. Based on these habitat maps the CPE Project is expected to only impact less than 0.1% of the potential habitat extent in the Cape Preston area.

Based on the above, it is expected that the implementation of the Proposal will not result in significant impacts to terrestrial fauna.

6 EPA PRINCIPLES

The EPA has identified a series of principles for environmental management. IOH has considered these principles in relation to the development and implementation of the CPE Project.

Table 2: EPA principles for environmental management

Principle	How being addressed by the CPE Project
1. Precautionary principle Where there are threats of serious irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, decisions should be guided by: a. careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and b. an assessment of the risk-weighted consequences of various options.	The Cape Preston area is well understood in terms of environmental values. The area is already being developed for large scale mining and iron ore export operations. The Proposal is utilising the existing environmental data in project design and will be supplementing it with a series of studies that are identified in the draft Environmental Scoping Document (Appendix 3). The early design phase has been completed and identified that significant BPPH can be avoided and that no dredging is required. Other options for development locations considered would have required substantial dredging, land reclamation and long trestle structures.
2. Intergenerational equity The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	The Proposal can be designed and implemented without significant impacts on the health, diversity and productivity of the environment. The Proposal will enable economic and social benefits to flow from iron ore projects that would otherwise have no economic export solution.
3. Conservation of biological diversity and ecological integrity Conservation of biological diversity and ecological integration should be a fundamental consideration	The extensive existing baseline data sets from the Cape Preston area indicate that there are not likely to be significant biodiversity or ecological integrity impacts at local or regional scales. Additional survey work will be used to confirm the range and status of environmental values within the Project area.
4. Improved valuation, pricing and incentive mechanisms a. Environmental factors should be included in the valuation of assets and services b. The polluter pays principle – those who generate pollution and waste should bear the cost of containment, avoidance or abatement. c. The users of goods and services should pay prices based on the full life cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste d. Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, which benefit and/or minimise costs to develop their own solutions and responses to environmental problems	The scale and value of the smaller iron ore deposits that would be exported through the CPE facilities demands a cost effective export solution. This is being achieved by minimising the length of the trestle jetty and avoiding the need for dredging - which directly reduces the environmental impact of the Proposal.
5. Waste minimisation All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment	No dredging waste will be created by the Project. Waste will be minimised by adopting the hierarchy of controls; Avoid, Minimise, Re-use, Recycle and Safe Disposal.

7 STAKEHOLDER CONSULTATION

To date, the following stakeholders have been consulted regarding the Proposal.

Table 3: Stakeholder consultation summary table

Stakeholder	Dates	Stakeholder personnel	Key issues discussed/raised
Coordination meeting involving DoT, DPA, DRDL DSD and EPA	24/7/2012	Various personnel representing each agency.	Coordination of CPE Development plans. Specific consideration given to land tenure, preferred administrative regimes and status of IOH studies. Agreement that IOH is to complete Native Title negotiations and manage Heritage and Environmental approvals. DPA to pursue reservation and vesting of port lands in consultation with DRDL. DPA to provide lease to IOH for construction and operation of barge loading facility.
DPA	Numerous	Port Development Manager	Selection of location for barge loading facilities including consideration of existing facilities, timelines and issues associated with new locations. Consideration of land access and preferred management frameworks. Agreement that IOH is to complete Native Title negotiations and manage Heritage and Environmental approvals. DPA to pursue reservation and vesting of port lands in consultation with DRDL. Consultation on Project design and the scope of environmental approvals. Negotiation of lease commenced September 2012.
DEC	23/5/2012 11/7/2012	Project Officer	Provided preliminary briefing on CPE Project. High level approach to CPE agreed. Main focus of discussion was the Buckland Project.
Department of State Development	30/4/2012 28/5/2012 2/7/2012 16/7/2012	Project Management	First department consulted regarding export options. Supportive of CPE as preferred option. Willing to assist and facilitate development discussions with other State departments and agencies but stated they do not see themselves as the lead agency for the project. DPA and DoT champion project on behalf of State. Consultation regarding the intention of the State to develop export facilities at CPE. Consideration of tenure issues. Agreement that IOH is to complete Native Title negotiations and manage Heritage and Environmental approvals.
CITIC Pacific Mining Management Pty Ltd	6/9/2012 4/10/2012	Director and Manager Environment and Heritage	Use of data from Sino Iron project subject to Mineralogy approval. Potential use of existing facilities. Potential practical issues associated with development of export facilities at Cape Preston East.
Office of the EPA	22/5/2012 20/7/2012	EPA Chairman, Directors, Managers and Officers.	Consultation on the scope of the Proposal, potential environmental issues. Discussion on approval process, status of existing information, proposed studies and timeframes for development of Proposal and approvals process. Consultation completed and planned.
Department of Mines and	12/6/2012	Environment Branch	Briefing on CPE project and associated developments. Discussion of tenure issues. Willing to assist in granting

Stakeholder	Dates	Stakeholder personnel	Key issues discussed/raised
Petroleum	13/6/2012	Tenure Branch Minister	Mining Act tenure should the Department receive that direction from DSD.
Department of Water	21/5/2012	Regional Manager	Consideration of water issues focused on mine site for Buckland Hill Project. Beds and Banks permits.
Department of Resources, Energy and Tourism	15/5/2012	Regional Manager	High level briefing on CPE project.
Department of Sustainability, Environment, Water, People and Communities (Federal) (SEWPaC)	15/5/2012	Regional Manager Assistant director	General briefing on IOH Projects.
Kurama Marthudunera Native Title Claimant Group	Numerous	Representatives	Consultation on Proposal. Successful negotiation of Native Title and Heritage Agreements. Agreements executed 22/10/2012.
Yaburara & Mardudhunera Native Title Claimant Group	Numerous	Representatives	Consultation on Proposal. Successful negotiation of Native Title and Heritage Agreements. Agreements executed due to be executed November 2012.
Department of Transport	26/4/2012 25/06/2012 26/7/2012 30/8/2012	Various roles at different meetings.	Selection of location for export facilities including consideration of existing facilities, timelines and issues associated with new locations. Consideration of land access and preferred management frameworks. Consideration of mooring locations, marine park proposals.
Department of Regional Development and Lands	Numerous	Director/Project Manager	Close consultation regarding LAA tenure for CPE that is suitable to the State. Continue to work closely together to secure tenure for CPE Project.
Department of Fisheries	27/4/2012	Environmental Representative	Location of marine reserves. Biosecurity, oceanographic, long-shore currents, other shipping movements and the EPA guidance statement on Pilbara mangroves. Likely level of EPA assessment.
Department of Premier and Cabinet	11/6/2012 6/8/2012	Native Title Branch	Project scope and timeframes. Agreement that IOH may pursue Native Title agreements.
Shire of Roebourne	15/11/2012	Council	Consultation on CPE planned for November 2012. Issues relevant to local government including accommodation, development applications and building licences (if required).
Mardie Station Pastoral Lease Holder	15/8/2012	Manager	Consultation on Project. Consideration of access and pastoral management issues.
Main Roads WA	14/6/2012 21/6/2012 24/10/2012	Executive Director and other representatives	Consultation on Project focusing on road transport issues. Use of large vehicles on public roads. Access road will require proper turning lanes. Options to increase tonnage to be transported on public roads.
Selected mining companies with nearby/adjacent operations	Various	Various	Issues related to tenure, potential use of export facilities.

Stakeholder	Dates	Stakeholder personnel	Key issues discussed/raised
DoT, CITIC Pacific Mining, Mineralogy	22/10/2012	Various	Cape Preston marine safety meeting. Briefed on CPE export facility proposal, with a focus on marine safety issues.

Consideration has been given to issues raised throughout the consultation process.

Pre-referral consultation with the Office of the EPA has been completed. IOH is preparing a consultation plan to continue the consultation processes commenced to provide information to greater levels of detail and incorporate additional stakeholders as they are identified.

8 ASSESSMENT TIMELINE

The assessment timeline below is based on the assumption that an API level of assessment decision is received from the EPA.

	2012			2013						
Stage	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
IOH submits Referral and ESD										
EPA sets level of assessment										
IOH prepares and submits API documentation										
OEPA assess API and request additional info										
IOH provide additional information										
OEPA publish report and submit to Minister										
Ministerial Statement released										

9 CONCLUSION

IOH has consulted with a large number of agencies and other stakeholders regarding the development of iron ore export facilities in the West Pilbara. Following amendments to the IOPAA in 2008, an area of land to the east of Cape Preston was set aside by Government for the purposes of port development (C Barnett, Hansard 4 December 2008). This area has been selected by IOH as the preferred location for development of iron ore export facilities. The location is known as Cape Preston East (CPE).

IOH proposes to be the foundation proponent to develop the initial iron ore export facilities at CPE. The Proposal covers the export facilities – defined as the infrastructure to the north of the North West Coastal Highway required for iron ore export. The mining and haulage of ore will be submitted as separate proposals as required.

This Proposal has been developed in close consultation with DPA, Department of Transport, Department of State Development and Department of Regional Development and Lands. It is proposed to support a larger throughput capacity than that required by IOH – of a planned 20 Mtpa capacity (IOH is expected to require up to 10 Mtpa of the design capacity). The facilities will be multi-user and open access.

Preparation of the Proposal has considered the available information from nearby projects at Cape Preston, as well as recent proposals assessed and approved regarding the development of Port Facilities at Port Hedland, Anketell, Dampier, Cape Lambert, Oakajee and Ashburton North (Onslow). These projects provide a useful array of baseline environmental data, management approaches to key environmental issues in environmental management plans, and Ministerial Conditions.

The Proposal is located immediately adjacent to Cape Preston where a series of proposals for mining, processing and export of magnetite ore are either under construction, approved or proposed under the IOPAA. Consequently, the area is well understood, having been the subject of numerous baseline environmental studies, and more recently environmental monitoring. Proposals under the IOPAA are of a more significant scale and have resulted in limited local interest through the approvals process.

The Proposal is not expected to cause a significant environmental impact. It is a relatively small scale proposal in a well understood environment. The proponent has commenced a suite of additional studies to update and focus the extensive set of existing baseline environmental data and enable detailed project planning including detailed design and preparation of environmental management plans. The scope of additional studies proposed are detailed in the draft Environmental Scoping Document (ESD) attached as Appendix 3. The key environmental issues associated with the Proposal are limited and able to be managed within existing condition setting frameworks and hence are not expected to cause significant impact.

The Proponent has completed extensive consultation that will continue and develop as the Project proceeds. The environmental issues the Proposal raises are able to be managed within

existing condition setting frameworks and are supported by other legislation. The table in Appendix 2 provides an assessment of legislation relevant to environmental management of the Proposal should the EPA determine that it does not require formal assessment under Section 38 of the EP Act.

Based on the above, IOH expects that the Proposal will either not require public assessment or could be appropriately managed at an assessment level of 'Assessment of Proponent Information (Category A)'.

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11 APPENDICES

APPENDIX 1 – REFERRAL FORM

GOVERNMENT OF WESTERN AUSTRALIA

Environmental Protection Authority

EPA • REFERRAL FORM PROPONENT

Referral of a Proposal by the Proponent to the Environmental Protection Authority under Section 38(1) of the *Environmental Protection Act 1986*.

PURPOSE OF THIS FORM

Section 38(1) of the *Environmental Protection Act 1986* (EP Act) provides that where a development proposal is likely to have a significant effect on the environment, a proponent may refer the proposal to the Environmental Protection Authority (EPA) for a decision on whether or not it requires assessment under the EP Act. This form sets out the information requirements for the referral of a proposal by a proponent.

Proponents are encouraged to familiarise themselves with the EPA's *General Guide on Referral of Proposals* [see Environmental Impact Assessment/Referral of Proposals and Schemes] before completing this form.

A referral under section 38(1) of the EP Act by a proponent to the EPA must be made on this form. A request to the EPA for a declaration under section 39B (derived proposal) must be made on this form. This form will be treated as a referral provided all information required by Part A has been included and all information requested by Part B has been provided to the extent that it is pertinent to the proposal being referred. Referral documents are to be submitted in two formats – hard copy and electronic copy. The electronic copy of the referral will be provided for public comment for a period of 7 days, prior to the EPA making its decision on whether or not to assess the proposal.

CHECKLIST

Before you submit this form, please check that you have:

	Yes	No
Completed all the questions in Part A (essential).	X	
Completed all applicable questions in Part B.	X	
Included Attachment 1 – location maps.	X	
Included Attachment 2 – additional document(s) the proponent wishes to provide (if applicable).	X	
Included Attachment 3 – confidential information (if applicable).		X
Enclosed an electronic copy of all referral information, including spatial data and contextual mapping but excluding confidential information.	X	

Following a review of the information presented in this form, please consider the following question (a response is optional).

Do you consider the proposal requires formal environmental impact assessment? ☐ Yes ☐ No ☒ Not sure
If yes, what level of assessment? ☐ Assessment on Proponent Information Review ☐ Public Environmental

PROPONENT DECLARATION (to be completed by the proponent)

I, MICHAEL KLVAC, *(full name)* declare that I am authorised on behalf of IRON ORE HOLDINGS LTD (being the person responsible for the proposal) to submit this form and further declare that the information contained in this form is true and not misleading.

Signature 	Name (print) MICHAEL KLVAC
Position MANAGER LAND ACCESS AND APPROVALS	Company IRON ORE HOLDINGS LTD
Date 2/11/12	

PART A - PROPONENT AND PROPOSAL INFORMATION
(All fields of Part A must be completed for this document to be treated as a referral)

1 PROPONENT AND PROPOSAL INFORMATION

1.1 Proponent

Name	Iron Ore Holdings Limited
Joint Venture parties (if applicable)	N/A
Australian Company Number (if applicable)	107 492 517
Postal Address (where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State)	PO Box 1761 West Perth, Western Australia, 6872
Key proponent contact for the proposal: • name • address • phone • email	Michael Klvac Level 1/1 Altona Street West Perth WA (08) 9483 2000 mklvac@ironoreholdings.com
Consultant for the proposal (if applicable): • name • address • phone • email	Phil Scott Level 3, 8/201 Adelaide Terrace, East Perth WA 6004 (08) 9211 0011 pscott@prestonconsulting.com.au

1.2 Proposal

Title	Cape Preston East – Iron Ore Export Facilities
Description	Iron Ore Holdings Ltd (IOH, the Proponent) intends to plan, construct, and operate from the first stage of a new multi-user iron ore export facility at Cape Preston East (Proposal). The facility will have an initial capacity of 10 Mtpa, with expandability to 20 Mtpa and will be vested in the Dampier Port Authority (DPA) under the *Port Authorities Act 1999*. It is based on land surrendered to the State under the provisions of Mineralogy's State Agreement Act. The Port facilities within the scope of this Proposal include: 1. An access road from the North West Coastal Highway (NWCH) to the east of Cape Preston (utilising the existing Sino Iron causeway over the tidal creek). 2. Stockyard area with capacity to enable 20 Mtpa of iron ore exports (2.5 Mt of stockpile), with associated infrastructure to include stackers, reclaimers, conveyors, transfer stations and drainage controls. 3. Power and water supply to support stockyard and port operations.

	4. Trestle jetty structure 1.5 km long to waters with sufficient depth to enable loading of dedicated transhipment vessels. The trestle structure will be capable of supporting two 5,000 tph conveyors, mobile maintenace platform (no vehicle access or walkway). 5. Two berths and shiploaders: telescoping and luffing shiploader, able to load transhipment barges. 6. Transhipment vessels of approximately 10,000 to 15,000 dwt, self powered, operating between jetty and loading area to fill Panamax to Cape sized ocean going vessels. The Proposal will utilise the existing causeway over the tidal creek at Cape Preston.
Extent (area) of proposed ground disturbance.	1. Port land side: approximately 320 ha 2. Port marine side: approximately 3 ha
Timeframe in which the activity or development is proposed to occur (including start and finish dates where applicable).	Commence Construction Stage 1 Q3 2013 Complete Construction Stage 1 Q1 2015 The timing of further development of Cape Preston East facilities will depend upon the demand by other parties to utilise the facilities.
Details of any staging of the proposal.	The Proposal will be staged in development. IOH expects to utilise the port capacity up to approximately 10 Mtpa (Stage 1) and will be the foundation Proponent for the Cape Preston East facilities.
Is the proposal a strategic proposal?	No
Is the proponent requesting a declaration that the proposal is a derived proposal? If so, provide the following information on the strategic assessment within which the referred proposal was identified: • title of the strategic assessment; and • Ministerial Statement number.	No

Please indicate whether, and in what way, the proposal is related to other proposals in the region.	IOH has iron ore assets in the Pilbara and is seeking to deliver iron ore to market. IOH is looking to develop a transport and export solution for the Bungaroo South Project in the west Pilbara region. This ore forms the initial basis for the Cape Preston East Proposal. The Bungaroo South Proposal is a separate Proposal that will cover all of the approvals required to land ore at the access road to Cape Preston East where it joins the NWCH. IOH has other deposits in the Pilbara which may be developed to utilise the export facilities. Other Companies have "stranded" deposits in the Pilbara for whom Cape Preston East may represent a viable export solution. The Project is located immediately adjacent to the existing Port facilities at Cape Preston that are subject to the *Iron Ore Processing (Mineralogy Pty Ltd) Agreement Act* 2002 (IOPAA). Those facilities are separate from this Proposal.
Does the proponent own the land on which the proposal is to be established? If not, what other arrangements have been established to access the land?	The land and waters on which the Proposal is based is currently secured by the State of Western Australia under Section 19 of the *Mining Act* 1978. Section 91 of the *Land Administration Act* 1997 (LAA) is being used to investigate the corridor from the NWCH to Cape Preston East. These areas, together, will be vested in the DPA under the *Port Authorities Act* 1999. The Proponent is currently negotiating leases with DPA as required to commence construction of the Project.
What is the current land use on the property, and the extent (area in hectares) of the property?	The land side disturbance area is located entirely within the Mardie Station pastoral lease. The station covers about 225,000 ha and is operated as a pastoral enterprise, currently producing beef cattle. On the water side, the disturbance area lies within the Proclaimed Port Waters for the Cape Preston Port. The waters are occasionally used for recreation and recreational fishing. The shoreline has been used to collect marine animals for the aquarium industry.

1.3 Location

Name of the Shire in which the proposal is located.	Shire of Roebourne
For urban areas: • street address; • lot number; • suburb; and • nearest road intersection.	N/A
For remote localities:	Dampier.

• nearest town; and • distance and direction from that town to the proposal site.	The export facilities are proposed to be located approximately 60 kilometres south-west of Dampier.
Electronic copy of spatial data - GIS or CAD, geo-referenced and conforming to the following parameters: • GIS: polygons representing all activities and named; • CAD: simple closed polygons representing all activities and named; • datum: GDA94; • projection: Geographic (latitude/longitude) or Map Grid of Australia (MGA); • format: Arcview shapefile, Arcinfo coverages, Microstation or AutoCAD.	To be provided electronically.

1.4 Confidential Information

Does the proponent wish to request the EPA to allow any part of the referral information to be treated as confidential?	No
If yes, is confidential information attached as a separate document in hard copy?	N/A

1.5 Government Approvals

Is rezoning of any land required before the proposal can be implemented? If yes, please provide details.		No	
Is approval required from any Commonwealth or State Government agency or Local Authority for any part of the proposal? If yes, please complete the table below.		Yes	
Agency/Authority	Approval required	Application lodged Yes / No	Agency/Local Authority contact(s) for proposal
EPA	EP Act Part IV	No	Mr H Jacob
SEWPaC	EPBC Act	No	Mr L Wilson
DRDL	Land Access	Yes	Mr M Raven
DPA	Leases, Development Approvals, Construction Approvals	No	Mr P King
DoT	Jetty Licence	No	Mr S Jenkins
DoW	Permit to interfere	No	Mr H

	with bed and banks		Mohsenzadeh
DEC	EP Act Part V. Works Approval and subsequent licence	No	Ms S Roworth
DIA	Heritage Surveys and Approvals	No	Mr C Romero
DoW	Section 5C licence to explore for water and 26D licence to construct a water bore	No	Mr H Mohsenzadeh
Shire of Roebourne	IOH will complete Development Approvals and Building Licences for the Proposal.	No	N/A
Worksafe	Safety Management Plan	No	N/A

PART B - ENVIRONMENTAL IMPACTS AND PROPOSED MANAGEMENT

2. ENVIRONMENTAL IMPACTS

Describe the impacts of the proposal on the following elements of the environment, by answering the questions contained in Sections 2.1-2.11:

2.1 flora and vegetation;

2.2 fauna;

2.3 rivers, creeks, wetlands and estuaries;

2.4 significant areas and/ or land features;

2.5 coastal zone areas;

2.6 marine areas and biota;

2.7 water supply and drainage catchments;

2.8 pollution;

2.9 greenhouse gas emissions;

2.10 contamination; and

2.11 social surroundings.

These features should be shown on the site plan, where appropriate.

For all information, please indicate:

(a) the source of the information; and

(b) the currency of the information.

2.1 Flora and Vegetation

2.1.1 Do you propose to clear any native flora and vegetation as a part of this proposal?

[A proposal to clear native vegetation may require a clearing permit under Part V of the EP Act (Environmental Protection (Clearing of Native Vegetation) Regulations 2004)]. Please contact the Department of Environment and Conservation (DEC) for more information.

☒ Yes **If yes**, complete the rest of this section.

☐ No **If no**, go to the next section

2.1.2 How much vegetation are you proposing to clear (in hectares)?

Up to 320 Ha.

2.1.3 Have you submitted an application to clear native vegetation to the DEC (unless you are exempt from such a requirement)?

☐ Yes ☒ No **If yes**, on what date and to which office was the application submitted of the DEC?

2.1.4 Are you aware of any recent flora surveys carried out over the area to be disturbed by this proposal?

☒ Yes ☐ No

If yes, please attach a copy of any related survey reports and provide the date and name of persons / companies involved in the survey(s).

If no, please do not arrange to have any biological surveys conducted prior to consulting with the DEC.

Five floristic assessments have been conducted at Cape Preston since 2001 (Biota and Trudgen 2001; Maunsell 2003, 2006a; Astron 2007; Mattiske 2007, Aecom 2009), which have collectively provided coverage over 34,302 ha, incorporating approximately 80% of the four project areas. The outcomes of these five assessments are consolidated in Maunsell (2008a). From the 34,000 ha surveyed, 500 species have been found, of which 18 are introduced. This is a low level of biodiversity for such a large area with diverse vegetation communities (Maunsell, 2008a).

2.1.5 Has a search of DEC records for known occurrences of rare or priority flora or threatened ecological communities been conducted for the site?

☒ Yes ☐ No

If you are proposing to clear native vegetation for any part of your proposal, a search of DEC records of known occurrences of rare or priority flora and threatened ecological communities will be required. Please contact DEC for more information.

This has been completed as a component of vegetation and flora reports provided for the Sino Iron and Balmoral South Project approvals. An updated search will be completed as part of the Cape Preston East Proposal.

2.1.6 Are there any known occurrences of rare or priority flora or threatened ecological communities on the site?

☐ Yes ☒ No

If yes, please indicate which species or communities are involved and provide copies of any correspondence with DEC regarding these matters.

No DRF, Priority Flora, TEC's or PEC's have been identified within the likely Project footprint. Within the broader surveyed Cape Preston area only Priority Flora (five species) have been located.

If located within the Perth Metropolitan Region, is the proposed development within or adjacent to a listed Bush Forever Site? (You will need to contact the Bush Forever Office, at the Department for Planning and Infrastructure)

☐ Yes ☒ No **If yes**, please indicate which Bush Forever Site is affected (site number and name of site where appropriate).

2.1.7 What is the condition of the vegetation at the site?

The vegetation surveys completed to date have covered over 34,000 km^2 and indicate that the majority of the vegetation in the survey area ranges in condition from Completely Degraded to Very Good using the Keighery (1994) condition scale (Maunsell, 2008a). In the Proposal area the vegetation condition is likely to be generally poorer than that on the stony rises due to the increased frequency of grazing pressure on the flats.

2.2 Fauna

2.2.1 Do you expect that any fauna or fauna habitat will be impacted by the proposal?

(please tick) ✔ Yes **If yes**, complete the rest of this section.

☐ No **If no**, go to the next section.

The 320 ha of native vegetation to be cleared is general fauna habitat that is well represented in surrounding areas of the Pilbara (based on Strategen 2009). The habitat to be cleared is not considered likely to be habitat for migratory birds. No mangroves will be cleared.

2.2.2 Describe the nature and extent of the expected impact.

This section describes only the terrestrial environment – marine and coastal environments are described in other sections.

Up to 320 ha of native vegetation will be cleared. This area represents the direct impact on habitat.

Small areas of minor, indirect impact on habitat can be expected via the following mechanisms:

- Dust;
- Noise;
- Light spill; and
- Surface water runoff/sediment.

The majority of habitats are well represented throughout the region (Strategen, 2009) so impacts will not be significant in a local or regional context. Disturbance within areas of restricted habitat such as dunes and drainage lines will be limited to small areas of unavoidable disturbance and not expected to be significant.

2.2.3 Are you aware of any recent fauna surveys carried out over the area to be disturbed by this proposal?

☒ Yes ☐ No **If yes**, please attach a copy of any related survey reports and provide the date and name of persons / companies involved in the survey(s).

If no, please do not arrange to have any biological surveys conducted prior to consulting with the DEC.

The Cape Preston area has been extensively surveyed for fauna as reported in Strategen (2009) and Aecom (2009). No species have been found that are restricted to the survey areas.

2.2.4 Has a search of DEC records for known occurrences of Specially Protected (threatened) fauna been conducted for the site?

☒ Yes ☐ No (please tick)

This has been completed as a component of the fauna surveys undertaken in the Proposal area. These searches will be repeated and included in the environmental review document.

2.2.5 Are there any known occurrences of Specially Protected (threatened) fauna on the site?

☐ Yes ☒ No **If yes**, please indicate which species or communities are involved and provide copies of any correspondence with DEC regarding these matters.

The following species are known to occur in the greater Cape Preston area (adjacent to the Proposal area):

- 24 migratory bird species (protected under EPBC Act);
- 3 DEC listed priority 4 bird species;
- 3 DEC listed priority fauna mammal species;

None of these were recorded on the Proposal area.

Marine fauna are discussed in Section 2.6.

2.3 Rivers, Creeks, Wetlands and Estuaries

2.3.1 Will the development occur within 200 metres of a river, creek, wetland or estuary?

(please tick) ☒ Yes **If yes**, complete the rest of this section.

☐ No **If no**, go to the next section.

The Proposal crosses the tidal creek at Cape Preston over an existing causeway. Thus, no disturbance is required to cross the tidal flats and no impacts on the tidal creek are expected.

Access from the NWCH to the causeway necessitates clearing and road crossings of Eramurra Creek.

2.3.2 Will the development result in the clearing of vegetation within the 200 metre zone?

☒ Yes ☐ No **If yes**, please describe the extent of the expected impact.

The extent of impact will be minor - only at the ephemeral creek (Eramurra) crossing points. Disturbance will be minimised in this zone. The crossing will be general road crossing with designed culverts.

2.3.3 Will the development result in the filling or excavation of a river, creek, wetland or estuary?

☐ Yes ☒ No **If yes**, please describe the extent of the expected impact.

2.3.4 Will the development result in the impoundment of a river, creek, wetland or estuary?

☐ Yes ☒ No **If yes**, please describe the extent of the expected impact.

2.3.5 Will the development result in draining to a river, creek, wetland or estuary?

☐ Yes ☒ No **If yes**, please describe the extent of the expected impact.

2.3.6 Are you aware if the proposal will impact on a river, creek, wetland or estuary (or its buffer) within one of the following categories? (please tick)

Conservation Category Wetland	☐ Yes	☒ No	☐ Unsure
Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998	☐ Yes	☒ No	☐ Unsure
Perth's Bush Forever site	☐ Yes	☒ No	☐ Unsure
Environmental Protection (Swan & Canning Rivers) Policy 1998	☐ Yes	☒ No	☐ Unsure
The management area as defined in s4(1) of the *Swan River Trust Act 1988*	☐ Yes	☒ No	☐ Unsure
Which is subject to an international agreement, because of the importance of the wetland for waterbirds and waterbird habitats (e.g. Ramsar, JAMBA, CAMBA)	☐ Yes	☒ No	☐ Unsure

2.4 Significant Areas and/ or Land Features

2.4.1 Is the proposed development located within or adjacent to an existing or proposed National Park or Nature Reserve?

☒ Yes ☐ No **If yes**, please provide details.

The Great Sandy Islands Nature Reserve is an A class Nature Reserve that includes South West Regnard Island located approximately 3 km to the north-east of the trestle jetty. The reserve includes islands from approximately 100 km to the south west and 14 km north east from Cape Preston. It includes the land to the low water mark.

The proposed Regnard Marine Management Area includes SW Regnard Island at its western extent.

No Commonwealth Marine Reserve System areas are proposed nearby the Project Area.

2.4.2 Are you aware of any Environmentally Sensitive Areas (as declared by the Minister under section 51B of the EP Act) that will be impacted by the proposed development?

☐ Yes ☒ No **If yes**, please provide details.

2.4.3 Are you aware of any significant natural land features (e.g. caves, ranges etc) that will be impacted by the proposed development?

☐ Yes ☒ No **If yes**, please provide details.

2.5 Coastal Zone Areas (Coastal Dunes and Beaches)

2.5.1 Will the development occur within 300 metres of a coastal area?

(please tick) ☒ Yes **If yes**, complete the rest of this section.

☐ No **If no**, go to the next section.

2.5.2 What is the expected setback of the development from the high tide level and from the primary dune?

The proposed Cape Preston Port East development includes a trestle structure from the land to the marine environment. It is unavoidable that this structure crosses the primary dune and tidal zone. A solid structure will run adjacent to the trestle structure to enable access to the conveyors for construction and maintenance and to the water for emergency response.

2.5.3 Will the development impact on coastal areas with significant landforms including beach ridge plain, cuspate headland, coastal dunes or karst?

X Yes ☐ No **If yes**, please describe the extent of the expected impact.

The Proposal will require a small area (approximately 1 ha) of unavoidable disturbance of coastal dunes to enable the trestle structure and vehicle access over the dunes.

2.5.4 Is the development likely to impact on mangroves?

☐ Yes X No **If yes**, please describe the extent of the expected impact.

No impact upon mangroves as the existing causeway will be utilised. Indirect impacts from dust are not expected with dust managed using standard industry dust control measures.

2.6 Marine Areas and Biota

2.6.1 Is the development likely to impact on an area of sensitive benthic communities, such as seagrasses, coral reefs or mangroves?

☐ Yes ✕ **If yes**, please describe the extent of the expected impact.

The proposal has been designed to avoid impacts on sensitive benthic communities.

2.6.2 Is the development likely to impact on marine conservation reserves or areas recommended for reservation (as described in *A Representative Marine Reserve System for Western Australia*, CALM, 1994)?

☐ Yes ✕ No **If yes**, please describe the extent of the expected impact.

The nearest direct disturbance will be approximately 2 km from the proposed Great Sandy Island Nature Reserve.

2.6.3 Is the development likely to impact on marine areas used extensively for recreation or for commercial fishing activities?

☐ Yes ✕ No **If yes**, please describe the extent of the expected impact, and provide any written advice from relevant agencies (e.g. Fisheries WA).

The area is used occasionally for recreational fishing. Commercial fishing activities may occur beyond the area of disturbance.

2.7 Water Supply and Drainage Catchments

2.7.1 Are you in a proclaimed or proposed groundwater or surface water protection area?

(You may need to contact the Department of Water (DoW) for more information on the requirements for your location, including the requirement for licences for water abstraction. Also, refer to the DoW website)

☐ Yes ☒ No **If yes**, please describe what category of area.

2.7.2 Are you in an existing or proposed Underground Water Supply and Pollution Control area?

(You may need to contact the DoW for more information on the requirements for your location, including the requirement for licences for water abstraction. Also, refer to the DoW website)

☐ Yes ☒ No **If yes**, please describe what category of area.

2.7.3 Are you in a Public Drinking Water Supply Area (PDWSA)?

(You may need to contact the DoW for more information or refer to the DoW website. A proposal to clear vegetation within a PDWSA requires approval from DoW.)

☐ Yes ☒ No **If yes**, please describe what category of area.

2.7.4 Is there sufficient water available for the proposal?

(Please consult with the DoW as to whether approvals are required to source water as you propose. Where necessary, please provide a letter of intent from the DoW)

☐ Yes ☒ No (please tick)

Water supply options are currently being assessed. These include:

- Supply of water from Citic Pacific desalination Plant;
- Standalone desalination plant (2 Gigalitres per year) (most likely option – approval being sought); and
- Potential use of groundwater for construction purposes (subject to application and licencing under the *Rights in Water and Irrigation Act* 1914.

2.7.5 Will the proposal require drainage of the land?

☒ Yes ☐ No **If yes**, how is the site to be drained and will the drainage be connected to an existing Local Authority or Water Corporation drainage system? Please provide details.

Roads and infrastructure will require drainage systems to be designed and implemented. The stockpile area will require a specific drainage capture and treatment using a standalone local treatment system. Any

fuel storage will be located away from drainage lines and will have its own bunding.

2.7.6 Is there a water requirement for the construction and/ or operation of this proposal?

(please tick) ☒ Yes **If yes**, complete the rest of this section.

☐ No **If no**, go to the next section.

2.7.7 What is the water requirement for the construction and operation of this proposal, in kilolitres per year?

The proposal is expected to require approximately 6 GL for construction and 6GL/yr of water for operations at approximately 20 Mtpa throughput.

2.7.8 What is the proposed source of water for the proposal? (e.g. dam, bore, surface water etc.)

Water will be sourced initially from existing bores. During construction a mobile desalination plant will be operated and additional bores may be commissioned. During operations a standalone desalination plant will provide water.

2.8 Pollution

2.8.1 Is there likely to be any discharge of pollutants from this development, such as noise, vibration, gaseous emissions, dust, liquid effluent, solid waste or other pollutants?

(please tick) ☒ Yes **If yes**, complete the rest of this section.

☐ No **If no**, go to the next section.

2.8.2 Is the proposal a prescribed premise, under the Environmental Protection Regulations 1987?

(Refer to the EPA's *General Guide for Referral of Proposals to the EPA under section 38(1) of the EP Act 1986* for more information)

☒ Yes ☐ No **If yes**, please describe what category of prescribed premise.

Category Number: 58

Description of Category: Bulk material loading or unloading: premises on which clinker, coal, ore, ore concentrate or any other bulk granular material is loaded onto or unloaded from vessels by an open materials loading system.

Production or Design Capacity: 100 tonnes or more per day.

2.8.3 Will the proposal result in gaseous emissions to air?

☒ Yes ☐ No **If yes**, please briefly describe.

The proposal will result in the release of insignificant amounts of greenhouse gas emissions from power generation (12 MW estimate for approximately 20 Mtpa throughput and supporting ancillaries).

Have you done any modelling or analysis to demonstrate that air quality standards will be met, including consideration of cumulative impacts from other emission sources?

☐ Yes ☒ No **If yes**, please briefly describe.

Cumulative impact modelling for power supply to the Mineralogy Projects (an order of magnitude greater than for this proposal) is understood to have been completed and reported to EPA.

2.8.4 Will the proposal result in liquid effluent discharge?

☒ Yes ☐ No **If yes**, please briefly describe the nature, concentrations and receiving environment.

A small package wastewater treatment plant will service the workshops, offices and accommodation for the site. Treated water is expected to be applied to vegetation for disposal under licence.

A small desalination plant will discharge liquid brine into the marine environment.

Runoff water from the stockyard area will not be discharged as drainage waters will be captured and allowed to infiltrate the soil to recharge groundwater.

2.8.5 If there is likely to be discharges to a watercourse or marine environment, has any analysis been done to demonstrate that the State Water Quality Management Strategy or other appropriate standards will be able to be met?

☒ Yes ☐ No **If yes**, please describe.

The brine discharge system for the desalination plant will be located approximately 1 km offshore. Experience with desalination outfalls and consideration of the location of other outfalls (for the Cape Preston projects) has shown that State Water Quality Management Strategy standards will be able to be met.

An Application Enquiry Form will be used to determine if the outfall warrants a Works Approval. A small mixing zone will be defined by modelling with verification monitoring at an early stage to ensure satisfactory performance. The outcomes would be reported to DEC.

2.8.6 Will the proposal produce or result in solid wastes?

☒ Yes ☐ No **If yes**, please briefly describe the nature, concentrations and disposal location/ method.

Solid wastes associated with construction and operation will be disposed of at a licenced landfill facility.

Solid marine wastes from screening of desalination plant inlet water will be disposed of at a licenced landfill facility, or dispersed by barge further offshore.

2.8.7 Will the proposal result in significant off-site noise emissions?

☒ Yes ☐ No **If yes**, please briefly describe.

Marine noise during construction (pile driving in the marine environment) will continue for a period of approximately 12 months. It will be subject to standard industry control measures such as marine fauna monitoring in an exclusion zone, soft starts, shut down during fauna events.

2.8.8 Will the development be subject to the Environmental Protection (Noise) Regulations 1997?

☒ Yes ☐ No **If yes**, has any analysis been carried out to demonstrate that the proposal will comply with the Regulations?

Noise from the development is expected to represent a minor addition to the cumulative noise from the Cape Preston Projects. It is understood that cumulative noise modelling has been completed for those projects.

2.8.9 Does the proposal have the potential to generate off-site, air quality impacts, dust, odour or another pollutant that may affect the amenity of residents and other "sensitive premises" such as schools and hospitals (proposals in this category may include intensive agriculture, aquaculture, marinas, mines and quarries etc.)?

☐ Yes ☒ No **If yes**, please describe and provide the distance to residences and other "sensitive premises".

No sensitive premises are located near to the Proposal area.

The key air quality risk is related to dust emissions from the iron ore stockpiles. The proposal is located adjacent to existing stockpile areas. The application of industry standard dust control measures is considered adequate to manage this risk.

2.8.10 If the proposal has a residential component or involves "sensitive premises", is it located near a land use that may discharge a pollutant?

☐ Yes ☒ No ☐ Not Applicable

If yes, please describe and provide the distance to the potential pollution source

2.9 Greenhouse Gas Emissions

2.9.1 Is this proposal likely to result in substantial greenhouse gas emissions (greater than 100 000 tonnes per annum of carbon dioxide equivalent emissions)?

☐ Yes ☒ No **If yes**, please provide an estimate of the annual gross emissions in absolute and in carbon dioxide equivalent figures.

2.9.2 Further, if yes, please describe proposed measures to minimise emissions, and any sink enhancement actions proposed to offset emissions.

2.10 Contamination

2.10.1 Has the property on which the proposal is to be located been used in the past for activities which may have caused soil or groundwater contamination?

☐ Yes ☒ No ☐ Unsure **If yes**, please describe.

2.10.2 Has any assessment been done for soil or groundwater contamination on the site?

☐ Yes ☒ No **If yes**, please describe.

2.10.3 Has the site been registered as a contaminated site under the *Contaminated Sites Act 2003*? (on finalisation of the CS Regulations and proclamation of the CS Act)

☐ Yes ☒ No **If yes**, please describe.

2.11 Social Surroundings

2.11.1 Is the proposal on a property which contains or is near a site of Aboriginal ethnographic or archaeological significance that may be disturbed?

☒ Yes ☐ No ☐ Unsure **If yes**, please describe.

Extensive Aboriginal Heritage surveys have been completed for the area to the west of the Proposal area. The Proposal area will be surveyed in consultation with the relevant Traditional Owner groups. It is anticipated that some areas with heritage significance will be identified. Project design will be amended to avoid identified heritage sites where feasible. If heritage sites cannot be avoided, a Section 18 application under the *Aboriginal Heritage Act* 1972 will be submitted in consultation with the Traditional Owner groups.

2.11.2 Is the proposal on a property which contains or is near a site of high public interest (e.g. a major recreation area or natural scenic feature)?

☐ Yes ☒ No **If yes**, please describe.

2.11.3 Will the proposal result in or require substantial transport of goods, which may affect the amenity of the local area?

☒ Yes ☐ No **If yes**, please describe.

The Proposal will result in the transportation of ore from mine sites located inland to the Cape Preston East area. Transport to Cape Preston East (the area of this Proposal, being north of the NWCH) will be the subject of other Proposals.

For the first stage of development of the Proposal this will be via road trains and public roads onto the NWCH and is outside of the scope of this Proposal. The NWCH forms the southern limit of the Proposal area. Up to 2 Mtpa is expected to be transported initially in this manner. IOH has plans to transport up to 10 Mtpa via road to the site. This Proposal will include amendments to the NWCH to enable the safe turning of traffic in and out of the Cape Preston East area. The road transport details of other projects beyond 10 Mtpa is beyond the scope of this Proposal where those activities are on or south of the NWCH.

3. PROPOSED MANAGEMENT

3.1 Principles of Environmental Protection

3.1.1 Have you considered how your project gives attention to the following Principles, as set out in section 4A of the EP Act? (For information on the Principles of Environmental Protection, please see EPA Position Statement No. 7, available on the EPA website)

1. The precautionary principle.	☒ Yes	☐ No
2. The principle of intergenerational equity.	☒ Yes	☐ No
3. The principle of the conservation of biological diversity and ecological integrity.	☒ Yes	☐ No
4. Principles relating to improved valuation, pricing and incentive mechanisms.	☒ Yes	☐ No
5. The principle of waste minimisation.	☒ Yes	☐ No

3.1.2 Is the proposal consistent with the EPA's Environmental Protection Bulletins/Position Statements and Environmental Assessment Guidelines/Guidance Statements (available on the EPA website)?

☒ Yes ☐ No

3.2 Consultation

3.2.1 Has public consultation taken place (such as with other government agencies, community groups or neighbours), or is it intended that consultation shall take place?

☒ Yes ☐ No **If yes**, please list those consulted and attach comments or summarise response on a separate sheet.

The consultation list for the Proposal is provided in the supplementary information report.

APPENDIX 2 – LEGISLATION RELEVANT TO ENVIRONMENTAL MANAGEMENT OF THE PROPOSAL

Summary of factor and relevant regulatory controls, relevant agencies and potential Part V EP Act permitting requirements

Factor	Sub - Factor	General Management Requirement	EP Act , Part V – including Environmental harm provisions (DEC)	EP Act regulations (Noise, controlled waste, unauthorised discharge, native vegetation etc.) (DEC)	Wildlife Conservation Act (DEC)	Conservation and Land Management Act (DEC)	Environmental Protection and Biodiversity Conservation Act (Comm)	Occupational Safety and Health Act (DoC)	Dangerous Goods Safety Act and related regulations (DMP)	Planning and Development Act – local Govt.	Rights in Water and Irrigation Act, Bed and bank permit (DoW)	Rights in Water and Irrigation Act, Licences to construct and operate a well (DoW)	Health Act (DoH)	Aboriginal Heritage Act s.18 (DIA)	Jetties Act (DoT)	Port Authorities Act – DPA Development Approvals Process (DPA)	Quarantine Act (AQIS)	Land Administration Act (DROL)	Comment/ rationale
Marine	Benthic Primary Producer Habitat	Minimise footprint and suitably located				**X**									**X**	**X**		**X**	• Referral defines footprint and location. Proposal would need to be implemented as presented in referral. • Facilities design avoids coral areas and dredging is not required. • Jetties Act verifies construction in location referred • LAA envelope limits location to defined area. • DPA development application process will determine location of Project elements in detail. • CALM Act protection in marine park only.
Marine	Benthic Primary Producer Habitat	Protect from indirect impacts	**X**	**X**		**X**											**X**		• Location avoids BPPH and hence reduces risk. • Indirect impacts risk is limited as no dredging and small (200 m) incursion into marine environment with solid structure. • CALM Act protection in marine park only.
Marine	Marine Fauna	Protected Marine Fauna			**X**	**X**	**X**												• Protected species list – it is an offence to take fauna. Small scale proposal with relatively low risk to marine fauna. • CALM Act protection in marine park only.
Marine	Waste Water Outfall (Desalination Plant)	Ensure mixing zone is minimised and suitably located	**X**	**X**	**X**											**X**			• Referral defines footprint and location. Proposal would be implemented as presented in referral. • CALM Act protection in marine park only.
Marine	Waste Water Outfall (Desalination Plant)	Manage outfall water quality	**X**	**X**	**X**														• Monitoring is generally done on discharge water with spot checking of water quality at mixing zone limited to verify mixing predictions. Discharge amounts and risks are low. • Use Application Enquiry Form to determine if proposal is sufficiently significant to require Works Approval. • WCA for any protected fauna impacts
Marine	Oil Spill Contingency	Spill prevention	**X**	**X**	**X**											**X**			• DPA development application process to specify spill prevention equipment and procedures. • WCA for any protected fauna impacts • CALM Act protection in marine park only.
Marine	Oil Spill Contingency	Response planning and capability	**X**	**X**												**X**			DPA development application process to specify response planning and capability
Marine	Introduced Marine Pests	Ballast water controls				**X**										**X**	**X**		• Well established protocols established in Australia for ballast water. • CALM Act protection in marine park only.

Factor	Sub - Factor	General Management Requirement	EP Act , Part V – including Environmental harm provisions (DEC)	EP Act regulations (Noise, controlled waste, unauthorised discharge, native vegetation etc.) (DEC)	Wildlife Conservation Act (DEC)	Conservation and Land Management Act (DEC)	Environmental Protection and Biodiversity Conservation Act (Comm)	Occupational Safety and Health Act (DoC)	Dangerous Goods Safety Act and related regulations (DMP)	Planning and Development Act – local Govt.	Rights in Water and Irrigation Act, Bed and bank permit (DoW)	Rights in Water and Irrigation Act, Licences to construct and operate a well (DoW)	Health Act (DoH)	Aboriginal Heritage Act s.18 (DIA)	Jetties Act (DoT)	Port Authorities Act – DPA Development Approvals Process (DPA)	Quarantine Act (AQIS)	Land Administration Act (DROL)	Comment/ rationale
Marine	Introduced Marine Pests	Vessel hygiene inspections				X										X	X		• Risk assessment approach under established protocols. • CALM Act protection in marine park only.
Marine	Introduced Marine Pests	IMP monitoring														X			Low risk. Mineralogy port has monitoring requirements that would detect any infestation.
Marine	Biofouling Agents	Use authorised biofouling agents and procedures														X			Well established protocols established in Australia.
Marine	Marine Noise	Industry standard controls for pile driving in marine environment			X		X												Controls as presented in referral. WCA and EPBC could be used if impacts result.
Coastal	Coastal Processes	Sediment/wrack transfer if required														X			DPA development approval process to ensure mechanism is identified and funded.
Coastal	Mangroves	Ensure no impact on mangroves	X	X							X								No impact on mangroves as existing crossing is used.
Coastal	Recreational Access									X						X			Small workforce. Small section of coast. DPA will control access.
Terrestrial	Flora and Vegetation	Minimise footprint and suitably located	X	X							X					X			NVCP process and conditions. No DRF. No TECs. No Federally listed species. Very low risk. Proposal would be implemented as presented in referral. DPA development application process will determine location in detail.
Terrestrial	Flora and Vegetation	Protect from indirect impacts	X	X	X						X								NVCP process and conditions. Environmental harm provisions, WCA, EPBC to protect any protected species. Beds and banks permits to control stream crossings.
Terrestrial	Fauna	Protected Fauna	X	X	X		X												• NVCP process and conditions to protect habitat. • Environmental harm provisions, WCA, EPBC for protected species. • Beds and banks permits to control stream habitat.
Terrestrial	Fauna	Protect from indirect impacts	X	X							X								• NVCP process and conditions to protect habitat. • Environmental harm provisions, WCA, EPBC to protect any protected species. • Beds and banks permits to control stream crossings.
Terrestrial	Emissions to Air	Minimise dust	X	X				X					X			X			• Works Approval, Licence, Environmental harm, unauthorised discharge. • DPA development approval process. • OHS controls.
Terrestrial	Emissions to Air	Power Station emissions	X	X															Works Approval and Licence conditions
Terrestrial	Surface Water	Control runoff to manage sediment and other potential pollutants	X	X							X					X			• NVCP process and conditions to protect water quality. • Environmental harm provisions, unauthorised discharge to protect water quality. • Beds and banks permits to control stream crossings.
Terrestrial	Aboriginal Heritage	Protect sites												X					• Heritage surveys and Native Title Agreements • S18 process to authorise any disturbance of sites.

APPENDIX 3 – DRAFT ENVIRONMENTAL SCOPING DOCUMENT

ENVIRONMENTAL SCOPING DOCUMENT

CAPE PRESTON EAST PROJECT

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October 2012

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Acknowledgement

Some material presented in this report has been prepared and presented to the EPA in proposals assessed under the *Environmental Protection Act* 1986 for the purposes of environmental approval for other projects.

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1 INTRODUCTION

Iron Ore Holdings (IOH) is seeking to obtain approval under Part IV of the *Environmental Protection Act 1986* (EP Act) for the development of a new multi-user export facility at the eastern extent of Cape Preston, in the Pilbara region of Western Australia. The export facility will initially be used to transport ore from IOH's mining operations to market in China, and may be further developed. The export facility is known as the Cape Preston East Project (the Project) and is the subject of a referral under Section 38 of the EP Act and will be referred to as the "Proposal"

The environmental aspects of the Cape Preston area are well characterised and understood. This document is submitted by the proponent jointly with the referral under the EP Act for the purpose of facilitating rapid consideration of the environmental issues associated with the Proposal and identifying appropriate levels of investigation and assessment. Further details are contained within the referral and referral form.

This document has been prepared in consultation with Office of the Environmental Protection Authority (OEPA) personnel and with reference to the Guide for Preparing an Environmental Scoping Document (ESD) (EPA 2010).

2 LEVEL OF ASSESSMENT

This ESD has been submitted with an Environmental Protection Authority (EPA) Referral Document, which presents the Proposal and the expected key environmental factors. Based on the content of the EPA Referral Document, the EPA may set the level of assessment on the Proposal at 'Assessment on Proponent Information (API) - Category A', or not assess the Proposal. The studies described herein are planned to be completed whether or not the Proposal is formally assessed.

3 PROPOSAL DESCRIPTION

IOH is currently developing several iron ore projects in the Pilbara, which rely on the development of an export facility to allow the export of ore to market. Port options along the coastline from Onslow to Dampier were considered for the export of ore. The most favourable option, based on pre-existing environmental and government assessments, was a new barge loading facility at Cape Preston immediately east of the existing port facilities.

The export facility will include the following:

- Access road from the Great Northern Highway. The access across the tidal creek to Cape Preston will be via the existing causeway;
- Stockyard on Cape Preston to support up to 20 Mtpa throughput;
- Trestle jetty extending approximately 1.5 km offshore from a small (approximately 200 m) rock supporting structure on the shoreline to support barge loading facilities for up to 20 Mtpa of iron ore export;
- 6 GL/year desalination plant including ocean intake and outfall; and
- Associated supporting infrastructure (power supply, laydown areas and offices).

The facilities outlined above are presented in Figure 1. A full description of the facilities is provided in the Supporting Information document to the EPA Referral.

4 ENVIRONMENTAL FACTORS

Environmental factors are presented in the Supporting Information Document provided in the referral. Those that are expected to be relevant to the Proposal will be presented in detail in environmental review and management documentation.

As identified in the EPA Referral Supporting Information document, the key factor is expected to be the Marine and Coastal Zone, including marine noise (during construction) and marine fauna.

Secondary factors are expected to be terrestrial flora and vegetation, and terrestrial fauna.

Other factors include:

- Air emissions;
- Noise;
- Heritage;
- Social;
- Surface water;
- Groundwater;
- Waste;
- Light; and
- Rehabilitation and Closure.

Potential impacts are not expected to be significant on a National, Statewide or regional scale. Local impacts are expected to be appropriately managed with industry standard control measures.

400000 410000 420000 430000 440000

7690000

7680000

INDIAN OCEAN

Cape Preston

NAVIGATION AIDS

CYCLONE MOORING

TRESTLE JETTY

STOCKYARD

EXISTING ROAD TO BE UTILISED

PORT SERVICES AREA

PROJECT AREA

PORT ACCESS ROAD

CENTRAL SERVICES FACILITY

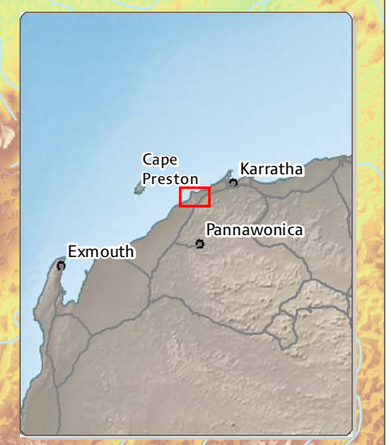
Forty Mile Beach

To Karratha 50km

Fortescue River

Fortescue River Road

North West Coastal Highway



North West Coastal Highway to Cape Preston Overview

Figure 1: Cape Preston East Proposal Infrastructure

N

0 1 2

Kilometres

Legend

- North West Coastal Highway
- Minor Road
- Secondary Road
- Existing Causeway & Road
- Watercourse
- Mineralogy PTY Ltd Tenement
- Project Area

Scale (A3): 1:120,000

Datum: Geocentric Datum of Australia 1994

Projection: Map Grid Australia, Zone 50

Sources: Topography: Geoscience Australia, GEODATA Topo 250KV3, © Commonwealth of Australia, 2006, DEM: GA SRTM, 1sec v1.3

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5 INFORMATION TO BE PROVIDED

The environmental documentation (assumed to be an Environmental Review Document) will address the following:

- Description of the proposal and alternatives considered, and provision of spatial datasets, information products and databases required;
- Relevant information on the receiving environment and its conservation values in a regional and local setting;
- Assessment of any key and significant environmental factors to demonstrate, succinctly, that the proposed management and mitigation of the potential impacts of the Proposal can meet the EPA's environmental objectives. The findings of any surveys and investigations undertaken to support this assessment will be included, with the technical reports provided as appendices;
- Identification of other regulation mechanisms by which other government agencies, under existing statutes can manage the Proposal and a commitment to complying with their requirements;
- Details of the consultation process and outcomes. IOH will identify in the documentation how issues raised during the stakeholder consultation have been responded to, and any subsequent adjustments made to the Proposal;
- Explanations of how the objective of the EP Act and Principles of EIA for the Proponent from the EPA's *Administrative Procedures 2010* have been addressed and how the Proposal is consistent with established environmental policy frameworks, guidelines and standards; and
- Provision of a completed checklist for documents submitted for EIA on terrestrial biodiversity, as detailed on the EPA website.

IOH understands that should the Proposal be assessed, API documentation will be made publically available when the EPA releases its report and recommendations. The environmental management plans for the Proposal will:

- Address the key environmental factors;
- Identify any other potential environmental impacts or risks of significance;
- Identify the management actions and responsibilities to ensure adequate control of these impacts.

6 EPA GUIDELINES & GUIDANCE STATEMENTS

The following EPA guidelines and guidance statements may be relevant to the Proposal and where applicable will be consulted for guidance when preparing environmental impact assessment and management documentation:

- Environmental Assessment Guideline (EAG) 1: Defining the key characteristics of a proposal;
- EAGs for protection of benthic primary producer habitat in WA's marine environment (EAG 3);
- EAG for protecting marine turtles from light impacts (EAG 5);
- Environmental Assessment Guideline (EAG) 6: Timelines for Environmental Impact Assessment of Proposals;
- EAG for marine dredging proposals (EAG 7);
- EPA Guidance Statement 1: Protection of tropical arid zone mangroves along the Pilbara coastline;
- EPA Guidance Statement 6: Rehabilitation of terrestrial ecosystems;
- EPA Guidance Statement 41: Assessment of Aboriginal Heritage;
- EPA Guidance Statement 51: Terrestrial flora and vegetation surveys for environmental impact assessment in WA;
- EPA Guidance Statement 55: Implementing best practice in proposals submitted to the environmental impact assessment process; and
- EPA Guidance Statement 56: Terrestrial fauna surveys for environmental impact assessment in WA.

7 ADDITIONAL STUDIES PROPOSED

As discussed in Section 4, the marine and terrestrial environment surrounding Cape Preston has been extensively surveyed as part of the various proposals associated with the *Iron Ore Processing (Mineralogy Pty Ltd) Agreement Act* 2002 for which Cape Preston is the port facility. Some additional studies are proposed to be conducted to enable environmental management plans to be prepared for the Proposal. These additional studies are discussed below.

7.1 MARINE BENTHIC HABITAT SURVEY

The distribution of marine benthic habitats in the Cape Preston region has been mapped by CALM (2000), Maunsell (2006) and most recently by URS in November 2008. The URS survey extent covers a large area including the area proposed for the Cape Preston East Port. The most recent benthic habitat map is partly based on a review of past mapping in the area, but is mainly based on the most recent field surveys and aerial inspections by URS (Le Provost, 2008).

There may be potential issues with the use of these results in the EIA process for the Proposal as changes to the key habitat boundaries or cover/quality may have occurred as a result of the Cape Preston port construction, or by natural processes since the last survey was completed.

The following work is to be conducted to ensure the environmental impact assessment and management documentation contains accurate and up to date information:

- Benthic habitat survey of the trestle jetty footprint and immediate surrounds (approximately 500 m each side of the centreline). The majority of the alignment is expected to be over sand/silt.
- Baseline survey of several (approximately six) key benthic habitat features in the area, such as areas of high coral cover (>25%) at South West Regnard Island, or other background monitoring locations already proposed by existing projects.

Marine benthic habitat monitoring data collected for the Sino Iron Project is not publicly available.

7.2 MARINE NOISE

Pile-driving activities during the construction of the trestle jetty are expected to produce marine noise, which has the potential to result in impacts to marine fauna.

Marine noise modelling was not completed for the Cape Preston port as the port design as constructed did not require a significant amount of pile-driving or other sources of elevated marine noise. Marine noise modelling will be conducted for the Proposal to determine the area of impact from pile driving activities.

The potential impact of pile driving noise on marine fauna will be discussed by a relevant expert in the field. IOH is proposing to implement the usual controls (slow start, shut downs when fauna in close proximity etc) so this will be taken into consideration and discussed. Also to be discussed is the expected likelihood of encountering significant marine fauna at the proposed port location (i.e. is it within normal marine fauna migration or movement patterns).

7.3 TURTLE NESTING HABITAT – LIGHT SPILL

Numerous turtle nesting surveys of the Cape Preston area have been conducted since 2000, by CALM/DEC (2000, 2005 & 2006), Maunsell (2004) and Pendoley Environmental (2009).

The Pendoley Environmental survey was conducted in January and March 2009, which identified the beaches surrounding Cape Preston that have been used for turtle nesting. Using these beach locations, a light spill study will be conducted, to determine if there are any areas on these beaches or the intertidal zone where light spill may reach. If there are areas where light spill may impact the beaches, then advice will be sought regarding ways to minimise the light spill (light shielding/angles etc).

In addition expert advice will be obtained to assess the potential impacts of the port construction (including light spill and general construction impacts) on turtles and their nesting habitat.

7.4 COASTAL PROCESSES

It is expected that a 200 m rock structure will be installed from the shoreline and extend into the intertidal zone. The trestle jetty will then extend from this structure into deeper water (Figure 1).

The effect of the Cape Preston port structure on sedimentology, coastal processes and shore alignment has been investigated by GEMS and reviewed by Oceanica. The resultant report (GEMS, 2008) is based on a field inspection, desktop appraisal of aerial imagery and application of models for prediction of shoreline change resulting from coastal structures (Le Provost, 2008).

Additional hydrodynamic modelling will be conducted in order to assess the impact of the Cape Preston East Port breakwater on coastal processes. The modelling will include the impacts of the Cape Preston port on coastal processes. Existing reports developed for the Cape Preston port will be used where applicable to supply some of the raw data required for the modelling.

7.5 INTRODUCED MARINE PESTS

Marine pests have the potential to be introduced to the port via vessels during construction or operation of the port. The export process is based on a transhipment arrangement, whereby barges are loaded off the trestle jetty and transported to an offshore transhipment facility, which transfers the ore from the barge to the export vessel. Ore will typically be shipped to Chinese ports.

URS conducted an introduced marine pests (IMP) survey at Cape Preston in 2009 and found no marine pest species listed on the National IMP Coordination Group (URS, 2009).

A risk assessment will be conducted to determine the likelihood and impacts of IMP being transported to the waters surrounding the proposed port during construction and operation.

7.6 DESALINATION OUTFALL

A small (6 GL/yr production) desalination plant is expected to be required, with the outfall being located in the waters surrounding the proposed port.

Numerous large desalination plant wastewater outfalls have been modelled for the various existing and proposed projects at Cape Preston, with a typical capacity of 50 GL/yr. Hydrodynamic modelling by GEMS (2009) determined that five desalination plants of this size could be located in the Cape Preston area without significantly impacting the water quality outside of the mixing zones.

An assessment of the expected mixing zone for the IOH desalination plant will be conducted, based on the preferred outfall location. Near-field simulations will be modelled to characterise the mixing zone on the basis of salinity over a range of 'worst case' tidal depths and water currents.

7.7 OIL SPILL CONTINGENCY PLANNING

Xodus conducted oil spill modelling in 2009 for various scenarios throughout the construction and operation of the approved port facilities at Cape Preston. The results of this modelling were used to develop an Oil Spill Contingency Plan (OSCP). The OSCP for the existing Cape Preston operations are expected to form the basis of an OSCP specifically for the CPE project. An example of modelling output from the Xodus (2009) is shown in Figure 2 below. The OSCP contains a series of model predictions for hydrocarbon spillage based on credible scenarios specific to the Cape Preston port operations. The plan identifies the range of equipment required for spill control and cleanup, roles and responsibilities. It also provides information and an action plan in the event of a spill, with different requirements depending on the risks associated with the particular spill.

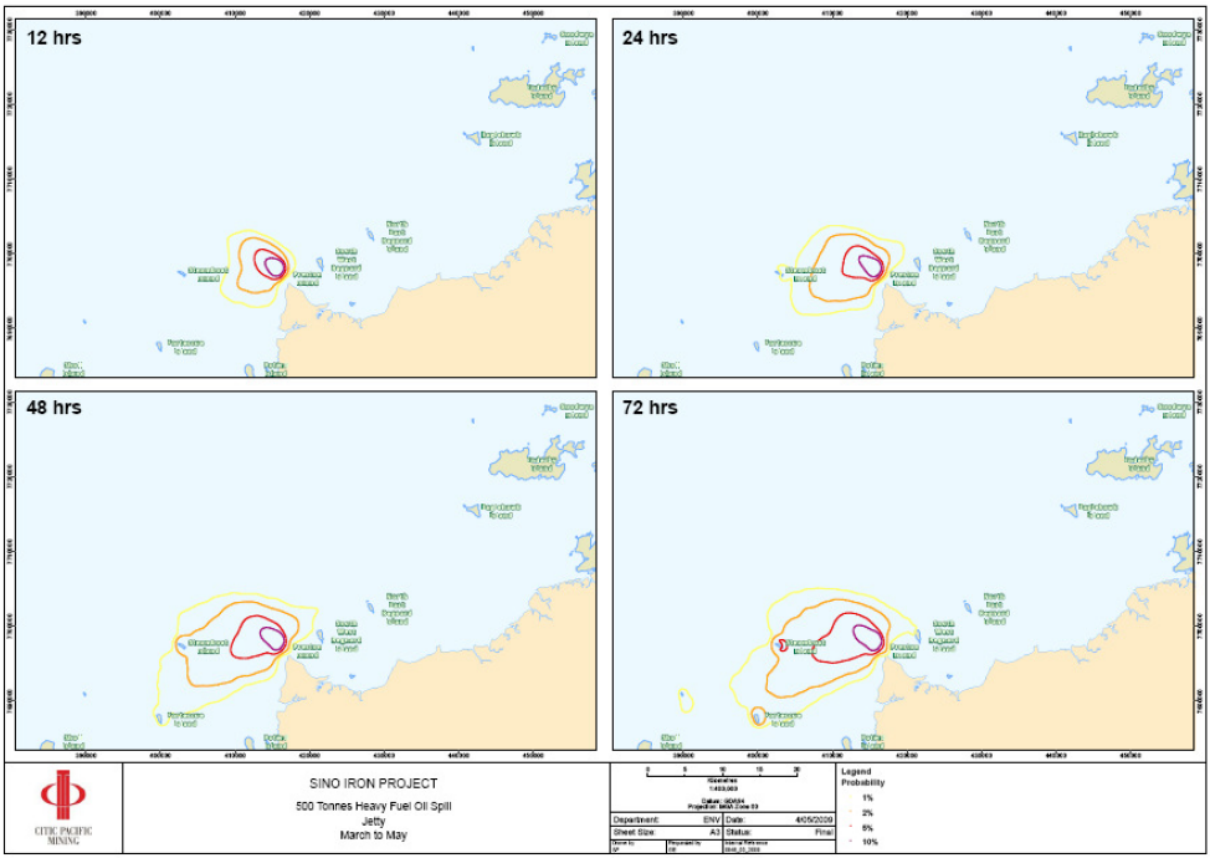

Figure 2: Example modelled oil spill scenario at adjacent Cape Preston port facilities (from Xodus 2009)

It is IOH's intention to utilise the modelling and results of this existing Cape Preston port OSCP to develop credible oil spill scenarios and appropriate management for the construction phase of the Project facilities. This is expected to include the following:

- Review of existing Cape Preston OSCP;
- Extract relevant data from the Cape Preston OSCP and apply to the Cape Preston East Port;
- Risk assessment of potential oil spill scenarios during construction of the Cape Preston East facilities; and
- Preparation of a report that summarises the outcomes of the risk assessment, details potential oil spill impacts during construction, and presents appropriate management actions to minimise these impacts.

Through the period of preparation and assessment of environmental review documentation for the Project, IOH will review the planned operations activities in relation to the 2009 Cape Preston OSCP. IOH will liaise with Dampier Port Authority and CITIC Pacific Mining Management regarding the applicability of the Cape Preston OSCP to Project operations such that an integrated OSCP for Cape Preston and Cape Preston East port operations can be prepared and implemented.

7.8 TERRESTRIAL FLORA AND VEGETATION

Numerous flora and vegetation surveys have been completed within the Cape Preston area since 2001. These include:

- Austeel Biological Survey Phase 1 (Biota Environmental and MF Trudgen and Associates 2001, also referred to as HGM 2001);
- Cape Preston Iron Ore Development, Seasonal Biological Survey – Threatened Flora (Maunsell AECOM Australia Pty Ltd 2003);
- Balmoral South Environmental Impact Assessment, Flora and Fauna Survey, Balmoral South (Maunsell AECOM Australia Pty Ltd 2006);
- Flora and Vegetation Survey of Cape Preston Potential Campsites and Airstrips (Mattiske Consulting 2007);
- General Purpose Leases G 08/52 and G08/53 Additional Vegetation Survey and Mapping (Astron Environmental Services 2007);
- Balmoral North [Stage 5) and Balmoral South Stage 2 (Stage 4) Flora and Vegetation Assessment (AECOM 2009b);
- Sino Iron Project – Cape Preston Mapping and Surveying of Groundwater Dependent Ecosystems (GDEs) (Astron 2009a); and
- Mineralogy Expansion Proposal, Desktop Vegetation and Flora Study (Astron 2009b).

The extent of these surveys is shown in Figure 4. The entire of Cape Preston (north of the causeway) has already been surveyed, as well as within Mineralogy tenements, west of the proposed access road.

A Level 1 survey will be conducted to cover unsurveyed areas that are within the possible survey envelope defined as the Project Area (as shown in Figure 1) with the exception of the Cape area itself which has recently been surveyed. The work will include:

- Revision of the desktop studies and previous reports;
- Conservation significant species assessment: Assessment of the current conservation status of species potentially impacted by the project. This will include assessment of the likelihood for any conservation significant species to occur within the project foot print and, an assessment of the level of significance of any impact on the species arising from the Project;
- Field investigation: Level 1 flora and vegetation assessment of the previously unsurveyed extent. The surveys will be undertaken with regards to the EPA Guidance Statement No. 51, Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia.
- An assessment of the Project against the ten clearing principals to inform permit requirements; and
- Assessment of the potential impacts on flora, fauna, habitats and communities from the proposed works.

7.9 TERRESTRIAL FAUNA

Numerous fauna investigations have been carried out previously in the Cape Preston area:

- Austeel Biological Survey Phase 1 (HGM et al. 2001);
- Shorebird Survey of Cape Preston (Hassell 2002);
- Balmoral South Environmental Impact Assessment, Flora and Fauna Survey (Maunsell AECOM 2006);
- Fauna Survey Cape Preston Iron Ore Precinct (Phoenix 2009a); and
- Report on Shorebird Numbers and Shorebird Values at Cape Preston (2008a).

Pheonix (2009b) also defined seven fauna habitats throughout the Cape Preston area. The extents of this habitat mapping and the locations of the above fauna surveys are shown in Appendix 1. In order to conduct an assessment of potential impacts to terrestrial fauna as a result of the Proposal, the following additional fauna studies will be conducted:

- Desktop assessment of conservation significant fauna species (including SRE's) that could potentially be found in the area;
- Desktop assessment of whether any suitable conservation significant fauna habitat exists within the proposed disturbance areas;
- Site verification to confirm the presence of the expected habitat, and assessment of the significance of the habitat in the context of the surrounding area; and
- If results show that conservation significant fauna habitat is likely to be located in proximity to the Proposal area, then an assessment of the overall expected impact will be provided.

8 SUMMARY AND CONCLUSION

A significant amount of environmental information is currently available for the Cape Preston area. The area is well understood and provides a setting with few significant environmental impact and management issues. Despite this, the proponent plans to update selected baseline data and complete surveys and modelling activities to ensure that the environmental baseline for the CPE Project is current and focused on the planned infrastructure and activities for the Project. The proponent has consulted with the Office of the EPA and prepared a list of additional studies to support impact assessment and environmental management plan development. The additional studies are expected to provide a sound basis for the development of environmental impact assessment and management documents and detailed project design.

Table 1 summarises the environmental information that is currently available, as well as the studies that will be undertaken and included in environmental documentation.

Table 1: Summary of environmental information (existing and planned)

Factor & Environmental Objective	Status of Current Information	Additional Planned Studies
Flora: To maintain the abundance, diversity, geographic distribution and productivity of flora at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.	Numerous flora and vegetation surveys have been completed within the Cape Preston area. All of Cape Preston (north of the causeway) has already been surveyed. Mineralogy tenements, west of the proposed access road have also been surveyed.	• Level 1 flora and vegetation survey of unsurveyed area of Proposal area • Desktop assessment of likelihood of conservation significant flora being located within Proposal area
Fauna: To maintain the abundance, diversity, geographic distribution and productivity of fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.	**Terrestrial Fauna**: Numerous fauna surveys have been completed within the Cape Preston area. 10 conservation significant fauna were found to potentially occur in the surveyed area. Fauna habitat mapping has been completed over Cape Preston, and Mineralogy tenements west of the proposed access road have also been mapped. **Marine Fauna**: Numerous turtle surveys have been completed across Cape Preston beaches. Cape Preston does not support large numbers of turtle nests.	• Desktop terrestrial fauna habitat survey of unsurveyed area • Site reconnaissance assessment to identify terrestrial fauna habitats and assess potential for conservation significant fauna • Marine noise modelling for pile-driving activities • Assessment of likelihood of significant marine fauna being present at Cape Preston • Development of appropriate marine noise management actions • Risk assessment for IMP

Factor & Environmental Objective	Status of Current Information	Additional Planned Studies
Surface water: To maintain the quantity of water so that existing and potential environmental values, including ecosystem maintenance, are protected.	Drainage lines that intersect the Proposal area are ephemeral, with the most significant being Eramurra Creek, which is expected to be intersected at least once by the access road. Access to Cape Preston will be via the existing causeway and therefore will not result in any additional impact.	No additional studies expected to be required. Creek crossings will be appropriately engineered to minimise restriction to flow and erosion of the access road formation.
Land (marine): To maintain the integrity, ecological functions and environmental values of the seabed and coast.	A marine benthic habitat survey surrounding Cape Preston completed by URS in 2008, and the survey extent covers the area proposed for the Cape Preston East facilities. Coastal process modelling has been conducted for the Cape Preston port using site-specific tidal and wave current data recorded off Cape Preston.	• Benthic habitat survey of trestle jetty footprint and immediate surrounds. • Baseline survey of several key benthic habitat features in the area, such as areas of high coral cover (>25%) at South West Regnard Island, or other background monitoring locations already proposed by existing projects at Cape Preston. • Once the relevant studies have been completed, the impact of jetty construction on significant benthic habitat will be provided by a relevant expert in the field. • Risk assessment for invasive marine pests • Modelling of the impact of the breakwater structure on coastal processes will be conducted. It is proposed to use existing reports developed for the Cape Preston port to supply the raw data required for the modelling.
Water quality (surface, marine or ground): To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards	Baseline water quality data has been collected by existing projects for Cape Preston marine waters. Existing projects have commissioned oil spill modelling for various scenarios throughout the construction and operation of the Cape Preston Port. The results of this modelling were used to develop an OSCP.	• Utilise the modelling and results of the Cape Preston port OSCP to develop credible oil spill scenarios and appropriate management for the construction phase of the Cape Preston East Port. • Near-field brine discharge modelling to determine 'worst case' mixing zones for the 2GL/yr desalination plant outfall.
Light: To avoid or manage potential impacts from light overspill and comply with acceptable standards	Numerous turtle surveys have been completed across Cape Preston beaches. Cape Preston does not support large numbers of nesting sites. Pendoley (2009) recommended that light spill and turtle monitoring be conducted throughout construction of the Sino Iron project. At present it is unclear as to whether this has occurred and whether the information will be able to be made available to IOH.	• Use GIS based on light sources and existing topography • Field study to collect baseline light spill data • Assessment of resultant impact to nesting habitat on the eastern beaches

Factor & Environmental Objective	Status of Current Information	Additional Planned Studies
Heritage: To ensure that changes to the biophysical environment do not adversely affect historical and cultural associations and comply with relevant heritage legislation.	Numerous Aboriginal heritage surveys have been completed across the Cape Preston area.	Heritage surveys with the KM and YM Native Title Claimant Groups are currently being planned and are expected to be completed over the next 18 months.

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SUPPLEMENTARY INFORMATION – EXISTING ENVIRONMENT

Terrestrial Environment

Cape Preston is located approximately 60 km south-west of Dampier in the Pilbara region of Western Australia. The Proposal area is within the Roebourne sub-region of the Pilbara bioregion as per the Interim Biogeographic Regionalisation of Australia.

At a more detailed scale, land systems mapping is often used to indicate fauna habitat types. The land systems map of Cape Preston is shown in Figure 3.

The vegetation found within the Roebourne sub-region is broadly described into four separate categories based on setting (Kendrick and Stanley 2001):

- Coastal plains consist of a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* or *A. pyrifolia* and *A. Inaequilatera;*
- Uplands are dominated with Triodia hummock grasslands;
- Ephemeral drainage lines support Eucalyptus victrix or Corymbia hamersleyana woodlands; and
- Marine alluvial flats and river deltas support samphire, Sporobolus and mangrove communities.

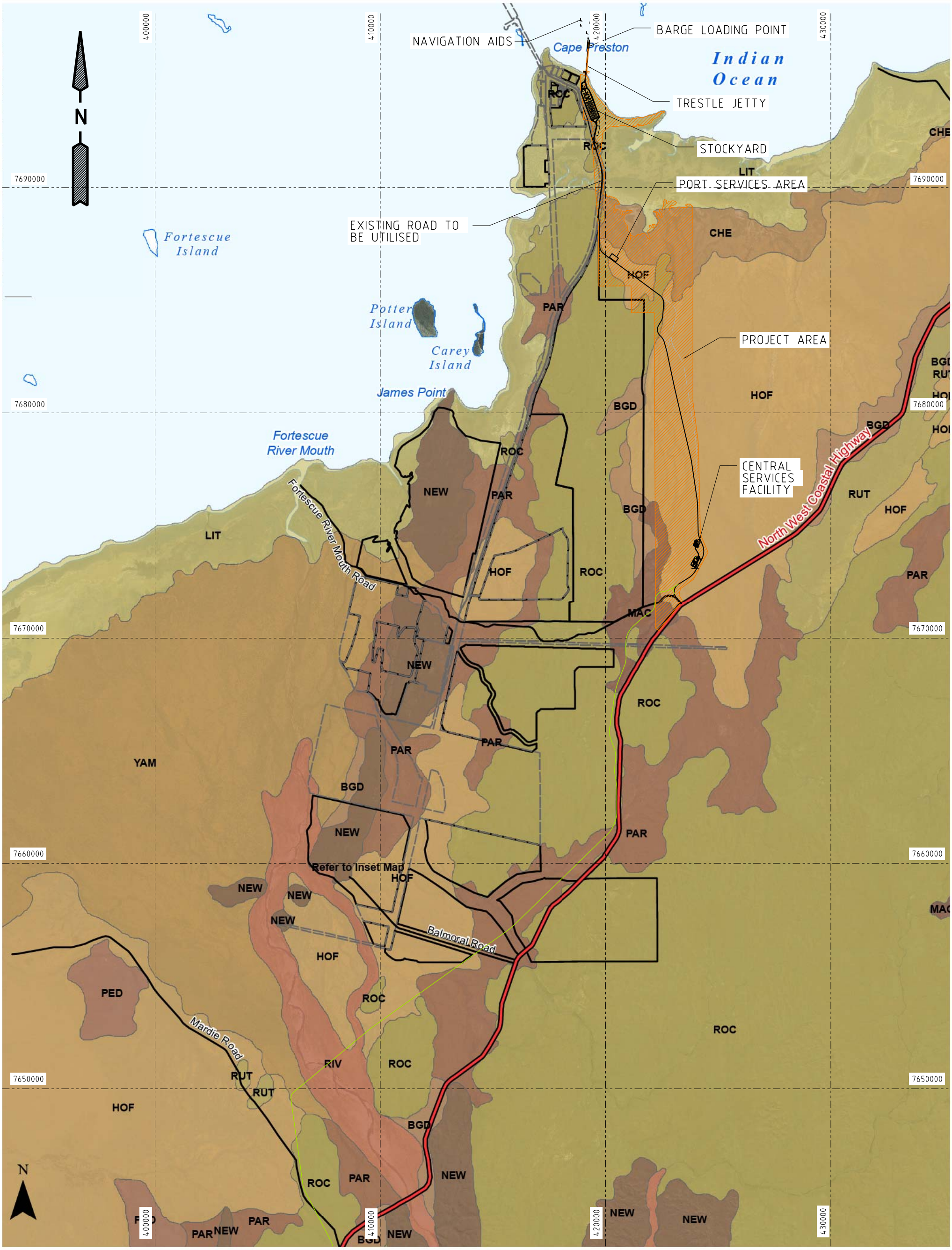
Several vegetation and flora surveys have been undertaken within the Cape Preston region (Figure 4) and a total of 639 flora species from 73 families have been recorded. Vegetation maps have been prepared for the entire Cape area and the area immediately to the west of the CPE project further inland. The detailed vegetation maps can be found in Strategen 2009 which is included in a CD in Appendix 4 to the EPA Referral supporting document**Error! Reference source not found.**.

No species listed as Declared Rare Flora under State legislation or threatened flora under Federal legislation have been recorded in the area during site surveys (Strategen, 2009, Aecom 2009b)). No Threatened Ecological Communities (TECs) or Priority Ecological Communities (PEC) are noted to occur in the areas of similar land system that have been mapped.

Broad terrestrial fauna habitat types recorded in the Cape Preston area include cracking clays, dunes, hilltop/hill slopes/rocky outcrops, mangrove/beach, samphire, stony spinifex plain with or without low shrub and woodland drainage areas (Figure 5) (Phoenix 2008). These habitat types are broadly consistent with land systems and can be used as an appropriate basis for predicting habitat extents of local vertebrate species (Phoenix 2009b).

On-ground surveys conducted by Phoenix (2009a; 2009b) recorded 132 bird, 84 reptile, 24 native mammal and three amphibian species from a number of sites as shown in Figure 6. Of

those species recorded, 32 are listed either under the *Wildlife Conservation Act 1950* and/or the *Environmental Protection and Biodiversity Conservation Act 1999*.



PILBARA LAND SYSTEM

- BGD, BOOLGEEDA
- CHE, CHEERAWARRA
- HOF, HORSEFLAT
- LIT, LITTORAL
- MAC, MACROY
- NEW, NEWMAN
- PAR, PARABURDOO
- PED, PEEDAMULLA
- RIV, RIVER
- ROC, ROCKLEA
- RUT, RUTH
- YAM, YAMERINA

- PRINCIPAL ROAD
- MINOR ROAD
- PROJECT AREA

NOTE: ORIGINAL IMAGE FROM STRATEGEN 2009

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Figure 3: Land systems map for Cape Preston (from Strategen 2009)

NAVIGATION AIDS
Cape Preston
BARGE LOADING POINT
TRESTLE JETTY
STOCKYARD
PORT SERVICES AREA
EXISTING ROAD TO BE UTILISED
PROJECT AREA
CENTRAL SERVICES FACILITY
Indian Ocean
Fortescue Island
Potter Island
Carey Island
James Point
Fortescue River Mouth
Fortescue River Mouth Road
Eramurra Creek
North West Coastal Highway
Edward Creek
McKay Creek
Devil Creek
Du Boulay Creek
Balmoral Road
Mardie Road
Fortescue River
Trevarton Creek
N
400000
410000
420000
430000
7690000
7680000
7670000
7660000
7650000
7640000

VEGETATION SURVEY

- HGM 2001
- MAUNSELL 2006
- MAUNSELL EXTRAPOLATED 2008
- MATTISKE 2007
- ASTRON 2007
- ASTRON GDE SEP 2008
- ASTRON EXTRAPOLATED 2009
- AECOM 2008
- PROJECT AREA
- DEC PRIORITY FLORA

NOTE: ORIGINAL IMAGE FROM STRATEGEN 2009

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Figure 4: Vegetation and flora survey history and coverage (from Strategen, 2009)

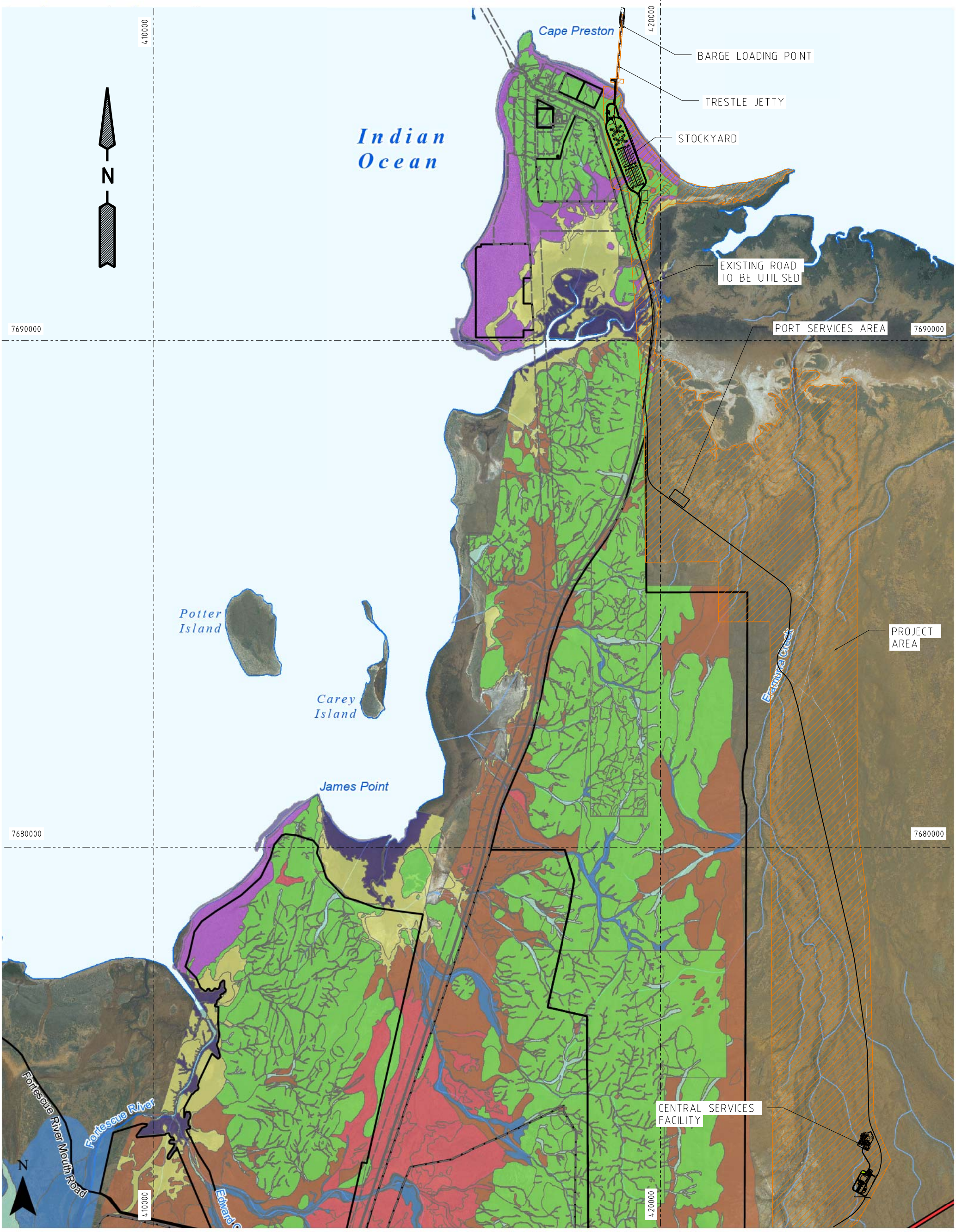

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Figure 5: Cape Preston fauna habitat (from Strategen 2009)

NAVIGATION AIDS
CYCLONE MOORING
BARGE LOADING POINT
TRESTLE JETTY
STOCKYARD
EXISTING ROAD TO BE UTILISED
PORT SERVICES AREA
PROJECT AREA
CENTRAL SERVICES FACILITY
Indian Ocean
South West Regnard Island
Cape Preston
Fortescue Island
Potter Island
Carey Island
James Point
Fortescue River Mouth
Fortescue River Mouth Road
North West Coastal Highway
Eramurra Creek
Mckay Creek
Devil Creek
Edward Creek
Du Boulay Creek
Balmoral Road
Mardie Road
Fortescue River
400000
410000
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430000
7690000
7680000
7670000
7660000
N

MAJOR RIVER
MINOR CREEK
STAGE 3 - SINO IRON EXTENSION
IRON ORE
STAGE 65 - AUSTEEL STEEL
GT. SANDY ISLAND NATURE RESERVE
FAUNA SAMPLING SITE (2008) PHEONIX
FAUNA SAMPLING SITE (2000) MAUNSELL
FAUNA TRANSECT (2006) MAUNSELL
PRINCIPAL ROAD
MINOR ROAD
TRACK
PROJECT AREA

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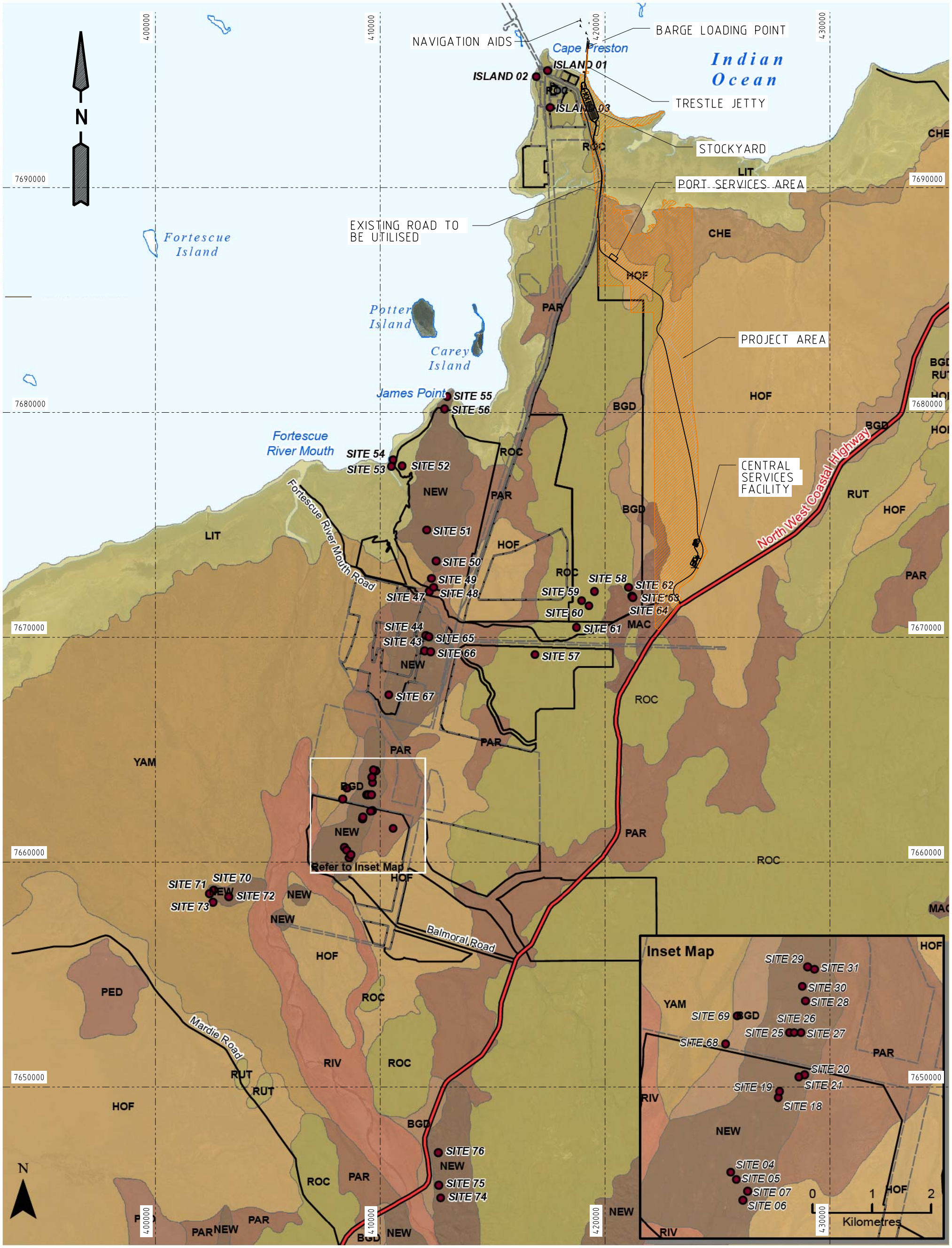
Figure 6: Location of fauna sampling sites (from Strategen 2009)

25 potential Short Range Endemic (SRE) species were also recorded in the Cape Preston area (Strategen, 2009). The sampling sites for SREs is shown in Figure 8.

Five shorebird surveys have also been completed for the Cape Preston area and noted the presence of migratory species. The results are summarised in Strategen (2009) with no species being recorded in internationally significant numbers. Habitat areas were characterised according to Figure 9. Site 6 (the location for the Proposal) is noted to have a sandy beach with rocky headlands at each end and backed by steep dunes (Figure 7). This location is noted to have the lowest numbers of species of any of the sites surveyed (Bennelongia, 2008).

Figure 7: Site 6 – Approximate location for the proposed trestle jetty and breakwater (from Bennelongia 2008)

The Cape Preston area has been intensively surveyed for Aboriginal Heritage associated with the implementation of projects associated with the IOPAA and other nearby projects. A map showing the current register of sites from the Department of Indigenous Affairs (DIA) database is shown in Figure 10. The surveys have covered a small portion of the Project Area for the CPE Proposal and will be supplemented with new surveys for the proposed footprint. Permission to disturb sites where unavoidable will be sought via Section 18 of the *Aboriginal Heritage Act*.



PILBARA LAND SYSTEM

- BGD, BOOLGEEDA
- CHE, CHEERAWARRA
- HOF, HORSEFLAT
- LIT, LITTORAL
- MAC, MACROY
- NEW, NEWMAN
- PAR, PARABURDOO
- PED, PEEDAMULLA
- RIV, RIVER
- ROC, ROCKLEA
- RUT, RUTH
- YAM, YAMERINA

- SRE SURVEY SITE
- PRINCIPAL ROAD
- MINOR ROAD
- PROJECT AREA

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Figure 8: Short range endemic sampling sites at Cape Preston (from Strategen 2009)

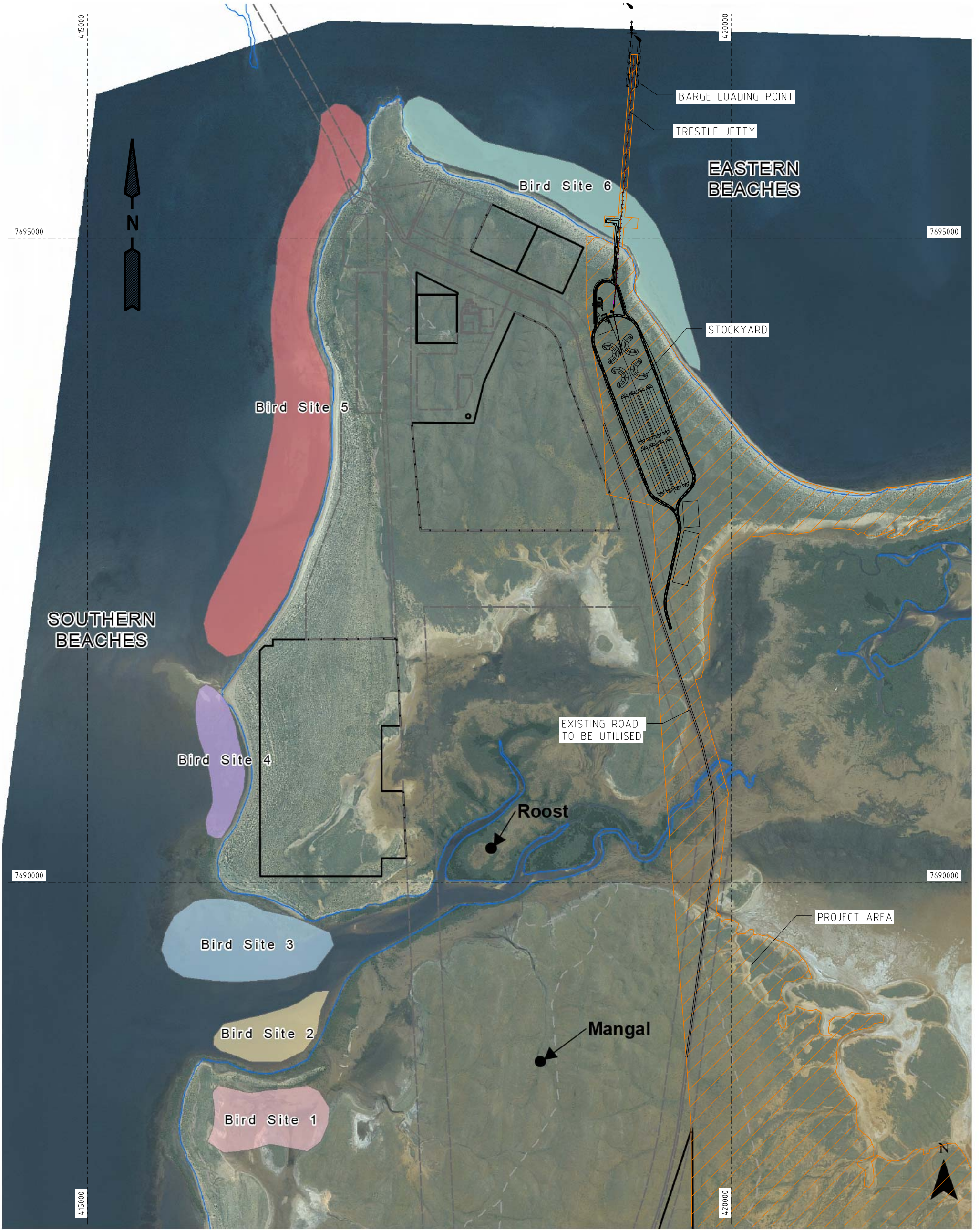

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Figure 9: Location of shorebird survey sites (from Strategen, 2009)

400000 410000 420000 430000 440000

7690000

7680000

INDIAN OCEAN

NAVIGATION AIDS
CYCLONE MOORING
TRESTLE JETTY
STOCKYARD
Cape Preston
EXISTING ROAD TO BE UTILISED
PORT SERVICES AREA
PROJECT AREA
PORT ACCESS ROAD
CENTRAL SERVICES FACILITY
Forty Mile Beach
Devil Creek ADCDP Onshore Gas Supply Pipeline
To Karratha 50km
Dampier to Bunbury Natural Gas Pipeline
North West Coastal Highway
Fortescue River
Fortescue River Road

Cape Preston
Karratha
Pannawonica
Exmouth

North West Coastal Highway to Cape Preston Overview

N

0 1 2
Kilometres

Legend

- North West Coastal Highway
- Minor Road
- Secondary Road
- Existing Causeway & Road
- Watercourse
- Mineralogy PTY Ltd Tenement
- Project Area
- Aboriginal Heritage Sites

Scale (A3): 1:120,000

Datum: Geocentric Datum of Australia 1994

Projection: Map Grid Australia, Zone 50

Sources: Topography: Geoscience Australia, GEODATA Topo 250KV3, © Commonwealth of Australia, 2006, DEM: GA SRTM, 1sec v1.3

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Figure 10: Project Map showing DIA registered Aboriginal Heritage Sites

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Marine Environment

The Cape Preston marine environment experiences a combination of strong tidal currents, episodically strong winds and relatively shallow bathymetry which results in a well flushed marine environment. Water quality sampling undertaken by URS (2008b) shows little evidence of stratification even at neap tides, with high levels of dissolved oxygen at all times. The turbidity in the region is at times high, due to the episodic high volume river flows, dominant marine sediment types, strong local winds, large tides and common occurrences of cyanobacterial blooms (URS 2009). Nutrient concentrations have been found to be slightly above ANZECC & ARMCANZ (2000) guideline values (HGM 2002).

A basalt outcrop occurs at the Cape and anchors the coastline which is further protected by a shallow shelving rock platform offshore (GEMS 2008a). The major source of energy responsible for distribution of sediment in the region is cyclone induced storm waves. The Cape itself is an erosional area whilst sediment is transported down both the eastern and western coastlines of the Cape. On the western side it accumulates in the lee of Preston Spit to form aggrading sand dunes. On the eastern side of the Cape, the beach has been shown to have been relatively stable over the last 40 years and acts purely as a sediment transport corridor to the tidal flats which occur further east.

During non-storm periods, there is a low volume northerly sediment transport along the west coast of the Cape in summer driven by prevailing westerly winds. This coast is protected during the winter from the easterly winds which prevail at this time of year and little to no sediment transport occurs.

Low volumes of sediment transport may occur along the eastern side of the Cape during winter, and a similar reversal probably occurs during the summer sea breezes from the northwest quarter (Strategen, 2009).

The seafloor and intertidal zone habitats around Cape Preston consist of:

- Barren sand/rubble veneered limestone pavement;
- Algal dominated limestone pavement;
- Sand/mud flats to the east of Cape Preston;
- Low to moderate percentage coral cover along a wide belt on the western side of the Cape Preston platform and a narrow band along the west and north side of Preston Island;
- Mangrove system at Mangrove Creek, on the tidal flats that join Cape Preston with the mainland and on the western shoreline and embayments between the creek and the mouth of the Fortescue River; and
- Algal mats occur predominantly on high tidal flats north of Mangrove Creek and in the upper reaches of Mangrove Creek.

Benthic habitats are shown in Figure 11.

MARINE HABITATS

INTERTIDAL

- SAND/MUD FLATS
- SAND/RUBBLE VENEERED LIMESTONE PAVEMENT
- ALGAE DOMINATED LIMESTONE PAVEMENT

SUBTIDAL

- PATCHY SEAGRASS
- SAND VENEERED LIMESTONE PAVEMENT
- ALGAE DOMINATED LIMESTONE PAVEMENT (INCLUDING LOW % CORAL & SPONGE COVER)
- DEEP SAND/SILT

CORAL COMMUNITIES

- LESS THAN 10% CORAL COVERAGE
- MORE THAN 25% CORAL COVERAGE
- 10 - 25% CORAL COVERAGE

- PROJECT AREA

NOTE: ORIGINAL IMAGE FROM STRATEGEN 2009

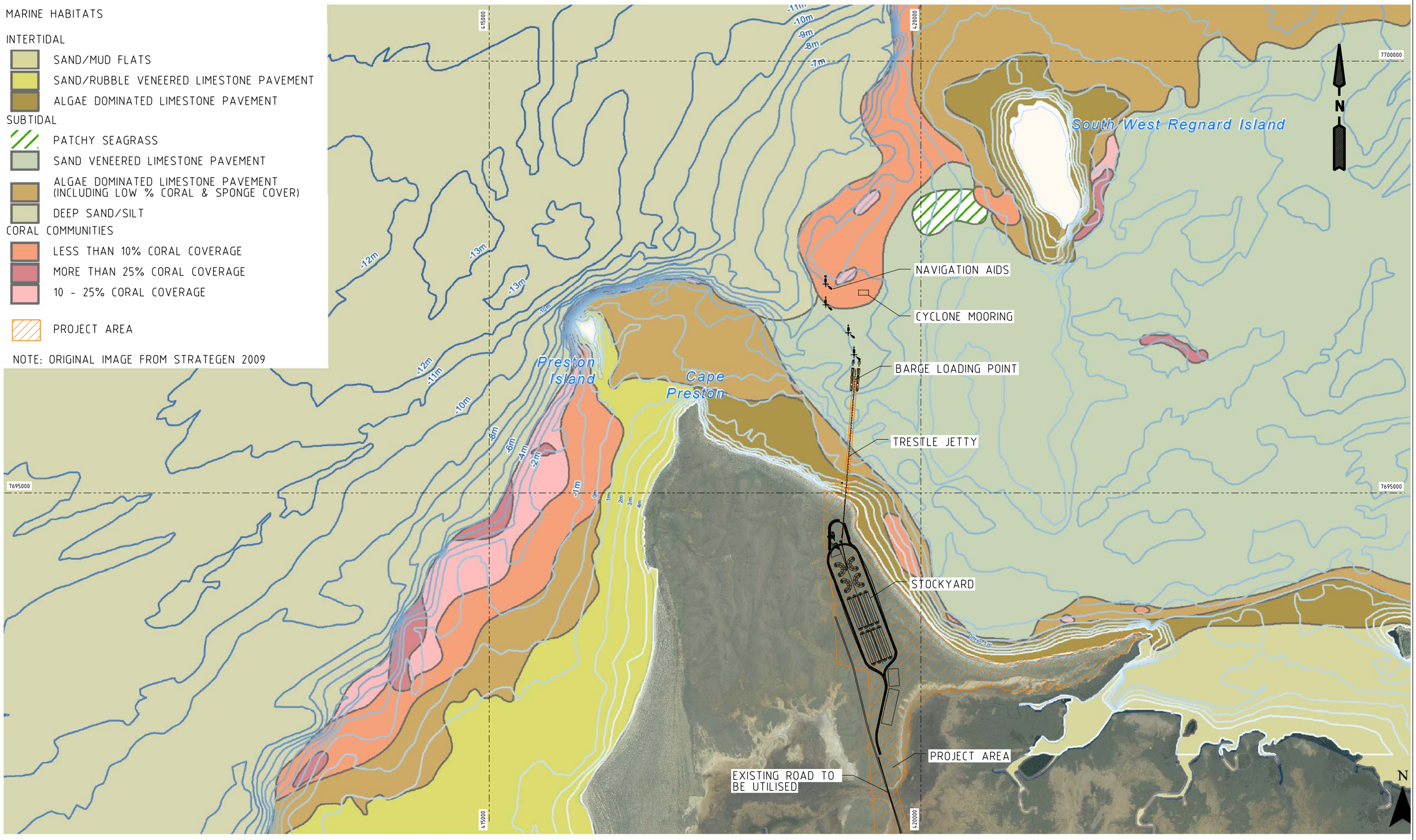

Figure 11: Cape Preston benthic habitats (from Strategen, 2009)

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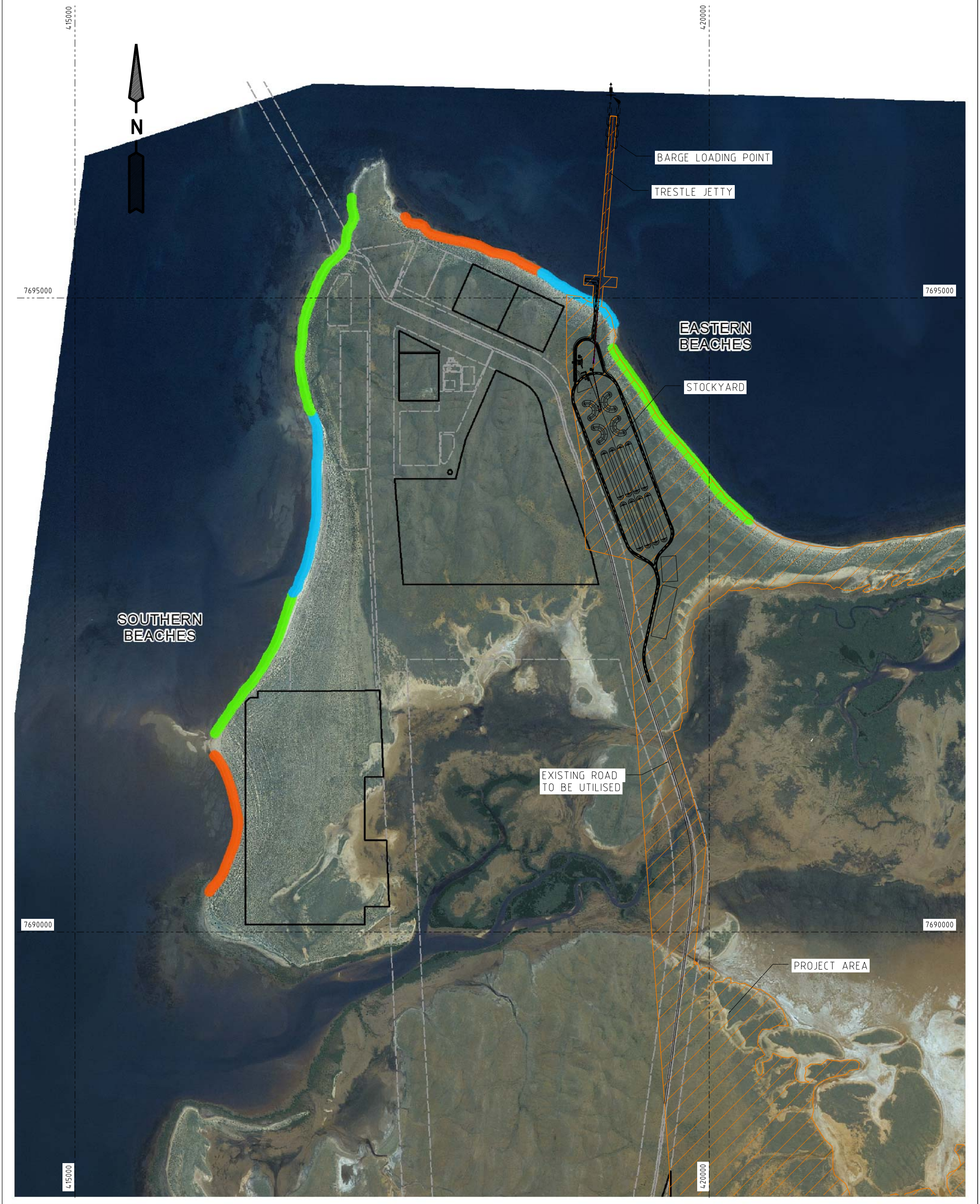
Sampling of aquatic fauna was carried out for the original Sino Iron Project (HGM 2000). The tip of Cape Preston is characteristic of benthic communities on rocky shores and in shallow waters with reasonably large water movements. Prawns, corals, sponges, ascidians and zoanthids comprise the diverse benthic fauna community.

The Cape Preston beaches are not expected to be highly significant for nesting marine turtles. Numbers of turtles nesting were not in regionally or nationally significant numbers compared with other flatback turtle rookeries in the Pilbara region, for example, over 1,700 flatback turtles nest annually at Mundabullangana, north-east of Cape Preston (Pendoley, 2009). This conclusion is supported by previous survey results, which report a similarly low incidence of nesting activity. The overall incidence of nesting activity (tracks and body holes) for all species was 34 occurrences in 2000 (CALM, 2000), 40 occurrences in 2002/2003 (Maunsell, 2004), zero occurrences in 2004 (CALM, 2005), 31 occurrences in 2006 (DEC, 2006) and 45 occurrences in 2009 (Pendoley).

The survey information available indicates that the northern end of the western beach is a favoured nesting area for hawksbill turtles (*Eretmochelys imbricate*), the south-eastern beaches are favoured by the green turtle (*Chelonia mydas*) and south western beaches by flatback turtles (*Natator depressus*) (Pendoley 2009) (Figure 12).

In the Dampier Archipelago/Cape Preston region, small numbers of dugongs (*Dugong dugon*) have been sighted in the shallow, warm waters in bays and between islands, including at East Lewis Island, Cape Preston, Regnard Bay, Nickol Bay and west of Keast Island.

Humpback whales migrate along the WA coast in winter and early spring but usually pass more than 20 km from the coastline along the 40 m depth contour. The whales are not known to aggregate in the waters off Cape Preston, but it is possible that individuals pass through the area (Strategen, 2009).



MOST NESTING ACTIVITY (>30 ACTIVITIES OVER FIVE SURVEYS)

SOME NESTING ACTIVITY (10 - 30 ACTIVITIES OVER FIVE SURVEYS)

MINIMAL NESTING ACTIVITY (<10 ACTIVITIES OVER FIVE SURVEYS)

ACTIVITIES = EVIDENCE OF NESTING INCLUDING OLD NESTS/BODY HOLES, PREDATED NESTS, TURTLE TRACKS & HATCHING TRACKS

PROJECT AREA

NOTE: ORIGINAL IMAGE FROM STRATEGEN 2009

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Figure 12: Turtle nesting beaches at Cape Preston (from Strategen 2009)

APPENDIX 4 – ELECTRONIC INFORMATION

CD containing:

- Strategen Environmental Consultants Pty Ltd, 2009, *Mineralogy Expansion Proposal – Public Environmental Review*, prepared for Mineralogy Pty Ltd, Leederville, WA, October 2009
- LeProvost Environmental Pty Ltd 2008, *Sino Iron Project – Marine Management Plan*, prepared by LeProvost Environmental Pty Ltd in association with GEMS, URS Australia and CITIC Pacific Mining Management Pty Ltd, Perth, WA, December 2008.
- Phoenix Environmental Sciences 2009, *Short-range Endemic Invertebrate Fauna Survey of the Mineralogy Cape Preston Iron Ore Mining Project and Impact Assessment of the Mineralogy Expansion Proposal*, prepared for Mineralogy Pty Ltd.
- Electronic data (shape files) for project infrastructure.