INDEPENDENT POWER PRODUCERS PROGRAMME:
EIA FOR A FLOATING POWER PLANT, PORT OF NGQURA

EASTERN CAPE PROVINCE OF SOUTH AFRICA

ENVIRONMENTAL SCOPING REPORT

DRAFT

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF PLATES

EXECUTIVE SUMMARY

INTRODUCTION

The Department of Energy (DoE) through its Independent Power Producer (IPP) Office has launched a Gas to Power project. The aim of this project is to increase the use of gas in South Africa's energy supply mix for generating electricity. As there are limited local gas resources gas will most likely need to be imported, in the form of liquefied natural gas (LNG), through one of the national ports. The development of gas supply infrastructure will also help promote the use of gas in the broader industrial environment.

It will take about 3 to 5 years to develop the required LNG terminals. Due to the current demand for additional electricity generating capacity, the IPP Office is also considering alternative means of early power generation in the form of mobile floating power plants (FPP). Power barges or power ships have been identified as an effective form of relatively quickly mobilising additional power generation capacity that can feed into South Africa's national grid. They will, however, need to be mobilised in one or more of the national ports, which offer the required protected waters and supporting infrastructure. Transnet National Ports Authority (TNPA) supports this initiative and are helping to facilitate and find the most suitable location for FPP units within the Port of Ngqura, which is located immediately adjacent to the Coega Industrial Development Zone (IDZ) in the Eastern Cape (Figure 1 included below).

This project involves the permanent mooring of an FPP vessel in the Port of Ngqura for a 5-15 year project life, with a floating fuel storage facility (a bunker barge) moored at any available quay. Power will be evacuated from the power barge via an overhead line to a switching yard. From here power will be evacuated via a 132 kV line over a distance of approximately 6 km to the Dedisa substation, which currently has an available capacity of 600 MW.

THE EIA PROCESS AND APPLICABLE LEGISLATION

This report is the first of a number of reports that will be produced in the EIA process. This Scoping Report has been produced in accordance with the requirements set out in section 21 as well as Appendix 2 of the EIA Regulations (GNR.982), which clearly outlines the content of a Scoping Report, and sections 39-44 which cover the activities necessary for a successful Public Participation Process (PPP).

Three lists of activities, published on 4th of December 2014, as Government Notice Numbers R.983, R.984, and R.985 define the activities that require, respectively, a Basic Assessment (applies to activities with limited environmental impacts), or a Scoping and Environmental Impact Assessment (applies to activities which are significant in extent and duration).

Based on the NEMA EIA listed activities identified by EOH CES, namely the activities in Listing Notice 2 GNR.984, the proposed project's EIA application will be subject to the scoping and environmental impact assessment reporting process as stipulated in the regulations. The relevant authority is the National Department of Environmental Affairs.

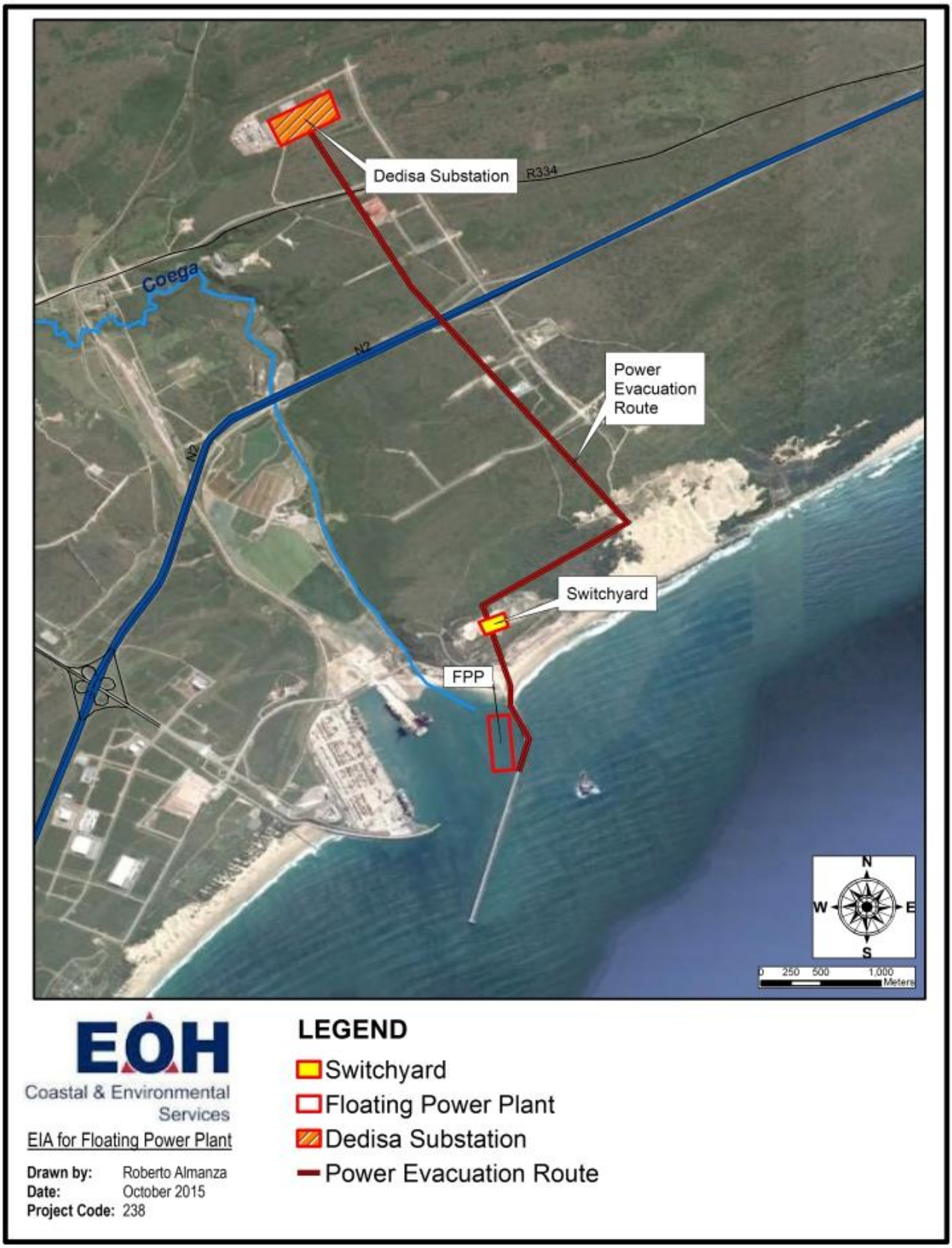

Figure 1: Proposed Project Layout

PROJECT DESCRIPTION

The FPP is to be moored in protected waters within the Port of Ngqura. A multi-criteria analysis to determine the preferred location of mooring sites was undertaken at the onset of the proposed project. The outcome of this analysis resulted in only two suitable locations for the mooring of a FPP. The first option is located at the seaward end of the container terminal, and is protected by the end of the western breakwater, which forms a small embayment on the southern end of the container quay. This area is presently not utilised. The second option is located at the landward end of the eastern breakwater (within the Port), approximately 200m from the shoreline. At this location the FPP would be moored to dolphin mooring structures approximately 50m from the breakwater, where water is deep enough.

Both of these alternatives will be discussed and assessed in the EIAR, however at the moment the preferred option from a technical and port operational perspective is along the eastern breakwater (Option 2). Power will be evacuated from the power barge via an overhead line to a switching yard. From here power will be evacuated via a 132 kV line over a distance of approximately 6 km to the Dedisa substation, which currently has an available capacity of 600 MW, as described above. A section of the line from the switching yard to the substation may be laid underground. A detailed description of the components of the proposed development is included in the sections below.

THE NATURAL ENVIRONMENT

Climate

The Eastern Cape has a complex climate. There are wide variations in temperature, rainfall and wind patterns, mainly as a result of movements of air masses, altitude, mountain orientation and the proximity of the Indian Ocean. Climate data is readily available for Port Elizabeth which, due to its proximity to the proposed project area, will be representative of the climate for this project site.

The wind regime for the Port Elizabeth area is dominated by westerly and north-westerly flow fields representing the pre-frontal conditions; and south-westerly flow fields representing the frontal conditions. The south-easterly and south-westerly wind flow (land breeze) increases during the daytime while westerly and north-westerly wind flow regimes increase during the night (sea breeze). The proposed project area is subject to strong winds from the west and west-south-west (41% combined frequency) all year round, and east (15%) from October through to March. These winds occur mainly throughout the day and may generate a significant amount of fugitive dust. Diurnal variations in the wind regime occur which are due to the influence of land-sea breeze circulation on the airflow of the region.

Port Elizabeth has a bimodal rainfall pattern with an average of 624 mm annually, with peaks in spring and autumn. On average, October has the most rainfall days with January having the least. The highest precipitation occurs in August. Algoa Bay is situated near the junction of the temperate and subtropical climatic regions, and it has a warm temperate climate with the average daily temperature ranging from 25ºC (summer) to 12ºC (winter). January has the highest mean temperate (23°C) with June and July having the lowest (11°C) overnight average temperature. Exceptionally high temperatures may be experienced during berg wind conditions, which occur frequently during autumn and winter. Extreme temperatures also occur during summer, with little accompanying wind.

Topography, geology and soils

The proposed project area is located in close proximity to the southern cape coastline and therefore consists of a coastal topography dominated by sand dunes overlying relatively recent erodible geological deposits. Generally the IDZ consists of level ground, but the Coega River valley behind the Ngqura Port is flanked by fairly steep slopes where the river has cut into the coastal plain. The altitude of the project area does not exceed 80 m above sea level at any point and is located on the coastal plateau on the eastern side of the Coega River Valley.

The proposed project area is underlain by a bedrock of quartzite strata belonging to the Peninsula Formation of the Table Mountain Group (Cape Super Group). This formation consists of coarse-grained super-mature sandstone and is highly resistant to erosion. It forms the bedrock of Algoa Bay and outcrops are evident as islands off the coast (St Croix, Jahleel, Bird and Brenton) as well as several outcrops on land such as Coega Kop. The beaches comprise dune and marine sands and the whole bay consists of unconsolidated sand with the exception of Cape Recife, Woody Cape and Cape Padrone (CEN, 1997).

The geology of the Coega IDZ is characterised by coastal limestone, overlain by calcareous sands blown onshore. Three marine incursions and subsequent limestone deposition phases seem to have occurred, each progressively younger and at lower altitude seaward. The geology towards the sea consists of unconsolidated sands and fluvial sediments within the Coega floodplain. The land north of the N2 national road is dominated by coastal limestone.

The soils of the IDZ can be described as relatively deep, red, lime-rich sandy clay loams. The proposed site is characterised by coastal sands, and sandy soils and lime-containing lithosols.

Vegetation and Floristics

The Metropolitan Open Space System (MOSS) defines the following vegetation types in the study area:

Sandy Beaches - classified as Azonal beach types dominated by the deposition of sand. Approximately 86.7% of the intact habitat remains. This vegetation type is classified as “Least Threatened”.

Algoa Dune Thicket is a suptropical thicket vegetation type dominated by protected trees such as the Milkwood (*Sideroxylon inerme*) and Candlewood (*Pterocelastrus tricuspidatus*). Waxberry shrubs are abundant in this vegetation type and rare succulents such as *Cotyledon adscendens* are characteristic. This vegetation type is present on calcareous sandstone, silt/siltstone, shelly limestone and coquinite. Approximately 38.4% of the intact vegetation remains. This vegetation type is classified as “Vulnerable”.

Colchester Strandveld is a subtropical thicket vegetation type consisting of thicket clumps in a matrix of shrubland (MOSS, 2009). This vegetation type is present on aeolianite/calcareous sandstone/sand. Approximately 43.4% of the intact vegetation remains. This vegetation type is classified as “Vulnerable”.

Grassridge Bontveld is a subtropical Valley Thicket consisting of small clumps of Sundays Valley Thicket in a matrix of veld that consists of a combination of species that are characteristic of fynbos (*Acmadenia obtusata, Euryops ericifolius*), succulent karoo (*Pteronia incana*) and grassland (*Themeda triandra, Eustachys paspaloides*). This unit contains many highly localized endemics and is found on the Alexandria Formation. Approximately 90.9% of the intact vegetation remains. This vegetation type is classified as “Vulnerable”.

A Conservation Assessment and MOSS plan was done for the Nelson Mandela Bay Municipal area in 2009. Various outcomes relevant to the study site include the following:

- The most southern section of the proposed power line is located within an area classified as a Critical Biodiversity Area (CBA). CBA areas should form part of the protected area system if found not to be degraded beyond the ability for restoration. Suggested land use guidelines are biodiversity conservation, game farms, and low density settlements; provided they are all ecologically sustainable.
- The ecosystem status of the majority of the proposed development site is classified as 'Vulnerable'. According to MOSS, Vulnerable areas outside of CBAs must be managed for sustainable development. This means that some loss of natural habitat is allowed but this needs to be within the limits of cumulative impacts of the transformation threshold of the Ecosystem Status.
- Vegetation types found on site include Grassridge Bontveld, Colchester Strandveld, Algoa Dune Thicket and Sand Beaches.

Fauna

Amphibians

Amphibians are an important and often neglected component of terrestrial vertebrate faunas. They are well represented in sub-Saharan Africa, from which approximately 600 species have been recorded (Frost, 1985). However, distribution patterns in southern Africa are uneven both in terms of species distribution and in population numbers (du Preez and Carruthers, 2009). A relatively rich amphibian fauna occurs in the Eastern Cape, where a total of 32 species and sub-species occur. This represents almost a third of the species known from South Africa. Knowledge of amphibian species diversity in the study area is limited. However, according to the Animal Demographic Unit's Reptile Database, 16 species of frog have been documented in the Quarter Degree Square (QDS) in which the project area falls. Of these 16 species, none are listed on the IUCN Red List nor as a schedule 1 on the Provisional Nature Conservation Ordinance (PNCO) list. However, all frogs and toads are listed as schedule 2 species on the PNCO list and are therefore considered species of conservation concern. Permits will be required for the removal of all frogs and toads.

Reptiles

South Africa has 350 species of reptiles, comprising 213 lizards, 9 worm lizards, 105 snakes, 13 terrestrial tortoises, 5 freshwater terrapins, 2 breeding species of sea turtle and 1 crocodile (Branch, 1998). Of those 350 reptile species, the Eastern Cape is home to 133 which include 21 snakes, 27 lizards and eight chelonians (tortoises and turtles). The majority of these are found in Mesic Succulent Thicket and riverine habitats. The Animal Demography Unit historical records indicate that 83 species of reptiles are likely to occur in the project site. Only one Near Threatened species (*Nucras taeniolata - Albany Sandveld Lizard)* and one Critically Endangered species (*Bitis albanica- Albany adder*) on the IUCN Red Data List are likely to be found in the study area. However, all lizards and tortoises are listed as a schedule 2 species on the PNCO list and will therefore require permits for their removal.

Birds

Nine bird species are endemic to South Africa, but there are no Eastern Cape endemics. However, there are 62 threatened species within the Eastern Cape Province (Barnes, 2000). Most of these species occur in grasslands or are associated with wetlands, indicating a need to conserve what is left of these ecosystems (Barnes, 2000). According to Southern African Bird Atlas Project 2 (SABAP2) for the QDS 3325DA and 3325DC, 369 bird species (including marine species) have distributions which incorporate the project area. Species include; The Blue Crane (*Anthropoides paradiseus*), which is a critically endangered species according to NEMBA, as well

as a listed species on Appendix II of CITES; Denham's Bustard (*Neotis denhami*) which is listed as protected on the NEMBA list; and the Martial Eagle (*Polemaetus bellicosus*) which is listed as threatened.

Mammals

Large game makes up less than 15% of the mammal species in South Africa and a much smaller percentage in numbers and biomass. In developed and farming areas, this percentage is greatly reduced, with the vast majority of mammals present being small or medium-sized.

Eighty-nine mammal species have distribution ranges which include the project area. According to NEMBA, three protected mammal species (South African Hedgehog, Honey Badger and Cape Fox) and one vulnerable species (Leopard) have distributions that coincide with the project area. However, the likelihood of Leopard and/or Cape Fox occurring on site is **low** as human activity within the area is likely to force the species away from the site. The White tailed mouse, which has a distribution that coincides with the project area is listed as Endangered. Sclater's Mouse Shrew and Schreibers Long-fingered bat are both listed as Near Threatened on the IUCN Red List and have distributions which co-inside with the project area.

Surface and Groundwater

The Coega River is located to the west of the proposed project area. The Coega River Valley represents the only major incision into the coastal landform in the area between the Swartkops and Sundays rivers. Over time, the Coega River has created a floodplain valley between 400m and 1 000m wide. It is a relatively small sand-bed river, and is the most significant surface water feature associated with the Coega IDZ. Due to the absence of water within the Coega River for most of the year and the impermeability of underlying clays, flow may primarily be made up of run-off and effluent. The Coega estuary is the only major 'wetland'-defined area surrounding the proposed project area, but there are also a number of small wetlands surrounding the proposed site.

The southern portion of the IDZ is underlain by an artesian aquifer formed by sandstones and quartzites of the Table Mountain Group. Confining this aquifer are a succession of eastward-thickening Cretaceous formations (Uitenhague Group) up to 1 200 m thick near the coast. Groundwater levels in the Coega area are generally between 3 and 5 m below surface i.e. just above the contact between the permeable sands and the underlying impermeable clays. The groundwater flow direction is to the southeast, following the surface water drainage direction (Jacobs, 2008).

Marine Environment

In 2005, the Bird Island group and St. Croix Island group both located in Algoa Bay were proclaimed as part of the Greater Addo Elephant National Park. In addition to this, these islands have been proclaimed as an Important Bird Area (No SA 095). According to BirdLife International both of the Algoa Bay Island groups are of considerable importance as they are the only islands along a 1,777 km stretch of coastline between Cape Agulhas and Inhaca Island in Mozambique. Fourteen seabird, several shorebird and 33 terrestrial bird species have been recorded on the Algoa Bay Islands and eight seabird species currently breed there.

There are four globally threatened species, namely African Penguin, Cape Cormorant, Cape Gannet and the African Black Oystercatcher, and two regionally threatened species, namely Caspian Tern (*Sterna)*, and Roseate Tern. The species reaching the 1% or more congregatory threshold[1] are Kelp Gull (*Larus dominicanus)* and Antarctic Tern, while Swift Tern (*Thalasseus*

[1] This means 1% of the global population congregates in the area.

bergii) and Ruddy Turnstone (*Arenaria interpres)* are thought to reach the 0.5% or more congregatory threshold (BirdLife International). Jahleel Island, which is the closest island to the proposed project area (less than 1 km), forms part of the St Croix Island Group.

In addition to the above, the proposed area and surrounds are the eastern most distribution of the Cape fur seal. Breeding occurs on Black Rocks in Algoa Bay (Mills and Hes, 1997).

On intertidal reefs, red algae dominate particularly *Plocamium corallorhiza, P. Cornutum, Pterosiphonia cloiophylla, Hypnea spicifera, Chondrococcus hornemannii, Gigartina paxillata, Laurencia flexuosa* and articulated corallines *Amphiroa bowerbankii, A. ephedraea, Arthrocardia duthiae, Cheilosporum cultratum, Corallina* sp. and *Jania* sp. (Seagrief, 1988). Brown algae are also an important component, particularly species of *Dictyota* and *Dictyopteris, Zonaria subarticulata, Ecklonia biruncinata* and *Iyengaria stellata*. Green algae such as *Caulerpa filiformis, C. racemosa, Bryopsis* spp. and *Codium* spp. play a subordinate role to intertidal community composition (Seagrief, 1988). On intertidal and shallow subtidal reefs grazers and filter feeders are the most prolific fauna. In particular molluscs such as *Perna perna* and *Petella cochlear* and the *ascidian Pyura stolonifera* dominate the intratidal and shallow subtidal (Beckley, 1988). Deeper reefs are dominated by a high diversity of filter feeders, particularly colonial ascidians, sponges, soft corals and bryozoans (Porter *et al*., 2012).

SOCIO ECONOMIC ENVIRONMENT

The project is located within the Nelson Mandela Bay Municipality (NMBM) within the Sarah Baartman District Municipality (formerly the Cacadu District Municipality) of the Eastern Cape Province. The NMBM is divided into several Wards which are governed by separate councillors. The project falls into Ward 53 and borders Ward 60. The Coega IDZ is located within these wards and falls under the stewardship of the Coega Development Corporation (CDC). The administration of the Port of Ngqura falls under the Transnet National Ports Authority (TNPA).

STAKEHOLDER ENGAGEMENT

The general public, key stakeholders, landowners, adjacent landowners and government authorities at National, Provincial and Local level, where notified of the proposed development on the 23rd of October 2015, by the following means:

Site Notice - Due to the inaccessibility of the site (in the Coega IDZ), the CDC has an agreement with DEDEAT/DEA that site notices for projects situated in the IDZ can be placed on the e-notice board in the CDC main building and no addition site notices need to be erected. Site notices has therefore been digitally displayed at the CDC as per common practice. After discussion with Transnet Port Authority, additional site notices were placed at the site entrance to the Port Registration Office, at the Port entrance and at the Bluewater Bay Super Spar.
Letters of notification and Background Information Documents - Letters of notification and Background Information Documents were sent out via registered mail as well as via e-mail (for those stakeholders for which e-mail addressed are available) on the 30th of October 2015.
Advertisements - Newspaper advertisements were placed in The Herald and Die Burger on the 2nd of November 2015 in order to notify the general public of the proposed development.
Open house/public meeting - an open house will be held at the conference facilities at Coega Village in the IDZ during the release of the Draft Scoping Report. Should there be significant interest from stakeholders in the general Port Elizabeth area, an additional meeting will be held in Port Elizabeth.

IDENTIFICATION OF ALTERNATIVES

Various alternatives have been identified (Chapter 2 of this report) and will be investigated in the EIAR phase. These include, but are not limited to, the no development option, layout options, technology alternatives and operational alternatives.

KEY ISSUES

The following key issues have been identified and assessed in Chapter 6 of the Scoping Report:

- Topography and geology
- Land Use
- Top soil and soil erosion
- Surface and groundwater
- Disruption to terrestrial ecosystems
- Disruption to aquatic ecosystems
- Disruption to marine, near-shore and coastal ecosystems
- Health and safety
- Impacts on Archaeological, Palaeontological and/or Cultural Sites
- Social disruptions
- Social benefits from the project
- Provision of electricity
- Noise Impacts
- Traffic
- Air Quality
- Alignment with planning instruments

Cumulative impacts

- Discharge of effluent into the marine environment
- Noise emissions
- Air emissions

THE WAY FORWARD – EIA PHASE

This Draft Scoping Report includes the Plan of Study (PoS) for the EIA phase, which includes Terms of Reference (ToR) for specialist studies as they are currently envisaged and the methodology that will be used to assess impacts and rate their significance. Consultation National Department of Environmental Affairs will be ongoing throughout this EIA. However, it is anticipated that DEA will provide relevant comment with respect to the adequacy of this Plan of Study for the EIAR, as it informs the content of the Environmental Impact Assessment Report (EIAR) and its sufficiency.

The significance of impacts is assessed based on specialist input using a standardised rating methodology. “Significance” includes the spatial and temporal scales of impacts, the likelihood of impacts occurring, and the severity of impacts or potential benefits.

The following specialist studies are proposed for the EIA phase of the proposed development:

- Terrestrial Ecological Assessment (Transmission Line)
- Marine Ecology Assessment and Modelling
- Cultural, Heritage and Palaeontology Assessment
- Air Quality Assessment
- Noise Assessment
- Marine Traffic Risk Assessment

An EIAR that will be prepared will draw on the information contained in the above specialists studies to describe the nature of the proposed project and its environmental setting, summarise the results of the specialist studies, and recommended practical and reasonable mitigation measures to avoid, minimise or offset any negative impacts. In this regard the EIA Phase will actively engage and contribute to the planning process so as to mitigate environmental impacts through improved design and layout. The overall objective of the EIAR is to provide DEA with sufficient information about the proposed project and its associated environmental and social impacts on which to make an informed decision.

An Environmental Management Programme (EMPr) will be prepared that provides practical and actionable management, monitoring and institutional measures to be undertaken during the construction, operation and decommissioning of the proposed development. Such measures are designed to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The public participation process initiated in the Scoping Phase will continue throughout the EIA Phase.

A critical outcome of the EIA phase will be the Draft EIAR and Draft EMPr. These reports will be released for public review and comment, and will also be presented to I&APs during public meetings, before they are finalised and presented to DEA. An environmental authorisation may be granted or rejected by the authority based on the review of these reports. The decision will be advertised, and registered I&APs will also be informed in writing and given the opportunity to appeal the decision.

LIST OF ABBREVIATIONS

ABET	Adult Basic Education and Training
ACME	Angola Consulting Mining Engineers
ADU	Animal Demography Unit
BFD	Bird Flight Diverters
CBA	Critical Biodiversity Areas
CBD	Central Business District
CDC	Coega Development Corporation
CES	Coastal & Environmental Services
CESA	Consulting Engineers South Africa
CIDZ	Coega Industrial Development Zone
CITES	Convention on International Trade in Endangered Species
CSIR	Council for Scientific and Industrial Research
CTS	Cedar Tower Services
DBSA	Development Bank of South Africa
DEA	Department of Environmental Affairs
DEDEAT	Department of Development, Environmental Affairs and Tourism
DEIAR	Draft Environmental Impact Assessment Report
DFP	Development Framework Plan
DME	Department of Minerals
DoE	Department of Energy
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act
ECBCP	Eastern Cape Biodiversity Conservation Plan
ECD	Early Childhood Development
ECPHRA	Eastern Cape Provincial Heritage Resource Agency
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIAR	Environmental Impact Assessment Report
EMP	Environment Management Plan
EMPr	Environmental Management Programme
FET	Further Education and Training
FPP	Floating Power Plant
GoSA	Government of South Africa
GSP	Gross Domestic Product
HA	Hectares
I&AP	Interested and Affected Parties
IBA	Important Bird Area
IDP	Integrated Development Plan
IDZ	Industrial Development Zone
IFC	Internal Finance Corporation
IFO	Intermediate Fuel Oil
IMO	International Maritime Organisation
IPAP	Industrial Policy Action Plan
IPP	Independent Power Producers
IRP	Integrated Resources Plan
IUCN	International Union for Conservation of Nature
KPIs	Key Performance Indicators
KZN	KwaZulu-Natal
LED	Local Economic Development
LNG	Liquefied Natural Gas

LTMS	Long Term Mitigation Scenario
MARPOL	Marine Pollution
MOSS	Metropolitan Open Space System
MSDF	Metropolitan Spatial Development Framework
MW	Megawatts
NAAQS	National Ambient Air Quality Standards
NDP	National Development Plan
NEES	National Energy Efficiency Strategy
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NFEPA	National Freshwater Ecosystem Priority Areas
NGOs	Non-Governmental Organization
NMBM	Nelson Mandela Bay Metropolitan Municipality
NPA	National Protected Area
NSDP	National Spatial Development Perspective
OCGT	Open Cycle gas Turbines
PNCO	Provincial Nature Conservation Ordinance
PoS	Plan of Study
PPP	Public Participation Process
PRDW	Prestedge Retief Dresner Wijnberg
RHDHV	Royal HaskoningDHV
RoD	Record of Decision
SA	South Africa
SABAP	Southern African Bird Atlas Project
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
SANRAL	South Africa National Roads agency
SCC	Species of Conservation Concern
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
SKEP	Succulent Karoo Ecosystem Programme
STEP	Subtropical Thicket Ecosystem Project
TCP	Transnet Capital Projects
TNPA	Transnet National Ports Authority
ToR	Terms of Reference
UNCLOS	United Nations Convention of the Law of the Sea
UNFCCC	United Nations Framework Convention on Climate Change
WESSA	Wildlife and Environment Society of South Africa

1. INTRODUCTION

1.1 OVERVIEW

The National Development Plan (NDP) identifies the need for South Africa to invest in a strong network of economic infrastructure designed to support the country's medium and long-term economic and social objectives. This requires the development of 10,000 MW of additional electricity capacity to be established by 2025. To achieve this, the Department of Energy (DoE) has developed a 20-year energy plan for South Africa, the Integrated Resources Plan 2010-2030 (IRP 2011), which encourages the participation of independent power producers (IPPs) in electricity generation in South Africa.

The Independent Power Producers (IPP) Office was established by the DoE, the National Treasury and the Development Bank of Southern Africa (DBSA) to facilitate the involvement of IPPs in the generation of electricity. The IPP Office has to date successfully procured 6,327 megawatts (MW) under the Renewable Energy IPP Procurement Programme. It is currently intended that a further 3,126 MW of new generation capacity will be generated from natural gas.

For the Gas IPP Procurement Programme, the DoE through the IPP Office has, in collaboration with Transnet, developed a two-phased approach. The first phase is to introduce Floating Power Plants in three of South Africa's commercial ports – Saldanha Bay, Ngqura and Richards Bay. The second phase is to facilitate the import of Liquefied Natural Gas (LNG) in the same three ports, to allow for the development of medium- to long-term gas power plants outside of the port boundaries.

The DoE has appointed EOH Coastal and Environmental Services (EOH CES) as the independent Environmental Assessment Practitioner for the EIAs in Ngqura for both the Floating Power Plant and the LNG Import. This Scoping Report covers the Short Term Project (i.e. Floating Power Plant) only. A separate application and EIA process will be undertaken for the Medium Term LNG Import Facility Project.

1.2 PURPOSE OF THIS REPORT

This report is the first of a number of reports produced in the EIA process. This Scoping Report is compiled in accordance with the requirements as stipulated in Section 21 and Appendix 2 of the EIA Regulations (GNR 982), which clearly outlines the content of a Scoping Report.

The objective of the scoping process, as set out by the EIA Regulations (2014), is to, "*through a consultative process-*

(a) Identify the relevant policies and legislation relevant to the activity;
(b) Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
(c) Identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
(d) Identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
(e) Identify the key issues to be addressed in the assessment phase;
(f) Agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and

(g) Identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored."

1.3 PROJECT BACKGROUND

The Department of Energy (DoE) through its Independent Power Producer (IPP) Office has launched a Gas to Power project. The aim of this project is to increase the use of gas in South Africa's energy supply mix for generating electricity. As there are limited local gas resources gas will most likely need to be imported, in the form of LNG, through one of the national ports. The development of gas supply infrastructure will also help promote the use of gas in the broader industry.

It will take in the order of 3 to 5 years to develop the required LNG terminals. Due to the current demand for additional electricity generating capacity, the IPP Office is also considering alternative means of early power generation in the form of mobile floating power plants (FPP). Power barges or power ships have been identified as an effective form of relatively quickly mobilising additional power generation capacity that can feed into South Africa's national grid. They will however need to be mobilised in one or more of the national ports which offer the required protected waters and supporting infrastructure. Transnet National Ports Authority, the port authority (TNPA) supports this initiative and is helping to facilitate and find the most suitable location for FPP units within the Port of Ngqura.

This project involves the permanent mooring of an FPP vessel in the Port of Ngqura for a 5-15 year project life, with a floating fuel storage facility (a bunker barge) moored at any available quay. Power will be evacuated from the power barge via an overhead line to a switching yard. From here power will be evacuated via a 132 kV line over a distance of approximately 6 km to the Dedisa substation, which currently has an available capacity of 600 MW.

The Rochdale Envelope Approach will be adopted to deal with uncertainties associated with the design of the Floating Power Plant and the associated infrastructure. The Rochdale Envelope Approach is a method adopted by the Infrastructure Planning Commission in the United Kingdom to deal with information that is unresolved, with reasonably or valid cause, during the EIA process. This allows flexibility for the project description to evolve over time within a clearly defined framework.

The Rochdale Envelope Approach requires an adequate project description that provides sufficient information for the identification of potential significant effects to be assessed and mitigation measures to be described. In assessing the likely effects and in determining the relevant mitigation measures, it is essential that a cautious worst-case scenario approach is adopted.

It is the competent authority that decides whether the project description and information is satisfactory. If the project information provided is deemed inadequate, or if there is excessive flexibility for project details, it is for the authority to impose conditions and ensure the project refinement remains within the specified parameters.

The Rochdale Envelope Approach will be adopted in this EIA process and is further described in Chapter 7 of this report.

1.4 PROJECT MOTIVATION

1.4.1 Need and Desirability

South Africa has recognised the need to expand electricity generation capacity within the country. This is based on national policy and informed by ongoing planning undertaken by the Department of Energy (DoE) and the National Energy Regulator of South Africa.

Climate Change Overview

Most (approximately 90%) of South Africa's energy comes from non-renewable sources like coal, petroleum, natural gas, propane, and uranium. It is estimated that approximately only 1% of the country's electricity is currently generated from renewable energy sources. South Africa's total emissions were estimated to be 461 million tonnes CO_2 equivalent in the year 2000.

Approximately 83% of these emissions were associated with energy supply and consumption, 7% from industrial processes, 8% from agriculture, and 2% from waste. The South African Government recognises the need to diversify the mix of energy generation technologies within the country and to reduce the country's reliance on fossil fuels which contribute towards climate change and are therefore not environmentally friendly. This is in accordance with the prescriptions of the United Nations Convention on Climate Change 1994 (UNFCCC) and its associated Kyoto protocol of 1997. South Africa has put in place a long term mitigation scenario (LTMS) by which the country aims to develop a plan of action which is economically viable and internationally aligned to the world effort on climate change. During this period (2003-2050) South Africa will aim t**o take action to mitigate greenhouse gas** emissions by 30% - 40% by the year 2050. This is a reduction of between 9000 and 17 500 tons of CO_2 by 2050. Consequently, the South African Government has set a target of 17GW renewable energy contribution to new power generation capacity by 2030 (IRP, 2011). This is to be produced from wind, solar, biomass, gas and small-scale hydro facilities. However, it should be noted that this is a long term plan and thus does not address power shortages in the short term. The FPP provides a near immediate solution to the current short falls in power on a National scale as described below. The FPP will operate for a period of 5-15 years (i.e. until such time as alternative energy solutions have come on line).

National and Provincial

The National Development Plan (NDP) (also referred to as Vision 2030) is a detailed plan produced by the National Planning Commission in 2011 that is aimed at reducing and eliminating poverty in South Africa by 2030. The NDP represents a new approach by Government to promote sustainable and inclusive development in South Africa, promoting a decent standard of living for all, and includes 12 key focus areas. Those relevant to the current proposed project include two: (1) an economy that will create more jobs and (2) improving infrastructure. The NDP states that South Africa needs an additional 29,000 MW of electricity by 2030. About 10,900 MW of existing capacity will be retired, meaning that South Africa needs to create about 40,000 MW. According to the NDP, about 20,000 MW of this capacity should come from renewable sources. This project aims to alleviate the immediate need for electricity in the short-term while the necessary LNG infrastructure is secured to ensure alleviation of the long term energy crisis that the country faces.

STATSSA (2014) estimated a total population of 54 million in South Africa in July 2014. This equated to a growth of 3.1 million since the year 2010 when the total population stood at 50.9 million people. The Eastern Cape Province makes up approximately 12.6% (close to 7 million) of the total country's population. As a result, electricity demand and consumption is increasing sharply. According to the DoE (http://www.energy.gov.za/files/au_frame.html), "*energy comprises about 15 percent of South Africa's gross domestic product (GDP), creating employment for about 250 000 people*." In addition to this, power is also required for industrial purposes, including the mining sector. Inglesi-Lotz and Blignaut (2011), showed that the majority of industrial sectors have experienced an increase in their electricity consumption from 1993 to 2006. "*The top three contributors to national electricity consumption were non-ferrous metals (14,089 GWh[2]), iron and steel (13,027 GWh) and chemical and petrochemical (8,449 GWh). Increases in production are part of the rising electricity usage in all sectors of the South African economy* (Inglesi-Lotz and Blignaut (2011)."

[2] GWh refers to Gigawatt Hours, i.e. the GW of energy expended for 1 hour.

Several factors affect peak electricity demand. These include population growth, weather variables, calendar effects (such as the day of the week effect, the weekly effect, the monthly effect and the holiday effect), economic variables, changing technology, increasing demand by the industrial sector, as well as the general randomness in individual usage per household (Hyndman and Fan, 2010).

In 2004, the peak demand for electricity totalled at an average of 35 421 MW. By mid-year 2014, the peak demand totalled 35 677 MW; however the available capacity was only at 32,450 MW, which resulted in load shedding protocols being invoked. According to STATSSA (2014), a total of 252 578 gigawatt-hours (GWh) of electricity was produced in the year 2014, which is a reduction of approximately 3.8% since the year 2011. Of this amount approximately 13 836 GWh was exported, 11 177 GWh imported, 18 474 GWh used in power stations and 231 445 GWh consumed by the country. Consumption thus totalled 274 932 GWh, a shortfall of 22 354 GWh measured against the total production figure of 252 578 GWh.

It is evident from the above that the country and the Eastern Cape Province's current electricity generation and supply system is insufficient as the demand is higher than the actual capacity generated or available for distribution. In 2012, the Eastern Cape Provincial Executive Council adopted the Eastern Cape Sustainable Energy Strategy which focuses on improved provincial energy security and self-sufficiency, improved access to energy among the poorest in the province, and the need to stimulate a green and low-carbon economy underpinned by decent and sustainable jobs (The Eastern Cape Sustainable Energy Strategy, 2012). This strategy also commits the Province to achieving a minimum of 2% of energy from renewable sources by 2025.

Local

Inadequate access to basic services, such as electricity, as well as infrastructure, maintenance and service backlogs are some of the larger challenges the Nelson Mandela Bay Metropolitan Municipality (NMBM) faces. Currently, 12% of the total amount of households within this metropolitan area has no access to electricity - and with aging infrastructure this situation has been exacerbated. In rural areas, energy is mostly obtained from fuel wood while more formal urban areas obtain energy from coal, illuminating paraffin and liquid petroleum gas.

The NMBM (through Eskom) supplies electricity to over 297 000 customers within the Nelson Mandela Bay Metropolitan area, and has an annual turnover of approximately R1,8 billion. Eskom supplies an incoming voltage of 132 kV and power is then distributed to industrial, commercial and residential consumers. Due to the growing population the need for basic services such as electricity continues increasing, and thus the backlog also increases. As such there is not only a need to improve, upgrade and provide additional electricity to the region but also a need to save energy through energy reduction campaigns, and subsequently to become more reliant on renewable energy sources. In order to achieve universal access to electricity, grid and non-grid technologies have to be implemented in line with the National Energy vision that "*more than 90 percent of the population should enjoy access to grid-connected or off-grid electricity within 20 years*", as well as to implement any other possible technologies based on cost effective options in order to address current and future backlogs.

Although the objective of this project is to provide additional power to grid, especially during peak periods, the FPPs can also provide baseload, and will alleviate electricity shortages in the NMBA area as well.

1.4.2 National Energy Efficiency Strategy (2008)

The first Energy Efficiency Strategy for South Africa was implemented in the year 2005. It was the first consolidated Governmental document that was "*geared towards the development and implementation of energy efficiency practices in this country*" (DME (now DoE), 2005). The National Energy Efficiency Strategy (NEES) was then reviewed and updated in the year 2008. This document was promulgated on 26 June 2009 (Notice 908 of 2009) with the proviso that it be reviewed every 3 years, and this policy is captured within the National Energy Act, 2008 (Act No. 34 of 2008). The need for this strategy to become a legislated implementing strategy was a result of the increased electricity demand over supply, that resulted in load shedding being provoked since early January 2008.

In the year 1998, the White Paper on Energy Policy was published and was the mandating policy used to compile the National Energy Efficiency Strategy. This policy links socio-economic development plans with plans adopted by the energy sector, while also ensuring that other initiatives adopted by Government departments are considered and included. In addition to the above, "*clear and practical guidelines for the implementation of efficient practices within the South African economy, including the setting of governance structures for activity development, promotion and coordination"* has been catered for (DME, 2009). The NEES (2009) aims at providing immediate implementation of interventions in various cost stages (no-cost, low-cost and high-cost), in order to combat the electricity challenges. These interventions include short, - medium, - and long-term investment opportunities in energy efficiency. The vision of the NEES (2009) is not only geared towards improving the cost of energy - but also to reduce the negative effects of energy usage on the environment and human health. In order to achieve the aim and vision of this strategy the following is encouraged:

- Improve sustainable energy developments by considering environmental, social and economic factors
- Improve energy usage through efficient practices

The strategy "*sets a national long term target for energy efficiency improvement of 12% by 2015*", assuming that the energy practices and guidelines set out in this strategy are undertaken (DME, 2009).

1.5 THE PROPONENT

EOH Coastal & Environmental Services have been appointed by the Department of Energy (DoE) and Transnet as the independent Environmental Assessment Practitioner to undertake the EIA for the Floating Power Plant facilities in the Port of Ngqura. The FPP will be owned and operated by a third party IPP. The Environmental Authorization will thus be transferred to the successful bidder (FPP) and Eskom (powerline) on receipt thereof.

The Department of Energy (DoE)

The Department of Energy
Physical Address: 192 Visagie Street, Corner Paul Kruger & Visagie Street, Pretoria
Postal Address: Private Bag, X96, Pretoria, 0001
Telephone: +27 12 406 7798
Website: www.energy.gov.za
Email: info@energy.gov.za

The main priority of the DoE is to ensure optimal utilisation and safe exploitation of energy resources within the country. This includes ensuring development, processing, utilisation and management of various mineral and energy resources in order to regulate and transform the sector for the provision of secure, sustainable and affordable energy. Their vision is to improve the current country's energy mix by having 30% clean energy by the year 2025.

The DoE is headed by Minister, Ms Tina Joemat-Pettersson and the head office is situated in Gauteng, Pretoria while a number of regional satellite offices mandate projects of regional significance.

1.6 THE EIA TEAM

Coastal and Environmental Services (CES), trading as EOH Coastal & Environmental Services
Physical Address: 67 African Street, Grahamstown 6139
Postal Address: P.O. Box 934, Grahamstown 6140
Telephone: +27 46 622 2364
Fax: +27 46 622 6564
Website: www.cesnet.co.za
Email: info@cesnet.co.za

Coastal and Environmental Services (Pty) Ltd is a South African based company, with its head office in Grahamstown, and offices in Cape Town, Port Elizabeth, East London and Johannesburg, South Africa, as well as a wholly owned subsidiary in Maputo, Mozambique (EOH CES is registered as an Environmental Practitioner with the Mozambican authorities). EOH CES was established in 1990, to service a then fledgling market in the field of Environmental Management and Impact Assessment. The Company has grown apace with the increased market demand for environmental and social advisory services, both in South Africa as well as many African countries. Our principal area of expertise is in assessing the impacts of development on the natural, social and economic environments through, among other instruments, the environmental impact assessment process, and in so doing contribute towards sustainable development.

In 2013 EOH Mthombo (Pty) Ltd acquired all the shares in CES (Pty) Ltd, and CES (www.cesnet.co.za) now operates as EOH Coastal & Environmental Services. We are proud to be associated with EOH (www.eoh.co.za) which is one of the largest providers of enterprise applications, technology, outsourcing, cloud and managed services, as well as consulting services in a range of disciplines. The group is active in South Africa and Africa and has a strong Black Economic Empowerment profile. This acquisition has enabled CES to combine EOH's great reach and reputation with CES's recognized excellence in environmental and social advisory services. It has allowed us to maximize our strengths and our comprehensive offerings in the environmental and social fields. The existing Management Team of CES continues to be the driving force behind our product and service offering. We adopt a scientific approach to our studies, underpinned by an informed and holistic view of the environment and a pragmatic approach to sustainable development. We believe that a balance between development and environmental protection can be achieved by skillful and careful planning. Our success rate in achieving this balance in a variety of approved developments is evidence of our capability.

Our staff is currently comprised of 38 professional staff and 11 support staff. All professional staff members are graduates, and many have advanced postgraduate qualifications, including PhD degrees in the biological, social and environmental sciences. In addition, EOH CES has well-developed working relationships with a number of other individual specialist and specialist consulting companies who provide us with expertise in disciplines such as air quality impact assessments, noise impacts, heritage assessments, radiation hazard assessments, groundwater studies and health impact assessments. We have a demonstrated ability to manage EIAs for large and complex projects. This experience was initially gained during the undertaking of integrated environmental management studies, as well as the management of large and complex environmental and social impact assessments. EOH CES has managed numerous large EIAs from pre-feasibility through to operation for international clients in six southern African countries. These have been rigorously reviewed by parties such as the World Bank, MIGA, European Investment Bank, IFC, German Investment Bank (KFW), African Development Bank, BHP Billiton international peer review team, the Dutch Development Bank (FMO).

Project team:

Team Leader: Dr Ted Avis	Ted Avis, the team leader and Environmental Assessment Practitioner (EAP) for the proposed project, is a leading expert in the field of Environmental Impact Assessments, having project-managed numerous large-scale EIAs to international standards (e.g. International Finance Corporation). Ted was principal consultant to Corridor Sands Limitada for the development of all environment aspects for the US$1billion Corridor Sands Project. He has managed EIA studies and related environmental assessments of similar scope in Kenya, Madagascar, Egypt, Malawi, Zambia and South Africa. Ted has worked across Africa, and also has experience in large scale Strategic Environmental Assessments in southern Africa, and has been engaged by the International Finance Corporation (IFC) on a number of projects. He was instrumental in establishing the Environmental Science Department at Rhodes University whilst a Senior lecturer in Botany. He is an Honorary Visiting Fellow in the Department of Environmental Sciences at Rhodes. He was one of the first certified Environmental Assessment Practitioners in South Africa, gaining certification in April 2004. He has delivered papers and published in the field of EIA, Strategic Environmental Assessment and Integrated Coastal Zone Management and has been a principal of EOH CES since its inception in 1990, and Managing Director since 1998. Ted holds a PhD in Botany, and was awarded a bronze medal by the South African Association of Botanists for the best PhD adjudicated in that year, entitled "*Coastal Dune Ecology and Management in the Eastern Cape*". Ted is a Certified Environmental Assessment Practitioner (since 2002) and a professional member of the South African Council for Natural Scientific Professionals (since 1993).
Project Manager: Dr Chantel Bezuidenhout	Chantel holds MSc and PhD degrees in Botany (estuarine ecology) and a BSc degree in Botany and Geography from Nelson Mandela Metropolitan University (South Africa). Chantel has been an Environmental Consultant for approximately 7.5 years and as such has been focused on environmental management and impact assessment. Chantel is well versed in environmental legislation and has managed a number of environmental, social and health impact assessments and management plans in South Africa, Zambia, Madagascar and Mozambique. These projects have been completed to international standards (IFC and World Bank). Chantel's interest lies in the land and natural resource field and as such she has successfully completed a number of these assessments for large mining projects in Mozambique and Madagascar. She is principal consultant and branch manager of the Port Elizabeth office of EOH CES.
Report Assistance and Public Participation: Mrs Kim Brent	Kim holds a BSc degree with majors in Botany and Geography as well as a BSc (Hons) degree, both from NMMU. Her honours year focussed on Environmental Impact Assessments, Environmental Management and Geographic Information Systems. Kim's research projects in her honours year focussed on Plant Physiology and Biological Factors of the Velddrif Solar Saltworks. Kim's interests include Basic Assessments, Environmental Impact Assessments, Environmental Management Plans, Environmental Auditing, Geographic information systems and Botanical Assessments. Kim has close to 5 years' experience in the consultancy environment.
Report Assistance and Public Participation: Mr Roberto Almanza	Roberto obtained his BSc (Environmental Sciences) majoring in Geology and Geography from Nelson Mandela Metropolitan University and went on to complete his BSc Honours in Geology. Roberto is currently undertaking his MSc (Geology). While Roberto's academic experience is mostly in structural and economic geology, he has also worked as a consultant on a number of exploration projects across South Africa.
Report Assistance, Public Participation and Specialist Coordination: Belinda Huddy	Belinda holds an MPhil in Environmental, Society and Sustainability and a Bachelor of Business Science (Hons) in Economics both obtained from the University of Cape Town. Her master's dissertation explored alternative values, focusing on the social values, attached to the Cape Town Talent Exchange. Her honours thesis investigated the determinants of the success and failures of the bio-diesel industry, focusing on a jatropha plantation in Zambia. Courses in her master's degree include Theory and Practice of Environment Management, Managing Complex Human-Ecological Systems, Environmental Law and Cultural Geography. The relevant courses in her honours degree included Environmental Economics and Natural Resource Economics.

Specialist Team:

Air Quality Specialist: Dr Lucian Burger	Dr Burger holds an MSc and PhD in chemical engineering from the University of Natal. Following the completion of his bachelor's degree (*cum laude*) in chemical engineering in 1982, Dr Burger's experience in air pollution started in 1983 with the development and implementation of a real-time atmospheric dispersion model for processing industries (as partial fulfilment of his MSc Eng). A more complex dispersion model was subsequently developed in 1986, which contributed towards his PhD and later formed part of an international contract on the evaluation and validation of transport models as applied to the Chernobyl accident of April 1986 (International Atomic Energy Agency). Dr Burger is a Fellow of the South African Institute of Chemical Engineers (Fellow: No. 4533) and an Associate Fellow of the Institute of Chemical Engineers (IChemE) (Fellow: No. 99963108). He has been involved in several EIA projects and has conducted specialist studies for both quantified process risk assessments and air pollution impact components of EIAs. Dr Burger is a director of Airshed Planning Professionals (Pty) Ltd and Riscom (Pty) Ltd. Over the past three decades Dr Burger has been actively involved in the development of atmospheric dispersion modelling and its applications, air pollution compliance assessments, health risk assessments, mitigation measures, development of air quality management plans, meteorological and air quality monitoring programmes, strategy and policy development, training and expert witnessing. Whilst most of his working experience has been in South Africa, a number of investigations were made in countries elsewhere, including Angola, Botswana, Central African Republic, Congo, Democratic Republic of Congo, England, Equatorial Guinea, Ghana, Iran, Ireland, Lesotho, Liberia, Madagascar, Mozambique, Namibia, Suriname, Togo, Ukraine, Zimbabwe and Zambia.
Marine Plume Modelling: Steven Luger	Stephen Luger received an MSc in Civil Engineering from the University of Cape Town in 1991. He was then employed by the Council for Scientific and Industrial Research (CSIR) for sixteen years as a coastal modelling specialist. For the past nine years he has been employed by Prestedge Retief Dresner Wijnberg (PRDW) consulting engineers as a coastal modelling specialist and currently holds the post of Technical Director. He has twenty-four years of experience in the application of numerical models in the fields of coastal hydrodynamics, waves, tsunamis, sediment transport, outfalls, water quality, dredging, oil spills and flooding. These modelling studies have been conducted for feasibility studies, environmental impacts studies, nuclear safety studies and detailed engineering design. The countries where the studies have been conducted include South Africa, Namibia, Gabon, Nigeria, Kenya, Mauritius, Seychelles, Guinea, Mozambique, Madagascar, Cameroon, Angola, Egypt, Bahrain, Qatar, United Arab Emirates, Jordan, Israel, Ireland, Chile, Peru, Brazil and Australia. He is the author or co-author of over 20 articles in scientific journals, chapters in books and conference proceedings, over 100 technical reports for external contract clients, and has presented over 20 papers at local and international conferences. Twelve selected sediment transport studies that he has undertaken include: Modelling 2D sediment transport for VIP development at Swakopmund, Namibia (2015) Mauritius Turtle Bay Beach Restoration Study (2015) Modelling sedimentation for the proposed southern channel in Maputo Bay, Mozambique (2014) Modelling 2D sediment transport in Rupert's Bay, St Helena Island (2013) Shoreline and 2D modelling of sediment transport for proposed port at Micaune, Mozambique (2013) Modelling impact of port reclamation and dredging on stability of Table Bay coastline (2012) Sediment transport modelling for intake basins for proposed Eskom nuclear power station (2008 – 2009) Sediment transport modelling for proposed a fixed sand bypass system at Richards Bay (2008) Morphodynamic modelling for a fixed sand bypass system at Richards Bay (2008) Morphodynamic modelling for a fixed sand bypass system at Richards Bay (2007) Morphodynamic modelling for the Durban Small Craft harbour (2006) Dredging impacts in Table Bay: hydrodynamics, waves, shoreline stability and dredge plumes (2003) Morphodynamic modelling of beach erosion at Langebaan (2003 – 2004) Modelling morphodynamics on Egypt's northshore (2002)

	Modelling morphodynamics (beach protection measures) at Bar Beach, Lagos, Nigeria (2000) Five selected coastal zone management studies that he has undertaken include: Setback study for coastal mining works in Liberia (2014) Flood hazard assessment along the South African coastline for a major insurance company (2011) Impact of climate change on flooding at the Salt River mouth, Cape Town (2010) Flood line assessment for Eskom nuclear power stations (2009) Assessment of climate change effects on coastal engineering design for a proposed Eskom nuclear power station (2009)
Marine Ecology Specialist: Barry Clarke	Barry has twenty-one years' experience in marine biological research and consulting on coastal zone and marine issues. He has worked as a scientific researcher, lecturer and consultant and has experience in tropical, subtropical and temperate ecosystems. His main area of scientific study involved fisheries management and the biology and ecology of marine and estuarine fishes. He is presently Director of an Environmental Consultancy firm (Anchor Environmental Consultants) and Research Associate at the University of Cape Town. As a consultant he has been concerned primarily with conservation planning, monitoring and assessment of human impacts on estuarine, rocky shore, sandy beach and temperate and coral reef communities as well as coastal and littoral zone processes, aquaculture and fisheries. Barry is the author of 27 scientific publications in class A scientific journals as well as numerous scientific reports and popular articles in the free press. Geographically, his main area of expertise is southern Africa (South Africa, Lesotho, Namibia, Mozambique, Angola, Tanzania, Mauritius and Seychelles), but he also has working experience from elsewhere in Africa (Cote d'Ivoire, Ghana, Nigeria), the Middle East (UAE) and Europe (Azerbaijan).
Terrestrial Ecology Specialist: Tarryn Martin	Tarryn holds a BSc (Botany and Zoology), a BSc (Hons) in African Vertebrate Biodiversity and an MSc with distinction in Botany from Rhodes University. Tarryn's Master's thesis examined the impact of fire on the recovery of C_3 and C_4 Panicoid and non-Panicoid grasses within the context of climate change. She has spent time at Rhodes University working as a research assistant and has spent many years working within the corporate tourism industry as a project manager. Her research interests include biodiversity conservation, ecotourism and climate change.
Noise Specialist: Brett Williams	Dr Brett Williams is a registered Occupational Hygiene Consultant who has been consulting since 1997. He holds a PhD in Environmental Management from the University of Pretoria. His area of expertise is in Noise Impact Assessments from a human health perspective. He has conducted numerous environmental impact assessments for mining operations, wind farms, industrial developments and infrastructure projects such as desalination plants and marine port authorities. His clients include the CSIR, EOH CES and various Consulting Engineering Practices.
Cultural Heritage and Palaeontology Specialists: Cedar Tower Services (CTS)	Cedar Tower Services (Pty) Ltd (CTS) was founded in 2013 and specialises in developing innovative products for the heritage sector. The Director, Nicholas Wiltshire, designed and developed SAHRA's national heritage management system, SAHRIS, and led the archaeology unit of Heritage Western Cape from 2008-2010. The Heritage Executive, Dr Mariagrazia Galimberti, has extensive experience in heritage management at SAHRA and is currently a member of the Archaeology, Palaeontology and Meteorites Committee at Heritage Western Cape. CTS has a total of seven staff with four archaeologists, digitization administrators, GIS specialists and software developers. CTS started developing the 'Heritage Screener' in September 2014 and released the first samples in February 2015. CTS recently concluded the heritage component of the Strategic Environmental Assessment (SEA) Project for the CSIR which provided Eskom with over 45 high level screeners spanning the length of the country in five corridors. At the end of May 2015, CTS had managed to extract and moderate 8500 sites into SAHRIS which constitutes a quarter of the entire National Inventory of just under 33 000 sites.
Marine Traffic Assessment: PRDW	PRDW was founded in 1992 in Cape Town, South Africa and now operates as an international group of consulting engineers with offices in Chile, Australia, the USA, Brazil and Mozambique. PRDW provides consulting and specialist services in the field of port and coastal engineering, offering a broad range of capabilities including initial preliminary and feasibility investigations, specialist studies, detailed project design, planning and development, numerical modelling and supervision of construction and post-construction activities.

	The directors and senior personnel have devoted their professional careers to the pursuit of excellence in the field of maritime civil engineering and are recognised internationally as specialists in this field, reflected in the number of awards received over the years. All directors / partners participate actively as engineers and each project is a direct responsibility of every one of them.

1.7 SCOPING REQUIREMENTS AS PER EIA REGULATIONS 2014

This report is the first of a number of reports that will be produced in the EIA process. This Scoping Report has been produced in accordance with the requirements set out in section 21 as well as Appendix 2 of the EIA Regulations (GNR.982), which clearly outlines the content of a Scoping Report, and sections 39-44 which cover the activities necessary for a successful Public Participation Process (PPP).

Table 1.1 outlines the requirements of the Scoping report as set out in the EIA Regulations, as revised in 2014. According to Appendix 2 (1) "*A scoping report must contain the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process, and must include* the following, as outlined in table 1.1 below –*"*

Table 1.1: Requirements for the Scoping report and content (relevant to Appendix 2 of the EIA Regulations)

Relevant section in GNR. 982	Requirement description	Relevant section in this report
(a) Details of-	(i) The EAP who prepared the report; and	Details of the Project Team responsible for all documentation are available in Section 1.6 above.
	(ii) The expertise of the EAP, including a curriculum vitae;	Short summaries describing the expertise of the Project Team are included in Section 1.6 above. Curriculum Vitae are available in Appendix 2 of this document.
(b) The location of the activity, including-	(i) The 21 digit Surveyor General code of each cadastral land parcel;	This is available in Chapter 2, Section 2.1, and Table 2.1.
	(ii) Where available, the physical address and farm name;	Not applicable. The 21 digit Surveyor General code of each cadastral land parcel and coordinates of the boundary of the property or properties are provided, as per the requirements.
	(iii) Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	This is available in Chapter 2, Section 2.1, and Table 2.1.
(c) A plan which locates the proposed activity or activities applied for at an appropriate scale	(i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or	The power evacuation route is approximately 7 km in length and will pass through both TNPA and CDC owned land within the Coega IDZ and is thus zoned for industrial purposes. The majority of this route falls within existing power servitude within the IDZ, however a new servitude will need to be registered for a short distance from the FPP to where it will connect to the existing servitude, via a switching yard. The proposed power line as well as the proposed position of the FPP is indicated on Figure 2.1 (land parcels) and Figure 2.2 (layout plan).
	(ii) On land where the property has not been defined, the coordinates within	The co-ordinates of the proposed land parcels on which the activity is to occur is

Relevant section in GNR. 982	Requirement description	Relevant section in this report
	which the activity is to be undertaken;	available in Chapter 2, Section 2.1, Table 2.1.
(d) A description of the scope of the proposed activity, including	(i) All listed and specified activities triggered;	A listed of activities triggered is available in Chapter 3, Section 3.2.1.
	(ii) A description of the activities to be undertaken, including associated structures and infrastructure;	A full project description is available in Chapter 2 of this report.
(e)	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process	A full description of the legal and policy frameworks investigated during the Scoping Phase is available in Chapter 3 of this report.
(f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location	The need and desirability for the project is described in Section 1.4. In addition the motivation for the preferred location of the proposed project is included in Chapter 2 Section 2.5 (Alternatives)
(h) A full description of the process followed to reach the proposed preferred activity, site and location within the site, including -	(i) Details of all the alternatives considered;	Details on the alternatives considered are available in Chapter 2, Section 2.5.
	(ii) Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	This information is available in Chapter 5, Section 5.6 and Appendix 1 of this report.
	(iii) A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	There have been no comments to date.
	(iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	This is described in detail in Chapter 4 of this report.
	(v) The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- (aa) Can be reversed; (bb) May cause irreplaceable loss of resources; and (cc) Can be avoided, managed or mitigated;	This is available in Chapter 6 of this report.
	(vi) The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	This is available in Chapter 6 of this report.
	(vii) Positive and negative impacts that	This is available in Chapter 6 of this report.

Relevant section in GNR. 982	Requirement description	Relevant section in this report
	the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	
	(viii) The possible mitigation measures that could be applied and level of residual risk;	This is available in Chapter 6 of this report.
	(ix) The outcome of the site selection matrix;	This is available in Chapter 6 Section 6.3.
	(x) If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and	This is included in Chapter 2 Section 2.5 (Alternatives)
	(xi) A concluding statement indicating the preferred alternatives, including preferred location of the activity;	This is included in Chapter 2 Section 2.5 (Alternatives)
(i) a plan of study for undertaking the environmental impact assessment process to be undertaken, including	(i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;	This is available in Chapter 7 Section 7.1
	(ii) a description of the aspects to be assessed as part of the environmental impact assessment process;	This is available in Chapter 7 Section 7.2
	(iii) aspects to be assessed by specialists;	This is available in Chapter 7 Section 7.3
	(iv) a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;	This is available in Chapter 7 Section 7.3
	(v) a description of the proposed method of assessing duration and significance;	This is available in Chapter 7 Section 7.3
	(vi) an indication of the stages at which the competent authority will be consulted	This is available in Chapter 7 Section 7.4
	(vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and	This is available in Chapter 7 Section 7.4
	(viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process;	This is available in Chapter 7 Section 7.5
	(ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	This is available in Chapter 7 Section 7.2
(j) an undertaking under oath or affirmation by the EAP in relation to -	(i) the correctness of the information provided in the report;	This is available in Appendix 3
	(ii) the inclusion of comments and inputs from stakeholders and interested and affected parties;	This is available in Appendix 3
	(iii) any information provided by the EAP to interested and affected parties and	This is available in Appendix 3

Relevant section in GNR. 982	Requirement description	Relevant section in this report
	any responses by the EAP to comments or inputs made by interested or affected parties;	
(k)	an undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment;	To be inserted in Final Scoping Report.
(l)	where applicable, any specific information required by the competent authority; and	To be addressed in the Final Scoping Report.
(m)	Any other matter required in terms of section 24(4)(a) and (b) of the Act.	

1.8 REPORT STRUCTURE

The structure of the report is as follows -
Chapter 2 – Project description: Provides a description of the proposed development, the properties on which the development is to be undertaken and the location of the development on the property. The technical details of the project to be undertaken are also provided in this Chapter.

Chapter 3 – Legal and Policy Framework: Identifies all the legislation and guidelines that have been considered in the preparation of this Scoping Report.

Chapter 4 – Environmental and Social Baseline: Provides a brief overview of the bio-physical and socio-economic characteristics of the site and its environs that may be affected by the proposed development, compiled largely from published information, but supplemented by information from a site visit.

Chapter 5 – The EIA Process: Provides details of the process that will be followed when conducting the EIA report as per Regulation 23 including public participation process conducted in terms of Regulation 41. This chapter will include the objective of the EIA process as outlined in Appendix 3 of the EIA Regulations.

Chapter 6 – Impacts and risks identified during Scoping: Provides a description of the key issues that have been identified by the project team and through discussions with I&APs thus far in the Scoping phase, and that will be assessed in the EIA phase.

Chapter 7 - Plan of Study: Sets out the proposed approach to the environmental impact assessment including:

A description of the scope of work that will be undertaken as part of the EIA phase, including any specialist reports or specialised processes, and the manner in which the described scope of work will be undertaken;
An indication of the stages at which the competent authority will be consulted;
A description of the proposed methodology for assessing the environmental issues and alternatives, including the option of not proceeding with the proposed development;
Particulars of the public participation process that will be conducted during the EIA phase, and;
Any specific information required by the authority.

Chapter 8 – Conclusions and Recommendations

References: Cites any texts referred to during preparation of this report.

Appendices: Containing all supporting information.

2. PROJECT DESCRIPTION

2.1. Project Location

The FPP is to be moored in relatively protected waters within the Port of Ngqura. A multi-criteria analysis to determine the preferred location of mooring sites was undertaken at the onset of the proposed project (see Section 2.5 below for more detail). The outcome of this analysis resulted in only two suitable locations for the mooring of a FPP. The first option is located at the seaward end of the container terminal, and is protected by the end of the western breakwater, which forms a small embayment on the southern end of the container quay. This area is presently not utilised. The second option is located at the landward end of the eastern breakwater (within the Port), approximately 200m from the shoreline. At this location the FPP would be moored to dolphins approximately 50m from the breakwater, where water is deep enough.

Both of these alternatives will be discussed and assessed in the EIAR, however at the moment the preferred option from a technical and port operational perspective is along the eastern breakwater (i.e. Option 2). Power will be evacuated from the power barge via an overhead line to a switching yard. From here power will be evacuated via a 132 kV line over a distance of approximately 6 km to the Dedisa substation, which currently has an available capacity of 600 MW. A section of the line from the switching yard to the substation may be located underground. A detailed description of the components of the proposed development is included in the sections below.

Table 2.1: Properties on which the proposed project is located.

PROPERTIES	21 SG CODES	AREA (HA)	CENTRAL GPS-COORDINATE	
			Longitude	Latitude
RE/255	C07600230000025500000	52.50	25.699503	-33.791463
312	C07600230000031200000	515.23	25.689283	-33.778180
329	C07600230000032900000	1876.40	25.693462	-33.731429
RE/342	C07600230000034200000	505.38	25.673136	-33.758690
344	C07600230000034400000	29.30	25.676882	-33.767851
351	C07600230000035100000	1762.13	25.713104	-33.759756

2.2. Terrestrial Components

2.2.1. Mooring Facilities

The Operational requirements at the Port of Ngqura cannot accommodate the use of existing berthing infrastructure to be used for the proposed project. The FPP will therefore require its own mooring system. Landside mooring infrastructure in the form of bollards supported on concrete gravity bases are proposed along the eastern breakwater. The required mooring infrastructure will be provided by the IPP and is anticipated to be a combination of land secured mooring lines and catenary anchors.

No dredging will be required at the selected mooring site. As the FPP will not be moored against existing infrastructure, marine access will be required, the IPP may thus provide a temporary access jetty.

Figure 2.1: Locality map for the proposed project.

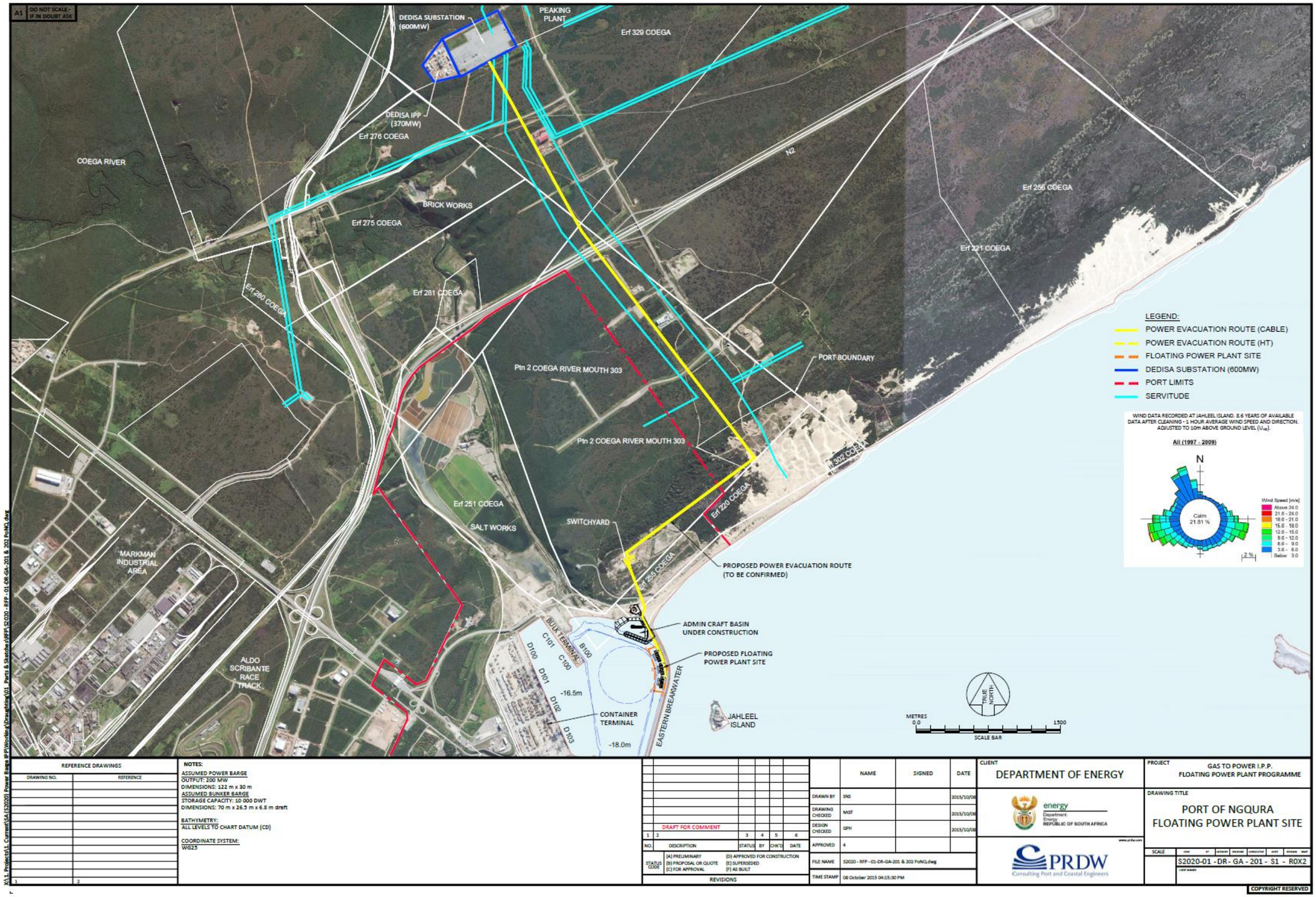

Figure 2.2: Layout of infrastructure for the proposed project

2.2.2. Transmission Lines

Power evacuation will be via a 132 kV interconnect line to Eskom's Dedisa substation approximately 6 km away from the FPP site (refer to Figure 2.3 below). The FPP will need an on-board step-up transformer to export power at 132 kV. In the case of multiple FPP's, each unit will have its own connection into a land based switchyard designed to manage synchronisation and balancing. Power will then be evacuated from the switchyard in a single 132kV HT transmission line to the Dedisa sub-station.

The 132 kV interconnect line will connect the FPP to the main national grid via the Dedisa substation which currently has an available capacity of 600 MW. The power evacuation route is approximately 6 km in length and will pass through both TNPA and CDC owned land within the Coega IDZ and thus is zoned for industrial purposes. The majority of this route falls within an existing power servitude within the IDZ, however a new servitude will need to be registered for a short distance from the FPP to where it will connect to the existing servitude.

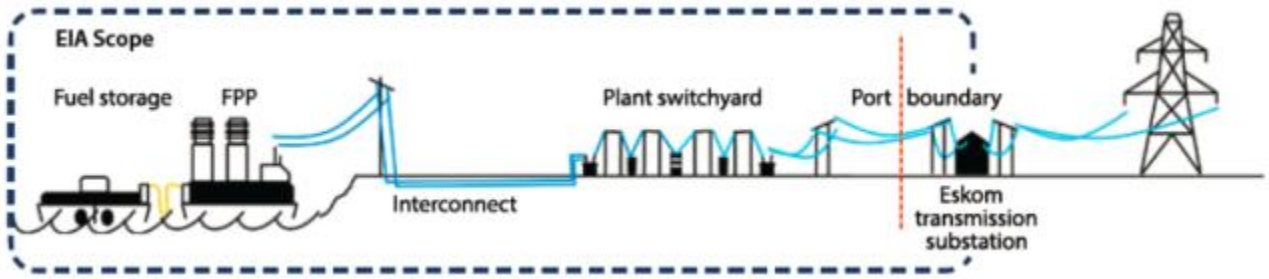

Figure 2.3: Conceptual illustration of a FPP showing the infrastructure required for power evacuation.

2.3. Marine Components

2.3.1. Floating Power Plant

Floating Power Plants (FPP) (refer to Plate 2.1 below) have been identified as a short term solution for providing emergency power to the national grid. These special purpose marine vessels are self-contained power generation resources which only require a land based transformer connection to produce and distribute power. The generating capacity of a FPP can be between 50 and 500 MW. Thus in order to generate approximately 600 MW[3] of power at 100% availability, a number of FPP units may be required to be moored in the Port. This may be undertaken in a phased manner, depending on the availability of FPP units. FPPs' use either many engines or a few gas turbines to provide peaking or base load power. In the Port of Ngqura, the use of gas turbines has been excluded as an option, since there is currently no LNG infrastructure within the Port and no available space for a Floating Storage Regasification Unit. It is thus anticipated that FPPs with a number of engines will be utilised that will be fuelled with imported liquid fuel such as distillate fuel oils or residual fuel oils (for more details refer to Section 2.3.2 below). The FPP will operate on a base load to mid-merit basis with the load factor being highest in the earlier years of operation.

Floating power plants are considered to be a good option for addressing energy shortages within the country as they have relatively short construction periods (generally < 12 months) and require a very small terrestrial footprint (land requirements are reduced). The FPP will be owned and operated by a third party IPP for a proposed duration of 5 - 15 years.

[3] According to the Eskom Fact Sheet, 1 MW can supply power to 650 homes on average. Thus 600 MW can potentially supply power to 390 000 homes.

Plate 2.1: An example of a FPP

2.3.2. Refuelling and Fuel Storage

The frequency of refuelling is dependent on the type of fuel, the power generation capacity of the FPP, its storage volume, the power generation load (from peaking power to 100% baseload) and the type of engine utilized. These details are not available at this time.

As discussed above, there is currently no gas infrastructure within the Port of Ngqura and therefore the FPP will initially be fuelled with an imported liquid fuel such as:

- Distillate fuel oils (light fuel oil, i.e. diesel fuel)
- Residual fuel oils (heavy fuel oil what remains of crude oil once the distillate fuel oils have been extracted)

If a LNG gas terminal is developed in the port, then gas may be used at a later stage as it is a cleaner more cost effective fuel. For this reason all FPPs will need to be designed to allow for the switching of fuels from the initial fuel type to LNG within six months of being notified that LNG will be available to the FPPs. LNG is expected to be made available during the first 5 years of operation.

There is no existing local fuel storage suitable facility for this operation, so all fuel will need to be imported and stored in floating storage units. Depending on the technology and/or type of FPPs used, the FPPs may or may not have on-board storage for the initial fuel. Fuel supply logistics will need to be organised by the IPP and it is assumed for the purposes of the EIA that the bulk of the necessary initial fuel supply will make use of foreign supply and shipping resources (for at least some of the required fuel supply). The supply arrangements may need to operate in a combination of locally located fuel storage and storage and/or fuel tenders. The supply chain for the initial fuel may involve the use of a large tanker vessel moored close by, within the Port, and/or involve ship to ship transfer operations. All these options will be explored and assessed in the EIA.

In terms of fuel consumption, an FPP generating 600 MW at a high load factor and medium efficiency (90% dispatch and 40% efficiency) is expected to consume 70,000 to 80,000 tonnes per month. Assuming a resupply schedule for storage located within the Port, it is anticipated that 20,000 tonnes of floating storage capacity will be required within the Port. This scenario is described as an example of the magnitude of the fuel supply undertaking for periods of maximum FPP output.

As there are no bunkering services within the port, fuel will need to be brought in with a liquid bulk tanker. The tanker will berth at one of the available TNPA berths. Fuel will then be transferred from the tanker to the bunker barge. The bunker barge will need to leave its moorings and come

alongside the tanker for refuelling. The size of the liquid bulk tanker will be dependent on the source of the fuel, and will either be from a local or international port of origin.

The existing sources of fuel oil supply in South Africa may have capacity to supply a certain amount of the required fuel to generate 600 MW of capacity at a high or mid merit load factor. Therefore, the potential capacity for local sources to support the required supply, or to mitigate supply risk, will be explored by the proponent.

2.3.3. Emissions

Emissions from the short term power project (FPP) could result from a number of sources and depend on the fuel used to generate power. A summary of typical emissions that can be expected is shown in Table 2.2 below:

Table 2.2: Typical emissions from a FPP

SOURCE	FUEL	
	HFO, Diesel	LPG, LNG, CNG
Power Generation	SO_2, NO_x, particulates, VOC including benzene, CO and CO_2	NO_x, CH_4, CO and CO_2
Power Vessel Engines	SO_2, NO_x, particulates, VOC including benzene, CO and CO_2	Not applicable
Support Ship	SO_2, NO_x, particulates, VOC including benzene, CO and CO_2	Not applicable
Fuel Storage	VOC including benzene	CH_4

An Air Quality Assessment will be undertaken and will assess the potential impact on air quality from all potential sources. The outcome of this assessment will be summarised in the EIR.

2.3.4. Discharge of heated water

Engine driven generation requires cooling water to cool the engine block (similar to a car). However, heat rejection from this source can be dealt with by direct discharge of the cooling water to the ocean or by the use of hybrid cooling towers and/or water to air heat exchangers that can be installed on the roof and deck spaces of a FPP. The volume of water to be discharged and the expected temperature increases will depend on the technology used, as well as the amount of energy generated, and thus is unknown at this stage. Three dimensional plume modelling will be undertaken for the worst case scenario (in terms of temperature and quantity of warm water discharged) in order to determine how the plume of warm water dissipates within the port basin, and outside the port basin, as a few selected locations. This information will be used to assess the impacts of warm water discharge on the marine environment.

In addition to the above, seawater used in cooling cycles may be treated with biocides to prevent biofouling and marine growth, and these parameters will also be considered.

2.3.5. Water Demand

It is anticipated that seawater will be used for cooling purposes. The FPP has limited fresh water demand. Most FPPs have desalination units and/or a source of water from condensate collected from inlet air refrigeration that can be used to supply the fresh water requirements. Should additional freshwater be required, this could be obtained from either the CDC or the local municipality, subject to a formal agreement with the relevant party.

2.3.6. Maintenance of the FPP

Maintenance requirements would be similar to those for land based power stations, such as regular inspections of equipment, maintaining operation through the renewal of deteriorated plant equipment, etc.

2.4. Project Duration and Phasing

It is envisaged that the FPP units will be introduced in the Port of Ngqura for a 5 to 15 year period and it is intended that these be introduced as soon as possible (within the next one to two years – 2016-2017).

The FPPs may be introduced in a phased approach as they become available and until the full capacity of 600 MW is reached.

2.5. Alternatives

One of the objectives of an EIA is to investigate alternatives to the proposed project. In relation to a proposed activity **"Alternatives"** means different ways of meeting the general purposes and requirements of the proposed activity. There are two types of alternatives - Fundamental Alternatives and Incremental (or development) Alternatives.

2.5.1. Fundamental Alternatives

Fundamental alternatives are developments that are totally different from the proposed project and usually involve a different type of development on the proposed site, or a different location for the proposed development. A number of Ports were considered in the Gas to Power War Room Report prepared for the Department of Energy and the Department of Public Enterprises. Ports in close proximity to Nqgura were Port Elizabeth and East London. The Port of Mossel Bay was not considered as it is a relatively small port and there is insufficient space to moor FPPs. In the case of the ports of Port Elizabeth and East London Ports the main excluding factor was the evacuation of power, as this would need to be done over extensive distances with limited available capacity at existing substations in close proximity to the ports. In addition both these ports are in close proximity to residential areas where noise and air emissions may pose a problem. .

Thus it was determined that the Port of Ngqura was the best option in the region for the development of the proposed project. No site alternatives can be presented for the proposed powerline as this is limited by the start (FPP) and end (Dedisa Substation) connections. It should be noted that the majority of this route falls within an existing power servitude within the IDZ. Thus, no alternative sites for the proposed development can be assessed. However, alternative locations within the Port of Ngqura can be explored for the placement of the FPP. These are described in Section 2.5.3 below.

A further fundamental alternative includes the type of activity to be undertaken, provided there are other options available to assess, other than the no-go option. This is not the case, as the proponent is the Department of Energy, with a sole mandate of providing adequate energy supply to the national grid. Thus, fundamental alternatives of a development other than the proposed infrastructure for the provision of electricity are technically not feasible in this instance. For this reason no fundamental alternatives to the provision of electrical infrastructure will be considered in the EIAR.

2.5.2. No Development Alternative

The no development option assumes the site remains in its current state, i.e. undeveloped land and underutilised port infrastructure within the Port of Ngqura and the Coega industrial development zone. In addition no additional power will be supplied to the National Grid. The no-go alternative will be used as a baseline throughout the assessment process against which potential impacts will be compared in an objective manner and assessed in the EIA.

2.5.3. Incremental Alternatives

Incremental alternatives are modifications or variations to the design of a project that provide

different options to reduce or minimise environmental impacts. There are several incremental alternatives that will be considered during the EIAR Phase of the project, including:

- The design or layout of the activity;
- The technology to be used in the activity;
- The operational aspects of the activity.

To date only alternatives related to the layout of the activity have been investigated. Within the Port of Ngqura seven probable sites for the location of the FPP were identified by PRDW (refer to Figure 2.4 below). These sites were discussed at a workshop attended by PRDW, Transnet and the EAP, in order to establish which sites were considered to be reasonable and/or feasible alternatives, using a multi criteria analysis. This analysis considered a number of issues, including but not limited to, environmental impacts, port operations, future development plans, power generation efficiency, spatial requirements and health and safety aspects. The main reasons for the exclusion of certain sites are listed below:

- Site 1, 2 and 5: These locations were excluded as TNPA requested that no existing berthing infrastructure be used for the proposed project, as the operational requirements at the Port of Ngqura cannot accommodate this.
- Site 3: This option was excluded as this site is earmarked for a new liquid bulk berth.
- Site 4: This option was excluded due to its close proximity to the turning circle and risk of obstruction to shipping traffic

As a result, this left only two options for further investigation, Site 6 and Site 7. However, it should be noted that Site 6 is very constrained in terms of space and thus may not be able to accommodate a number of FPP's in order to make up the available 600 MW. In addition, power evacuation may present a problem as the proposed powerline will have to be constructed across a greater distance to the existing servitude in the IDZ and will have to run along the back of port area. For this reason Site 7 is considered to be the preferred option, however both Site 6 and Site 7 (or a combination of both) will be assessed during the EIAR Phase of the project.

In addition to the above, technology and operational alternatives will also be assessed during the EIAR Phase of the project once more information has been made available.

Figure 2.4: Possible locations for the siting of the FPP

3. LEGAL AND POLICY FRAMEWORK

3.1. Introduction

Appendix 2 (e) of the National Environmental Management Act (Act 107 of 1998) as amended states that a *"description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process"* must be included in the Scoping Report.

Thus in line with the above legislative requirement the sections below describe the International and South Africa legislation that was taken into consideration during the Scoping Phase of the proposed project.

3.2. Environmental Authorisation Legislative Process

3.2.1. NEMA Environmental Authorisation

The National Environmental Management Act (NEMA) (107 of 1998) as amended

The objective of NEMA is: "*To provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state; and to provide for matters connected therewith*."

A key aspect of NEMA is that it provides a set of environmental management principles that apply throughout the Republic to the actions of all organs of state that may significantly affect the environment. The proposed development has been assessed in terms of possible conflicts or compliance with these principles. Section 2 of NEMA contains principles (see Table 3.1) relevant to the proposed project, and likely to be utilised in the process of decision making by the DEA.

Table 3.1: NEMA Environmental Management Principles

(2)	Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
(3)	Development must be socially, environmentally and economically sustainable.
(4)(a)	Sustainable development requires the consideration of all relevant factors including the following: i. That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; ii. That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied; iii. That waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner.
(4)(e)	Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.
(4)(i)	The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.
(4)(j)	The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.
(4)(p)	The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.
(4)(r)	Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.

As these principles are utilised as a guideline by the competent authority in ensuring the protection of the environment, the proposed development should, where possible, be in accordance with them. Where this is not possible, deviation from the principles would have to be very strongly motivated.

NEMA introduces the duty of care concept, which is based on the policy of strict liability. This duty of care extends to the prevention, control and rehabilitation of significant pollution and environmental degradation. It also dictates a duty of care to address emergency incidents of pollution. A failure to perform this duty of care may lead to criminal prosecution, and may lead to the prosecution of managers or directors of companies for the conduct of the legal persons.

In addition NEMA introduced a new framework for environmental impact assessments, the EIA Regulations (2014).

Relevance to the proposed project:

Three lists of activities, published on 21st of April 2006 and amended on 4th of December 2014, as Government Notice Numbers R.983, R.984, and R.985 define the activities that require, respectively, a Basic Assessment (applies to activities with limited environmental impacts), or a Scoping and Environmental Impact Assessment (applies to activities which are significant in extent and duration).

The activities triggered by the proposed development are listed in the table 3.2 included below.

Table 3.2: Listed activities triggered by the proposed development

Number relevant notice	Activity No(s)	Description of each listed activity based on the project description	Comments and observations
Listing Notice 1 of GNR.983 EIA Regulations dated 4 December 2014	18	The planting of vegetation or placing of any material on dunes or exposed sand surfaces of more than 10 m^2, within the littoral active zone, for the purpose of preventing the free movement of sand, erosion or accretion.	Some dune vegetation may be disturbed during construction of the proposed power line and thus will need to be rehabilitated post-construction.
	19	The infilling or depositing of any material of more than 5 m^3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 m^3 from the seashore, littoral active zone and/or within 100 m inland of the high water mark of the sea.	Some infilling and/or depositing may be required for the construction of the power line.
	27	The clearance of an area of 1 ha or more, but less than 20 ha of indigenous vegetation.	The construction of the power line may result in the clearance of vegetation in excess of 1 ha as the anticipated length is 7 km.
	30	Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004)	Jahleel island is approximately 500 m from the eastern breakwater and forms part of the Addo Elephant National Park.
Listing Notice 2 of GNR.984 EIA Regulations dated 4 December 2014	2	The development and related operation of facilities or infrastructure for the generation of electricity from a non-renewable resource where the electricity output is 20 megawatts or more.	The anticipated output from the floating power plant will be 600 MW.
	4	The development of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in	There is no existing local fuel storage suitable for this operation, so all fuel will need to be imported and stored in floating storage

		containers with a combined capacity of more than 500 m^3.	units.
	14	The development and related operation of an anchored platform.	At the request of TNPA no existing berthing infrastructure will be used for the proposed project. The FPP will therefore require its own mooring system. The required mooring infrastructure is anticipated to be a combination of land secured mooring lines and catenary anchors.
	28	Commencing of an activity, which requires an atmospheric emission license in terms of section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).	An AEL will be required for the FPP.
Listing Notice 3 of GNR.985 EIA Regulations dated 4 December 2014	12	The clearance of an area of 300 m^2 or more of indigenous vegetation within critical biodiversity area identified in bioregional plans and/or within the littoral active zone or 100 m inland from the high water mark of the sea.	Some vegetation may be disturbed during construction of the proposed power line within 100 m from the high water mark.
	14	The development of infrastructure or structures with a physical footprint of 10 m^2 or more within 32 m of a watercourse (excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour), outside urban areas in critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans and/or areas within 10 km from national parks or world heritage sites or 5 km from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve.	Jahleel island is approximately 500 m from the eastern breakwater and forms part of the Addo Elephant National Park.

Based on the NEMA EIA listed activities identified by EOH CES, namely the Listing Notice 2 listed activities in GNR.984, the proposed project's EIA application will be subject to the scoping and environmental impact assessment reporting process as stipulated in the regulations. The relevant authority is the National Department of Environmental Affairs.

3.2.2. Consolidated Permitting Requirements

The National Environmental Management: Air Quality Act (39 of 2004)

As with the Atmospheric Pollution Prevention Act 45 of 1965, the objective of the new Air Quality Act is to protect the environment by providing the necessary legislation for the prevention of air pollution. "*To reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring,*

management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto."

Relevance to the proposed project:

- The "best practicable means" for the abatement of dust during construction and operation if approved have to be taken.
- All appliances used for preventing or reducing to a minimum the escape into the atmosphere of noxious or offensive gases have to be properly operated and maintained and the best practice means for achieving this implemented.
- The proposed development requires an Air Emissions Licence according to the NEM: Air Quality Act (Act 39 of 2004).

National Environmental Management: Integrated Coastal Management Act (24 of 2008)

According to Section 2 of the NEM: ICMA, the objects of this Act are:

- *To determine the coastal zone of the Republic;*
- *To provide, within the framework of the National Environmental Management Act, for the co-ordinated and integrated management of the coastal zone by all spheres of government in accordance with the principles of co-operative governance;*
- *To preserve, protect, extend and enhance the status of coastal public property as being held in trust by the State on behalf of all South Africans, including future generations;*
- *To secure equitable access to the opportunities and benefits of coastal public property; and*
- *To give effect to the Republic's obligations in terms of international law regarding coastal management and the marine environment.*

Section 13 of the NEM: ICMA states that any natural person in the Republic:

- *Has a right of reasonable access to coastal public property; and*
- *Is entitled to use and enjoy coastal public property.*

Section 69(1) of the Act states that no person may discharge effluent that originates from a source on land into coastal waters except in terms of a general discharge permit or a coastal waters discharge permit issued under this section by the Minister after consultation with the Minister responsible for water affairs in instances of discharge of effluent into an estuary. This will be applicable to the project as heated water will be discharged from the FPP.

The abstraction of seawater is not mentioned in the act and therefore it is assumed that this activity does not require any permits from Oceans and Coasts (OC), a branch within the Department of Environmental Affairs with jurisdiction over ocean and coastal management in South Africa.

Relevance to the proposed project:

- A coastal discharge permit will be considered from the Minister for the discharge of heated water into the marine environment.
  A general discharge permit will be required if the discharge of effluent is greater than 10 000 m^3 per day, with a depth of 10 m and situated 500 m off shore. As the FPP is situated in the Port, a general discharge permit will not apply to the proposed project.

National Water Act (36 of 1998)

The Act regulates the protection, use, development, conservation, management and control of water resources in South Africa. The principal concerns in terms of the Act are the potential for the proposed development to pollute surface and groundwater resources, and to ensure that water is used as efficiently as possible.

Chapter 4 Part 1 of the NWA sets out general principles for regulating water use. "*Water use is defined broadly, and includes taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering a watercourse, removing water found underground for certain purposes, and recreation. In general a water use must be licensed unless it is listed in Schedule 1, as an existing lawful use, is permissible under a general authorisation, or if a responsible authority waives the need for a licence. The Minister may limit the amount of water which a responsible authority may allocate. In making regulations the Minister may differentiate between different water resources, classes of water resources and geographical areas*."

Should the proposed power line be constructed within or within close proximity to a wetland a water use license will be required for the proposed development. This will be discussed with the Department of Water and Sanitation and reported on in the EIAR.

Relevance to the proposed project:

19 (1) An owner of land, a person in control of land or a person who occupies or uses the land on which—
(a) any activity or process is or was performed or undertaken; or
(b) any other situation exists, which causes, has caused or is likely to cause pollution of a water resource,
must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring.

A WULA may be required depending on the final alignment of the power line.

3.3. Other Applicable legislation, Policies and/or Guidelines

3.3.1. National Legislation

The Constitution

The Constitution of the Republic of South Africa is the supreme law of the land. As a result, all laws, including those pertaining to the proposed development, must conform to the Constitution. The Bill of Rights - Chapter 2 of the Constitution, includes an environmental right (Section 24) according to which, everyone has the right:

a) To an environment that is not harmful to their health or well-being; and
b) To have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that:

(i) Prevent pollution and ecological degradation;
(ii) Promote conservation; and
(iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

Relevance to the proposed project:

- Obligation to ensure that the proposed development will not result in pollution and ecological degradation; and
- Obligation to ensure that the proposed development is ecologically sustainable, while demonstrating economic and social development.

The National Environmental Management: Biodiversity Act (10 of 2004)

This Act provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act 107 of 1998 (see Table 3.3 below). In terms of the Biodiversity Act, the developer has a responsibility for:

- The conservation of endangered ecosystems and restriction of activities according to the categorisation of the area (not just by listed activity as specified in the EIA Regulations).
- Application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all developments within the area are in line with ecological sustainable development and protection of biodiversity.
- Limit further loss of biodiversity and conserve endangered ecosystems.

Table 3.3: Management and conservation of South Africa's biodiversity within the framework of NEMA

CHAPTER 4	
	Provides for the protection of species that are threatened or in need of national protection to ensure their survival in the wild; o To give effect to the Republic's obligations under international agreements regulating international trade in specimens of endangered species; and o Ensure that the commercial utilization of biodiversity is managed in an ecologically sustainable way.
CHAPTER 5 (Part 2)	
Section 73	A person who is the owner of land on which a listed invasive species occurs must: a) Notify any relevant competent authority, in writing, of the listed invasive species occurring on that land; b) Take steps to control and eradicate the listed invasive species and to prevent it from spreading; and c) Take all required steps to prevent or minimise harm to biodiversity.
Section 75	• Control and eradication of a listed invasive species must be carried out by means or methods that are appropriate for the species concerned and the environment in which it occurs. • Any action taken to control and eradicate a listed invasive species must be executed with caution and in a manner that may cause the least possible harm to biodiversity and damage to the environment. • The methods employed to control and eradicate a listed invasive species must also be directed at the offspring, propagating material and re-growth of such invasive species in order to prevent such species from producing offspring, forming seed, regenerating or re-establishing itself in any manner.

The objectives of this Act are to provide, within the framework of the National Environmental Management Act, for:

- The management and conservation of biological diversity within the Republic;
- The use of indigenous biological resources in a sustainable manner.

The Act's permit system is further regulated in the Act's Threatened or Protected Species Regulations, which were promulgated in February 2007.

Relevance to the proposed project:

- The proposed development must conserve endangered ecosystems and protect and promote biodiversity;
- Must assess the impacts of the proposed development on endangered ecosystems;
- No protected species may be removed or damaged without a permit;
- The proposed site must be cleared of alien vegetation using appropriate means

The National Forest Act (84 of 1998)

The objective of this Act is to monitor and manage the sustainable use of forests. In terms of Section 12 (1) (d) of this Act and GN No. 1012 (promulgated under the National Forests Act), no person may, except under licence:

- Cut, disturb, damage or destroy a protected tree; or
- Possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree.

Relevance to the proposed project:

- If any protected trees in terms of this Act occur on site, the developer will require a licence from the DAFF to perform any of the above-listed activities.

The National Heritage Resources Act (25 of 1999)

The protection of archaeological and paleontological resources is the responsibility of a provincial heritage resources authority and all archaeological objects, paleontological material and meteorites are the property of the State. "*Any person who discovers archaeological or paleontological objects or material or a meteorite in the course of development must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority*".

Relevance to the proposed project:

- No person may alter or demolish any structure or part of a structure, which is older than 60 years or disturb any archaeological or paleontological site or grave older than 60 years without a permit issued by the relevant provincial heritage resources authority.
- No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter or deface archaeological or historically significant sites.

Occupational Health and Safety Act (85 of 1993)

The objective of this Act is to provide for the health and safety of persons at work (See Table 3.4 below). In addition, the Act requires that, "*as far as reasonably practicable, employers must ensure that their activities do not expose non-employees to health hazards*" (Glazewski, 2005: 575). The importance of the Act lies in its numerous regulations, many of which will be relevant to the proposed development. These cover, among other issues, noise and lighting.

Table 3.4: Health and safety of persons at work according to the Occupational Health and Safety Act

8: GENERAL DUTIES OF THE EMPLOYERS TO THEIR EMPLOYEES	
(1)	Every employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his employees.
(2)	Without derogating from the generality of an employer's duties under subsection (1), the matters to which those duties refer include in particular- a) The provision and maintenance of systems of work, plant and machinery that, as far as is reasonably practicable, are safe and without risks to health; b) Taking such steps as may be reasonably practicable to eliminate or mitigate any hazard or potential hazard to the safety or health of employees, before resorting to personal protective equipment; d) Establishing, as far as is reasonably practicable, what hazards to the health or safety of persons are attached to any work which is performed, any article or substance which is produced, processed, used, handled, stored or transported and any plant or machinery which is used in his business, and he shall, as far as is reasonably practicable, further establish what precautionary measures should be taken with respect to such work, article, substance, plant or machinery in order to protect the health and safety of persons, and he shall provide the necessary means to apply such precautionary measures; e) Providing such information, instructions, training and supervision as may be necessary to ensure, as far as is reasonably practicable, the health and safety at work of his employees; f) As far as is reasonably practicable, not permitting any employee to do any work or to produce, process, use, handle, store or transport any article or substance or to operate any plant or machinery, unless the precautionary measures contemplated in paragraphs (b) and (d), or any other precautionary measures which may be prescribed, have been taken; g) Taking all necessary measures to ensure that the requirements of this Act are complied with by every person in his employment or on premises under his control where plant or machinery is used; h) Enforcing such measures as may be necessary in the interest of health and safety; i) Ensuring that work is performed and that plant or machinery is used under the general supervision of a person trained to understand the hazards associated with it and who have the authority to ensure that precautionary measures taken by the employer are implemented; and authority as contemplated in Section 37 (1) (b).
14: GENERAL DUTIES OF EMPLOYEES AT WORK Every employee shall at work:-	
(a)	Take reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions;
(b)	As regards any duty or requirement imposed on his employer or any other person by this Act, cooperate with such employer or person to enable that duty or requirement to be performed or complied with;
(c)	Carry out any lawful order given to him, and obey the health and safety rules and procedures laid down by his employer or by anyone authorized thereto by his employer, in the interest of health or safety;
(d)	If any situation which is unsafe or unhealthy comes to his attention, as soon as practicable report such situation to his employer or to the health and safety representative for his workplace or section thereof, as the case may be, who shall report it to the employer; and
(e)	If he is involved in any incident which may affect his health or which has caused an injury to himself, report such incident to his employer or to anyone authorized thereto by the employer, or to his health and safety representative, as soon as practicable but not later than the end of the particular shift during which the incident occurred, unless the circumstances were such that the reporting of the incident was not possible, in which case he shall report the incident as soon as practicable thereafter.
15: DUTY NOT TO INTERFERE WITH, DAMAGE OR MISUSE THINGS [S. 15 substituted by S. 3 of Act No. 181 of 1993.]	
	No person shall intentionally or recklessly interfere with, damage or misuse anything which is provided in the interest of health or safety.

Relevance to the proposed project:

- The developer must be mindful of the principles and broad liability and implications contained in the OHSA and mitigate any potential impacts.

Hazardous Substances Act (15 of 1973)

The Act aims to manage hazardous substances. It is the principal national legislation that controls the transportation, and manufacturing, storage, handling, treatment or processing facilities for any substance that is dangerous or hazardous (Groups I-IV).

Relevance to the proposed project:

- Manage the hazardous substances in such a manner that it does not endanger human health or the environment.
- Prevent hazardous substances from being used for an unauthorised purpose.

National Environmental Management: Protected Areas Act (31 of 2004)

The purpose of this Act is to provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes.

The objectives of this Act are-

- To provide, within the framework of national legislation, including the National Environmental Management Act, for the declaration and management of protected areas;
- To provide for co-operative governance in the declaration and management of protected areas;
- To effect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity;
- To provide for a representative network of protected areas on state land, private land and communal land;
- To promote sustainable utilisation of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas;
- To promote participation of local communities in the management of protected areas, where appropriate; and
- To provide for the continued existence of South African National Parks.

Relevance to the proposed project:

- The eastern breakwater (where the FPP will be moored) is within 500 m of Jahleel Island which forms part of the Addo Elephant National Park.
- The proposed project area falls within the Addo Elephant National Park buffer zone.

Biodiversity Policy and Strategy for South Africa: Strategy on Buffer Zones for National Parks

The strategy on buffer zones for National Parks was originally established due to the increasing rate and extent of development in and around National Parks, resulting in the isolation of National Parks from wider natural areas. The function of the Buffer Zone is to reduce /mitigate the negative influences that activities in close proximities to National Parks may have on the Park. The function also includes integration of Parks into surrounding landscapes.

The main purpose of the Buffer Zone is thus to:

- "Protect the purpose and value of the National Park which is to be explicitly defined in the management plan submitted in terms of section 39(2) of the Act;
- Protect important areas of high value for biodiversity and/or to society where these extend beyond the boundary of the Protected Area;
- Assist adjacent and affected communities to secure appropriate and sustainable benefits from the National Park and buffer zone area itself by promoting a

conservation economy, ecotourism and its supporting infrastructure and services, and sustainability through properly planned harvesting."

According to this strategy, the establishment of a buffer zone around a National Park should be considered if the area is necessary for the proper conservation and effective protection of the National Park and would assist in achieving its objectives. This strategy also states that "the buffer zone is an area surrounding a National Park which has complementary legal and management restrictions placed on its use and development, aimed at providing an extra layer of protection to the integrity of the National Park." This strategy is specifically geared towards sections relating to protected areas as well as Goal 1.4 (Environmentally sound and sustainable development adjacent to protected areas).

A Buffer Zone has the following six (6) objectives:

1. Ensure the persistence of important species and ecological processes;
2. Promote broad based and sustainable economic activity;
3. Preserve, adapt, restore and stabilize cultural heritage and secure the sustainable use thereof;
4. Preserve and improve the quantity and quality of water from catchments in the park and the buffer zone;
5. Protect enhance and restore the unique and memorable character - the sense of place - that underpins the image of the National Park and their approaches, and
6. Protect and enhance the wilderness experience of park users.

The strategy stipulates that Buffer Zones must be established around National Parks in order to achieve the above goals. These buffer zones should be defined as priority natural areas, catchment protection areas and viewshed protection areas, and be identified by Government and integrated into management plans and Municipal Spatial Frameworks. These may then be established by publication in the Gazette or where appropriate, be declared as protected environments in terms of the Act.

In terms of the implementing the buffer zone strategy, the Department of Environmental Affairs (DEA) is responsible for implementing the specific provisions of National Environmental Management legislation, as they relate to buffer zones, while SANParks is responsible for the management of National Parks. The National Park buffer zones, as defined in the park management plan, can be considered special areas in terms of section 24(2)(b) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The strategy also states that all development in a formally established buffer zone that requires an environmental authorisation in terms of the NEMA, will be subject to an environmental impact assessment process at national level. The Department's decision will be informed by the management authority's (SANParks) opinion on the potential impact on the National Park.

Relevance to the proposed project:

- The proposed project area falls within the Addo Elephant National Park buffer zone

National Environmental Management: Waste Act (59 of 2008)

This legislation aims to enforce an integrated approach to waste management, with emphasis on prevention and reduction of waste at source and, where this is not possible, to encourage reuse and recycling in preference to disposal.

Section 16 (Chapter 4) of this Act deals with the general duty in respect to waste management and emphasises that, "*A holder of waste must, within the holder's power, take all reasonable measures to:- avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated; reduce, re-use, recycle and recover waste;*

where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner; manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour or visual impacts; prevent any employee or any person under his or her supervision from contravening this Act; and prevent the waste from being used for an unauthorised purpose".

Chapter 4, Part 3 of this Act deals with reduction re-use and recovery of waste, Part 4 deals with waste management activities, Part 5 covers storage collection and transportation of waste, Part 6 deals with treatment, processing and disposal of wastes, Part 7 covers industry waste management plans and Part 8 deals with contaminated land. Chapter 5 covers all issues regarding the licensing of waste management activities.

Relevance to the proposed project:

- All reasonable measures must be taken to avoid the generation of waste and where such generation cannot be avoided, minimise the toxicity and amounts of waste that are generated; reduce, re-use, recycle and recover waste; where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner;
- Manage the waste in such a manner that it does not endanger human health or the environment or cause a nuisance through noise, odour or visual impacts.
- Prevent any employee or any person from contravening this Act; and prevent the waste from being used for an unauthorised purpose.

Relevant Noise Legislation

Specific noise legislation and the following standards have been used to aid the study and guide the decision making process with regards noise pollution:

- South Africa - GNR.154 of January 1992: Noise control regulations in terms of section 25 of the Environment Conservation Act (ECA), 1989 (Act No. 73 of 1989).
- South Africa - GNR.155 of 10 January 1992: Application of noise control regulations made under section 25 of the Environment Conservation Act, 1989 (Act No. 73 of 1989).
- South Africa - SANS 10103:2008 Version 6 - The measurement and rating of environmental noise with respect to annoyance and to speech communication.
- South Africa - SANS 10210:2004 Edition 2.2 – Calculating and predicting road traffic noise.
- South Africa - SANS 10357:2004 Version 2.1 - The calculation of sound propagation by the Concawe method.
- NMBM noise control by-law 37 of 2010

The ambient noise levels guidelines in SANS 10103:2008 is 70dBA during the day and 60dBA at night in industrial districts. These levels can thus be seen as the target levels for any noise emissions within the IDZ.

SANS 10103:2008 provides typical rating levels for noise in various types of districts, as described in the table below.

Table 3.5: Typical rating levels for noise in various types of districts

Type of District	Equivalent Continuous Rating Level, LReq.T for Noise					
	Outdoors (dB(A))			Indoors, with open windows (dB(A))		
	Day-night	Daytime	Night-time	Day-night	Daytime	Night-time
Rural Districts	45	45	35	35	35	25
Suburban districts with little road traffic	50	50	40	40	40	30

Type of District	Equivalent Continuous Rating Level, LReq.T for Noise					
	Outdoors (dB(A))			Indoors, with open windows (dB(A))		
	Day-night	Daytime	Night-time	Day-night	Daytime	Night-time
Urban districts	55	55	45	45	45	35
Urban districts with one or more of the following: Workshops; business premises and main roads	60	60	50	50	50	40
Central business districts	65	65	55	55	55	45
Industrial districts	70	70	60	60	60	50

Furthermore, the South African noise control regulations describe a disturbing noise as any noise that exceeds the ambient noise by more than 7dB. This difference is usually measured at the complainants location should a noise complaint arise. Therefore, if a new noise source is introduced into the environment, irrespective of the current noise levels, and the new source is louder than the existing ambient environmental noise by more than 7dB, the complainant will have a legitimate complaint.

Guidelines for expected community responses to excess environmental noise is reflected in Table 3.6 below. It should be noted that the closest communities to the Port of Ngqura is Motherwell (approximately 6 km from the proposed site) and Wells Estate (approximately 4.5 km from the proposed site).

Table 3.6: Categories of environmental community / group response (SANS 10103:2008)

EXCESS Lr dB (A)	ESTIMATED COMMUNITY/GROUP RESPONSE	
	CATEGORY	DESCRIPTION
0 - 10	Little	Sporadic complaints
5 - 15	Medium	Widespread complaints
10 - 20	Strong	Threats of community / group action
> 15	Very Strong	Vigorous community / group action

3.3.2. International Standards

MARPOL 73/78 – International Convention for the Prevention of Pollution from Ships

The MARPOL (Marine Pollution) Convention was adopted in November 1973 at the International Maritime Organisation (IMO). In 1978, the MARPOL Protocol was adopted as a result of a number of oil tanker accidents in 1976 and 1977. This, in combination with the original MARPOL Convention, was entered into force in 1983 and was amended in 1997 when Annex VI was added. The amended Protocol was entered into force in May 2005 and has been followed by several additional amendments over the years (IMO, 2015).

The purpose of the MARPOL convention is to regulate pollution from ships – from accidental pollution to pollution from the general operations associated with shipping. The objective is to preserve the marine environment by eliminating pollution from harmful substances such as oil (IMO, 2015). 152 countries are currently entered into the convention and this represents over 99% of the world's shipping tonnage. Ships sailing under the flag of a country that has entered into the MARPOL convention are expected to comply with the regulations regardless of where they are sailing. Difficulties have arisen in the enforcement of these regulations as each participating country is separately responsible for certifying the ship under the compliances of MARPOL's pollution prevention standards (Copeland, 2008). The MARPOL Convention was ratified by South Africa in 1985.

Additional Marine Conventions

In addition to MARPOL, South Africa is a signatory of a number of international conventions for the protection of marine resources. Recommendations from these conventions will need to be adhered to.

International Convention	Internationally Adopted	Ratified by South Africa
International Convention for the Prevention of Pollution from Ships (MARPOL)	**1973**	**1985**
Framework Convention on Climate Change	1992	1997
Convention on Biological Diversity	1992	1995
International Convention on Civil Liability for Oil Pollution Damage	1969	
International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties	1969	1986
Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention)	1972	1978
Protocol to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter	1996	1998
United Nations Convention on the Law of the Sea (UNCLOS)	1982	1997
Protocol for the Protection of the Ozone Layer (Montreal Protocol)	1990	1990
Convention on the International Maritime Organization	1948	1995
Geneva Convention on the Territorial Sea and Contiguous Zone	1958	1963
Geneva Convention on the High Seas, 1958	1958	1963
Geneva Convention on Fishing and Conservation of the Living Resources of the High Seas	1958	1963
Convention on the Continental Shelf	1958	1963
Protocol relating to intervention on the high seas in cases of pollution by substances other than oil	1973	1997
International Convention on Civil Liability for Oil Pollution Damage	1969	1997
International Convention for the Safety of Life at Sea	1974	1980
International Convention on the Control of Harmful Anti-Fouling Systems	2001	2008

3.3.3. Municipal By-Laws and Planning

There will be certain requirements related to health and safety during construction and approval of method statements. Certain activities related to the proposed development may, in addition to National legislation, be subject to control by municipal by-laws including the NMBM Local Municipality Integrated Development Plan (IDP) and Spatial Development Framework (SDF).

NMBM SDF (2015)

The proposed development is considered to be in line with the Draft SDF (2015), which states the following in regards to power production within the Coega IDZ: *"Investments in the energy sector, with the purpose of feeding into the electrical grid, will continue in the IDZ, with the focus on renewable energy, peaking power generation capacity, and other key areas within the energy cluster. The world-class infrastructure at the IDZ unlocks and also enables potential for the development of an advanced manufacturing cluster within the IDZ, consistent with the objectives of the Industrial Policy Action Plan (IPAP). The Dedisa Power Peaking Plant is under construction, for opening in 2015. The IDZ is well positioned to establish a Liquefied Natural Gas handling facility and associated power facilities."*

Coega Open Space Management Plan (2014) and Coega IDZ Development Framework (2006)

The CDC compiled, with advice from Gibb Africa and Metroplan, a Development Framework Plan (DFP) for the Coega IDZ. This DFP aims to provide an overall development strategy for the Coega IDZ by identifying a series of defined objectives so that the implementation of the Coega IDZ can progress from concept to detailed planning and design. The DFP is based on a range of clusters and activity nodes. It achieves this by:

- Providing a robust but flexible land use, transportation and infrastructure strategy for the Coega site,
- Ensuring that the strategy conforms with National Policy for the planning of Development Zones, Confirming that the strategy is consistent with local planning initiatives, commitments and objectives, and
- Demonstrating that the strategy is based on previous feasibility studies, and current "best practice", as demonstrated in similar projects.

Based on the Coega IDZ Development Framework Plan (2006), the site (partially in Zone 6, 7, 8, 10 and 13) is classified in two different land use areas:

- Port Development Zone
- 132 kV Power Servitude

An Open Space Management Plan was prepared by CES (2006) to provide ecological input into the DFP. The OSMP identifies sensitive ecological areas, and areas of high biodiversity, to ensure that spatial planning considered the ecological setting. Ecological corridors and areas of high biodiversity or where unique fauna and flora occur were identified and where possible incorporated into the DFP. A number of ecological corridors were identified, and according to the OSMP, new power lines will pass through and adjacent to the open space system through a dedicated Services Corridor. The power line for this project will also be located within an existing services corridor. As limited vegetation clearing is required for the installation of a power line, these areas were seen as extensions of the ecological corridors, which will provide for ecological links between the Critical Biodiversity Area (CBA) – Industrial Development Zone (IDZ) areas and the Nelson Mandela Bay Metropolitan Open Space System (NMB MOSS) to the north-west of IDZ.

According to the OSMP, the goals of the planning and construction of linear infrastructure should be to:

- Minimise the impacts on the natural environment, including sensitive vegetation types, steep slopes, wetlands and the Coega River.
- Minimise potential impacts after construction by stabilising and rehabilitating disturbed areas.

Environmentally sensitive planning approach for linear infrastructure includes:

- The construction of any infrastructure must comply with the CDC's Environmental Specifications for Construction and the TNPA Construction Environmental Management Plan.

- For power lines minimise vegetation clearing during construction by ensuring that vegetation under the conductors is not cleared. Vegetation should only be cleared around towers and access roads.
- It is essential to minimise vegetation clearing and ground disturbances on areas susceptible to water erosion (in and around the Coega River).
- Rescue plant species protected under the Provincial Ordinance and/or translocate to areas requiring rehabilitation.
- Remove and store topsoil for later use during rehabilitation. Topsoil must not be contaminated with other material or compacted by vehicular traffic.
- For power lines appropriate bird flight diverters (BFD's) may need to be installed to increase the visibility of the power lines where they cross the Coega River. The requisite EIA must determine the need for BFD’s, type of BFD and spacing of the BFD’s.

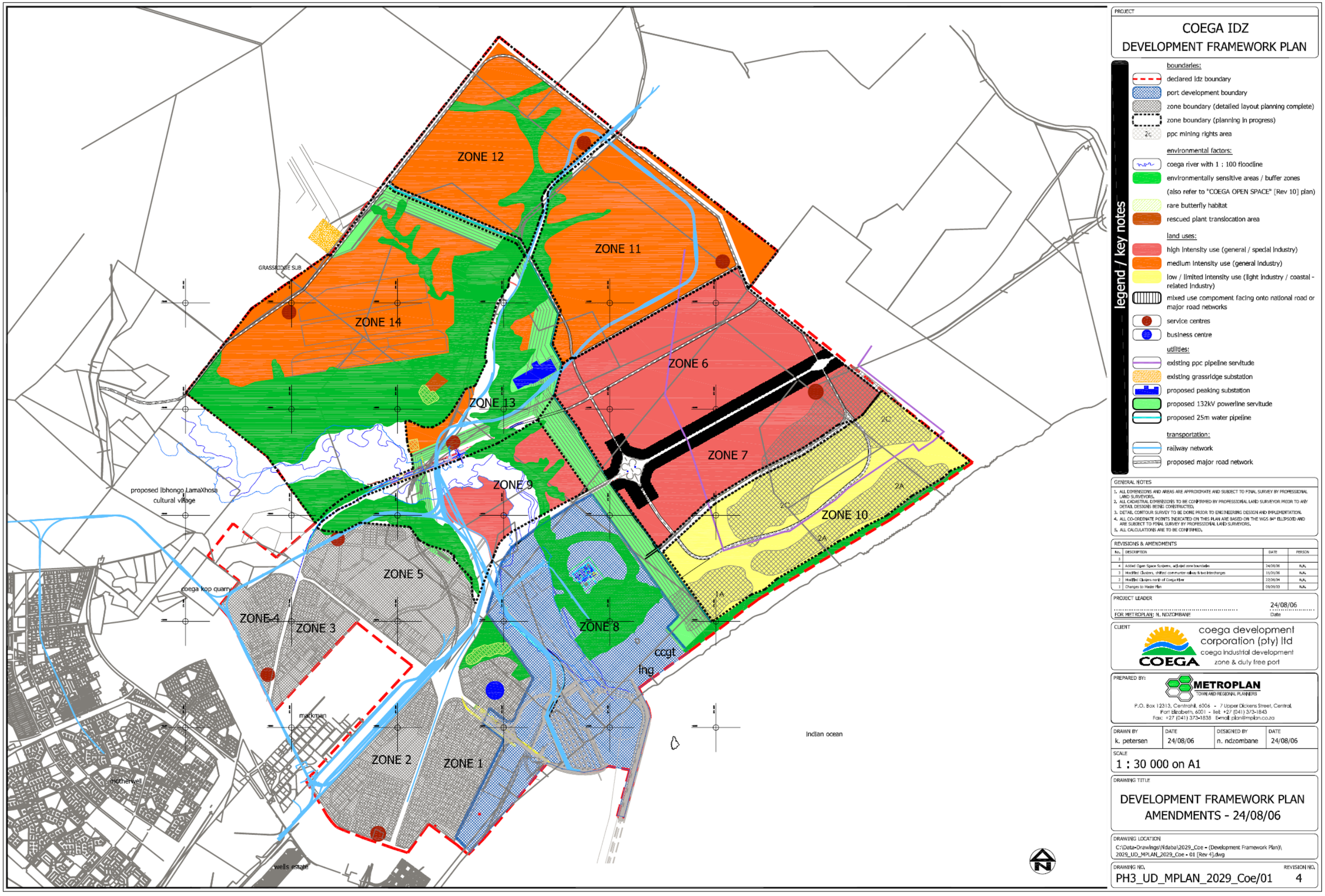

Figure 3.1: Coega IDZ Framework Plan (2006), indicating different land classifications (Also included in the Coega OSMP Appendix I).

4. ENVIRONMENTAL AND SOCIAL BASELINE

4.1. INTRODUCTION

This chapter gives background information on the biological, physical (biophysical) and social environment of the surrounding area and the proposed project site. The section draws on existing specialist studies undertaken for other developments within the Coega IDZ as well as municipal and local planning tools and any additional published and unpublished material. The environmental baseline is divided into terrestrial and marine sections. The former will look at aspects relating to climate, topography, geology, soils, flora, fauna, air quality and inland water bodies. The marine section will focus on the oceanography, water quality and marine ecological aspects pertaining to the proposed project area as well as the Port of Ngqura. The social baseline will address the administrative and institutional structures, demographic profile, education, health, economy, land use, cultural heritage, infrastructure and services as well as noise and visual aspects of the area.

4.2. AREA OF INFLUENCE

The project site is located within the 'Coega' allotment area approximately 25 km north of the Port Elizabeth CBD in the Eastern Cape Province (Figure 4.1). The proposed project area stretches from the eastern breakwater in the Port of Ngqura to the Dedisa Substation located approximately 6 km north. This crosses the N2 highway as well as the R102 road. Because the proposed project will consist of linear features (the power evacuation routes), the area of influence or 'development footprint' stretches over a relatively long distance (north to south) but does not extend laterally (east-west). As a portion of the overall project area is located in the Port of Ngqura, the area of influence also extends to the marine environment which includes Algoa Bay and the islands of St Croix, Brenton, Jahleel, Bird Island, Seal Island and Stag Island. Jahleel Island is located less than 1km from the eastern breakwater of the Port of Ngqura.

Figure 4.1: Area of influence

4.3. TERRESTRIAL ENVIRONMENT

The proposed project area is located at the coastline and extends approximately 7km inland over a coastal plateau covered mostly by thicket vegetation. The biophysical characteristics associated with the terrestrial environment of the area are elaborated on below using several spatial tools which have been developed over the recent years.

4.3.1. Climatic Conditions

The Eastern Cape has a complex climate. There are wide variations in temperature, rainfall and wind patterns, mainly as a result of movements of air masses, altitude, mountain orientation and the proximity of the Indian Ocean. Climate data is readily available for Port Elizabeth which, due to its proximity to the proposed project area, will be representative of the climate for this project site.

The wind regime for the Port Elizabeth area is dominated by westerly and north-westerly flow fields representing the pre-frontal conditions; and south-westerly flow fields representing the frontal conditions. The south-easterly and south-westerly wind flow (i.e. land breeze) increases during daytime conditions while westerly and north-westerly wind flow regimes increases during the night (sea breeze). The proposed project area is subject to strong winds from the west and west-south-west (41% combined frequency) all year round, and east (15%) from October through to March. These winds occur mainly throughout the day and may generate a significant amount of fugitive dust. Diurnal variations in the wind regime occur which are due to the influence of land-sea breeze circulation on the airflow of the region.

Port Elizabeth has a bimodal rainfall pattern with an average of 624 mm annually, with peaks in spring and autumn. On average, October has the most rainfall days with January having the least. The highest precipitation occurs in August (Figure 4.2). Algoa Bay is situated near the junction of the temperate and subtropical climatic regions, and it has a warm temperate climate with the average daily temperature ranging from 25ºC (summer) to 12ºC (winter). January has the highest mean temperate (23°C) with June and July having the lowest (11°C) overnight average temperature (Figure 4.3). Exceptionally high temperatures may be experienced during berg wind conditions, which occur frequently during autumn and winter. Extreme temperatures also occur during summer, with little accompanying wind.

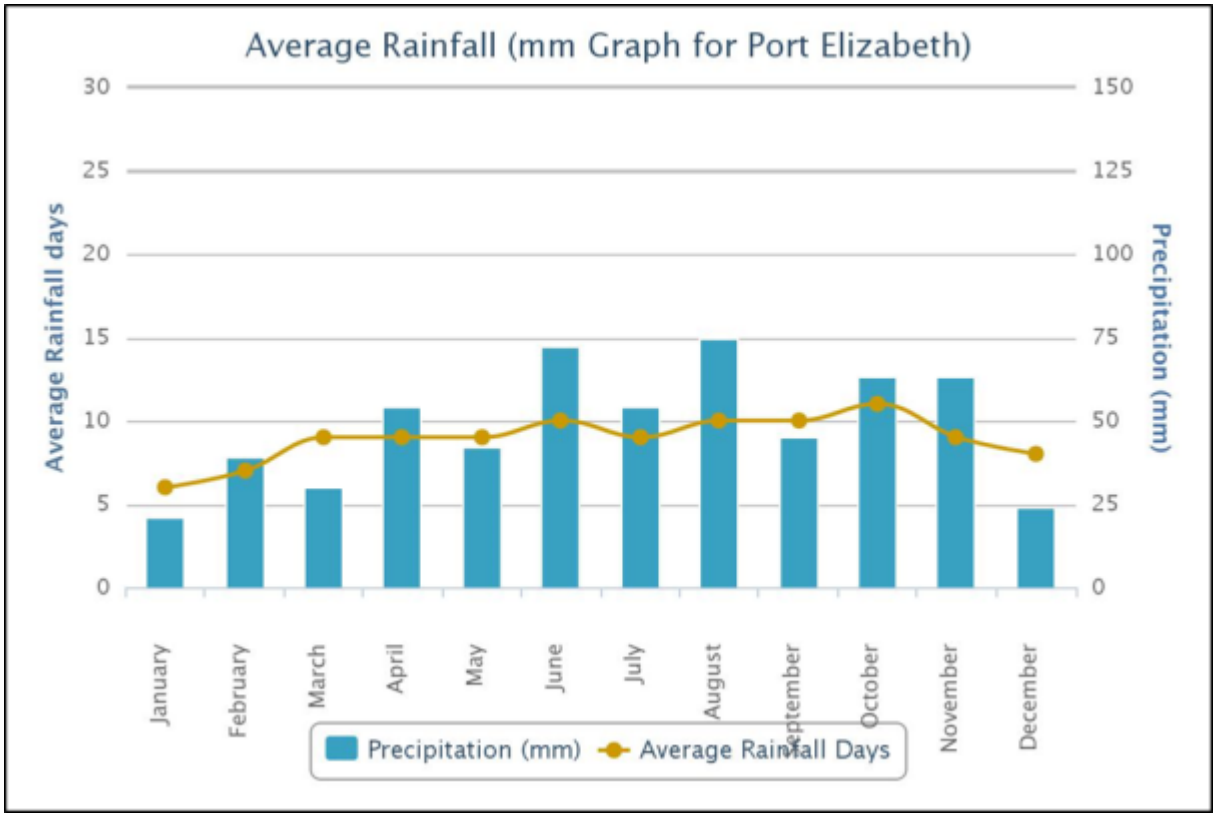

Figure 4.2: Port Elizabeth climate data: rainfall (from World Weather Online, 2015).

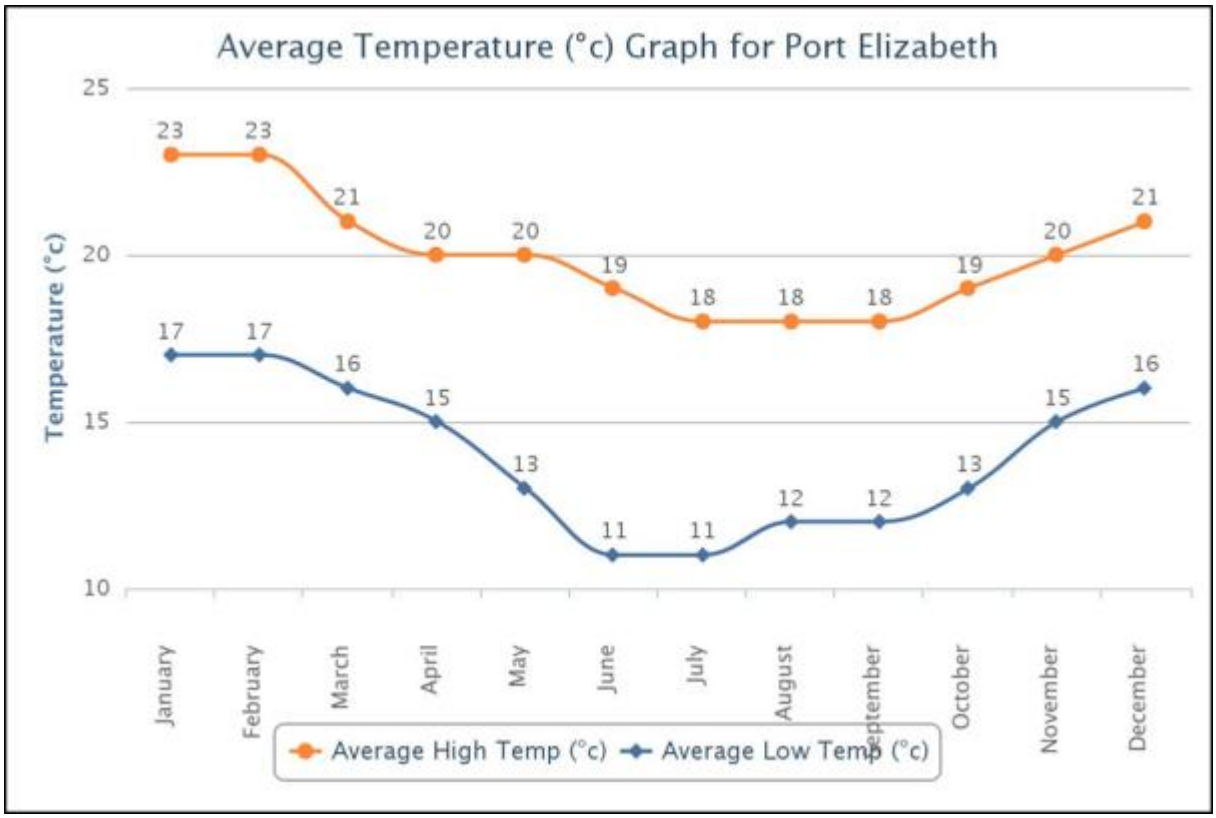

Figure 4.3: Port Elizabeth climate data: temperatures (from World Weather Online, 2015)

4.3.2. Topography, Geology and Soils

The proposed project area is located in close proximity to the southern cape coastline and therefore consists of a coastal topography dominated by sand dunes overlying relatively recent erodible geological deposits. Generally the IDZ consists of level ground, but the Coega River valley behind the Ngqura Port is flanked by fairly steep slopes where the river has cut into the coastal plain (Figure 4.4). The altitude of the project area does not exceed 80 m above sea level at any point and is located on the coastal plateau on the eastern side of the Coega River Valley.

Figure 4.4: Contour map (20m intervals) of the proposed project area.

The proposed project area is underlain by bedrock of quartzite strata belonging to the Peninsula Formation of the Table Mountain Group (Cape Super Group). This formation consists of coarse-grained super-mature sandstone and is highly resistant to erosion. It forms the bedrock of Algoa Bay and outcrops are evident as islands off the coast (St Croix, Jahleel, Bird and Brenton) as well as several outcrops on land such as Coega Kop. The beaches comprise dune and marine sands and the whole bay consists of unconsolidated sand with the exception of Cape Recife, Woody Cape and Cape Padrone (CEN, 1997).

The geology of the Coega IDZ is characterised by coastal limestone, overlain by calcareous sands blown onshore. Three marine incursions and subsequent limestone deposition phases seem to have occurred, each progressively younger and at lower altitude seaward. The geology towards the sea consists of unconsolidated sands and fluvial sediments within the Coega floodplain. The land north of the N2 national road is dominated by coastal limestone (Figure 4.5).

The soils of the IDZ can be described as relatively deep, red, lime-rich sandy clay loams. The proposed site is characterised by coastal sands, and sandy soils and lime-containing lithosols.

Figure 4.5: Geology map of the proposed project area

4.3.3. Vegetation

4.3.3.1 National Vegetation – Based on Mucina and Rutherford 2012

Mucina and Rutherford (2012) updated the National Vegetation map of 2006 as part of a South African National Biodiversity Institute (SANBI) funded project "…*in order to provide floristically based vegetation units of South Africa, Lesotho and Swaziland at a greater level of detail than had been available before.*" The map was developed using a wealth of data from several contributors and resulted in the best national vegetation map to date, the last being that of Acocks, developed over 50 years ago. This map forms the base of finer scale bioregional plans such as the Subtropical Thicket Ecosystem Project (STEP) and the Succulent Karoo Ecosystem Programme (SKEP). The map and accompanying book describe each vegetation type in detail, along with the most important species, including endemic species and those that are biogeographically important. This is the most comprehensive data for vegetation types in South Africa. The accompanying shapefiles were updated in 2012. The vegetation of the proposed project area consists of:

- Algoa Dune Strandveld,
- Cape Seashore Vegetation and
- Coega Bontveld (Figure 4.6).

These vegetation types are all classified as 'least threatened' (Figure 4.6).

Algoa Dune Strandveld

Algoa Dune Strandveld occurs in a narrow coastal strip along the Indian Ocean seaboard from the mouth of the Tsitsikamma River to the Sunday River mouth in the Eastern Cape. This vegetation type is characterised by tall dense thickets on dunes mainly outside the influence of salt spray. It is dominated by stunted trees, shrubs (often armed with spines and thorns), abundant lianas and sparse herbaceous and grassy undergrowth. The conservation status of this vegetation type is classified as "Least Threatened" (Figure 4.7). The conservation target (percent of area) as set by the NSBA is 20%. This vegetation type is conserved in the Greater Addo Elephant National Park, Cape Recife, Sardinia Bay, The Island, Kromme River Mouth, Gamtoos River mouth, Huisklip, Cape St Francis, Seal Point Nature Reserve, Gulu, Christmas Vale, Cape Morgan, Cintsa, Cove Rock, Bluebend and Sunshine Coast as well as in the private NMMU and Rebelsrus Nature Reserves, Thyspunt Natural Heritage Site and in the Seaview Game Park. More than 10% has already been transformed via cultivation (4%), urban development and the construction of roads. Some of the dune systems suffer heavy infestation by *Acacia cyclops* and *Acacia saligna*, which are now being removed by local Working for Water activities.

Cape Seashore Vegetation

Cape Seashore Vegetation occurs along the coast in the Western Cape and Eastern Cape Provinces. The conservation status of this vegetation type is classified as 'Least Threatened' (Figure 4.7). The conservation target (percent of area) as set by the NSBA is 20%. Almost half of this vegetation type is statutorily conserved in the West Coast, Cape Peninsula Agulhas, proposed Garden Route and Greater Addo Elephant National Parks as well as the Rocher Pan, Cape Columbine, Dassen island, Wolvengat, Kleinmond, Walker Bay, De Mond (Ramsar site), De Hoop, Kleinjongensfontein, Geelkrans, Robberg, (all Western Cape), and Cape St Francis, Cape Recife, Joan Muirhead, Gxulu, Cape Henderson, Kwelera and Bosbokstrand Nature Reserves (all Eastern Cape). A number of private conservation areas such as Donkin Bay, Robben Island, Rein's Coastal Reserve and Tharfield Nature Reserve protect other considerable portions of the Cape Seashore Vegetation. Only about 1.7% has been transformed, mainly by urban development.

Coega Bontveld

Coega Bontveld occurs on moderately undulating plains where a mosaic of low thicket (2-3 m) consisting mainly of bush clumps grows. Secondary open grassland occurs over wide stretches. This unit is often restricted to 'islands' in a matrix of typical valley thicket. The species present are a mixture of Fynbos, Grassland and Succulent Karoo elements. Distribution of Coega Bontveld within the Eastern Cape Province is limited to northeast of Port Elizabeth just inland of Algoa Bay (i.e. mainly Coega and Addo). The conservation status of this vegetation type is classified as 'Least Threatened' (Figure 4.7). The conservation target (percent of area) as set by the NSBA is 19%. A total of 10% of this vegetation unit is protected in the Greater Addo Elephant National Park and almost 4% in the private Grassridge Nature Reserve. Some 4% of Coega Bontveld has been altered by cultivation and 2% by urbanisation. The building of roads and traffic infrastructure for the IDZ and around the Coega harbour has encroached heavily on this area of the Coega Bontveld.

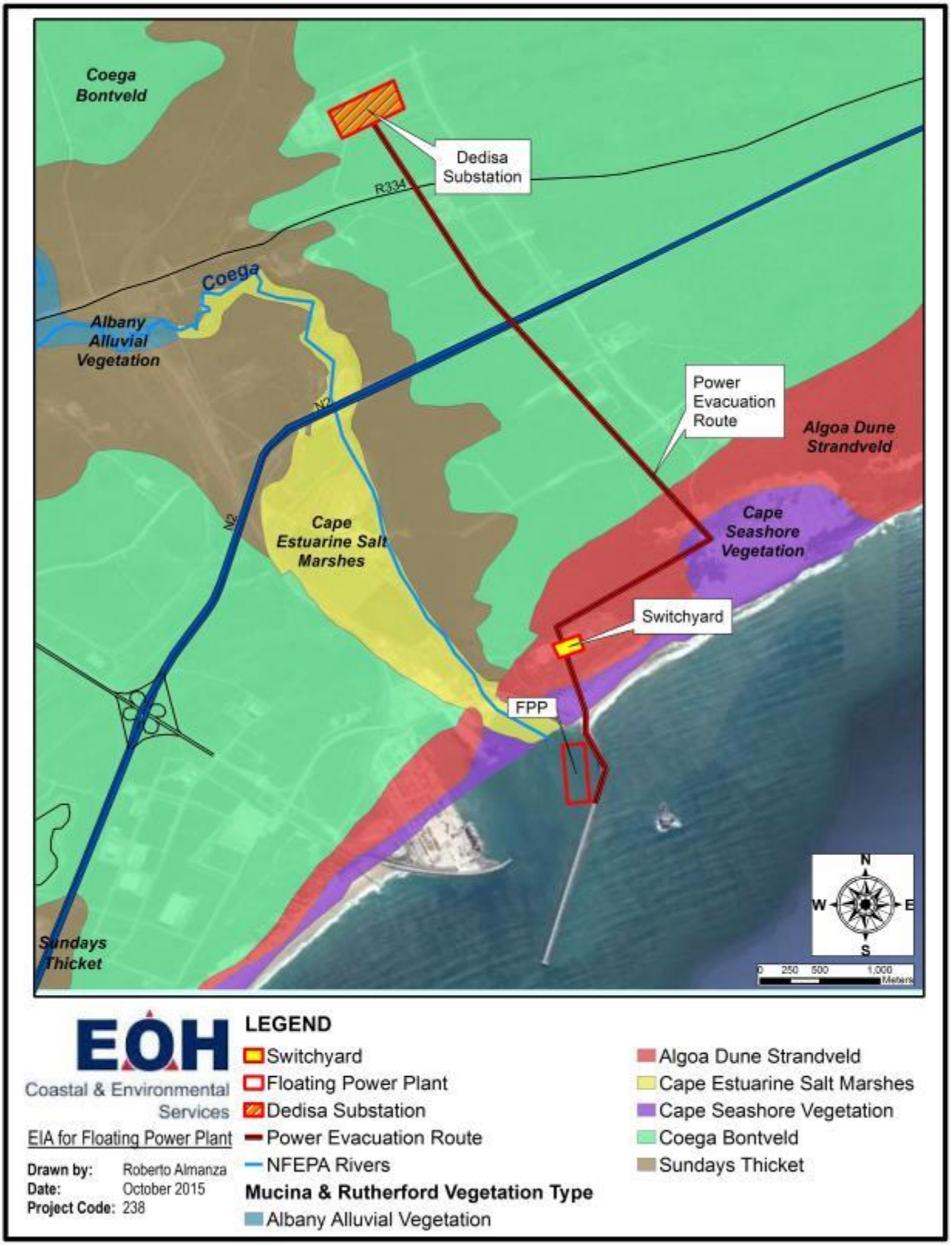

Figure 4.6: National vegetation classification of the proposed project area (Mucina and Rutherford, 2012)

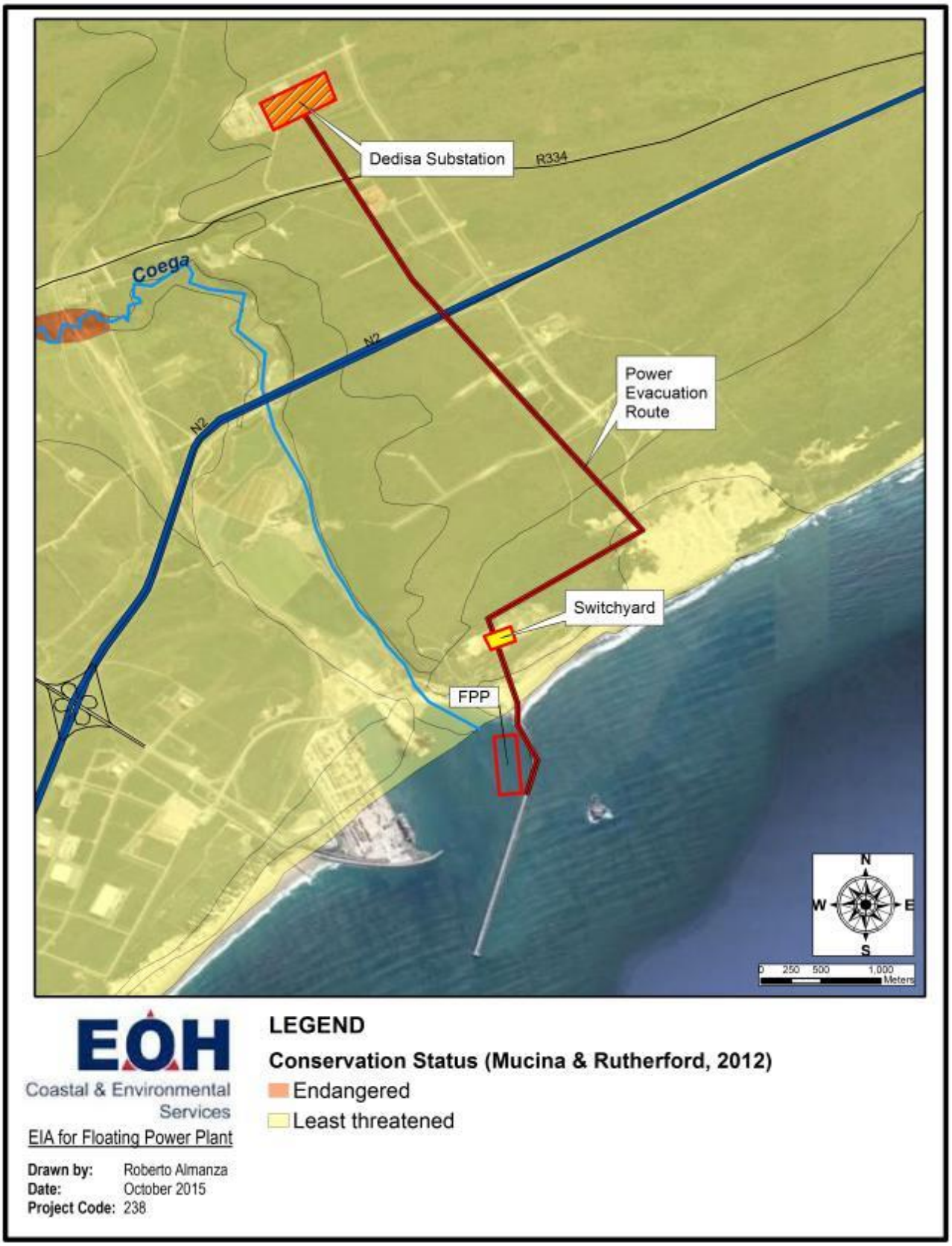

Figure 4.7: National Conservation Status of the proposed project area (Mucina and Rutherford, 2012)

4.3.3.2. Regional Vegetation – based on the Subtropical Thicket Ecosystem Planning Project (STEP) 2006

The Subtropical Thicket Ecosystem Planning (STEP, 2006) Project aimed to identify priority areas that would ensure the long-term conservation of the subtropical thicket biome and to ensure that the conservation of this biome was considered in the policies and practices of the private and public sector that are responsible for land-use planning and the management of natural resources in the region (Pierce *et al*. 2005). STEP looked specifically at the thicket biome and provided a finer scale map of the project area than the Mucina and Rutherford map. Based on this the vegetation on site can be classified as Algoa Dune Thicket, Sundays Thicket, Grassridge Bontveld and South East Coastal Vegetation (Figure 4.8). The conservation status of these vegetation types ranges from 'Vulnerable' to 'Currently Not Vulnerable' (Figure 4.9).

Grassridge Bontveld is a valley thicket mosaic type consisting of small patches of Sundays Valley Thicket in a matrix of veld that consists of a combination of species that are characteristic of fynbos (*Acmadenia obtusata, Euryops ericifolius*), succulent karoo (*Pteronia incana*) and grassland (*Themeda triandra, Eustachys paspaloides*). This unit contains many highly localized endemics and is generally restricted to outcrops of limestone (Nanaga formation), often as 'islands' in a matrix of Valley Thicket. Several rare and localised endemic plant species occur here, such as *Anginon rugosum, Bulbine inae, Euphorbia globosa, Lotononis micrantha* and *Rhombophyllum rhomboideum*. This vegetation type is classified as "Currently Not Vulnerable" (Figure 4.9).

Sundays Thicket consists of Kiepersol (*Cussonia spicata*) and tree euphorbias (*Euphorbia triangularis*) that emerge above the tree canopy, in which species such as wild olive (*Olea europaea* subsp. *europaea*), sneezewood (*Pteroxylon obliquum*) and bosboerboon (*Schotia latifolia*) are abundant and of which shrubs such as basterperdepis (*Hippobromus pauciflorus*) are characteristic. Spekboom (*Portulacaria afra*) is present only on the driest sites and is never dominant. This vegetation type is classified as "Currently Not Vulnerable" (Figure 4.9).

Algoa Dune Thicket grows mainly on dune soils of marine origin. Within this vegetation unit succulents are seldom common and like thicket, the vegetation is often forest-like in moist situations. Dominant species include Milkwood (*Sideroxylon inerme*) and candlewood (*Pterocelastrus tricuspidatus*). Waxberry shrubs (*Morella cordifolia*) are abundant and the rare succulent, *Cotyledon adscendens* is characteristic. Algoa Dune Thicket is classified as 'Vulnerable' (Figure 4.9).

South East Coastal Vegetation consists mainly of open and often succulent and grassy vegetation on mobile and semi-mobile coastal dunes. This type includes many species found in the former but differs in the high cover of *Ipomoea pes-caprae* and *Scaevola plumieri*. This vegetation type is classified as "Currently Not Vulnerable" (Figure 4.9).

In addition to the above, the southern section of the proposed power line and the switchyard falls within a coastal corridor (Figure 4.10). According to the STEP Handbook (2006), STEP Corridors are parts of the landscape that are best able to allow the continuation of large-scale ecological processes (especially the movement of plants and animals) if such areas are restricted to low-impact activities. The STEP Corridors cover 22% of connected and mostly undamaged natural environment across the STEP region. The areas within the STEP Corridors are considered to be vitally important for the existence and long-term survival of the region's biodiversity no matter what their Ecosystem Status classification. The safeguarding and wise land use of the STEP Corridors is therefore vitally important.

It is estimated that approximately 10% of the overall project area has been transformed by anthropogenic and other activities (Figure 4.11). However, this is likely to be more as there has been a significant amount of development within the Coega IDZ since the production of STEP in 2006.

Figure 4.8: Detailed Vegetation Map of the proposed project area (based on STEP, 2006)

Table 4.1: Applicable STEP Land Use Management Guidelines

	General rule	*Land use management (Reactive decisions)*
Vulnerable	Vulnerable land can withstand limited loss of area through disturbance or development.	• As a rule, developments with limited area or impacts may be allowed on vulnerable land. • In response to an application for a non-listed activity which will have severe or large-scale disturbance on a relatively undisturbed site (unspoilt by impacts), the Municipality should first seek the opinion of the provincial authority. • Proposed disturbance or developments should preferably take place on sites which have undergone disturbance or impacts rather than on sites that are undisturbed. • For a proposed "listed activity", EIA authorisation is required by law.
Not Vulnerable	Depending on other factors, this land can withstand loss of natural area through disturbance or development.	Proposed disturbance or developments should preferably take place on portions which have already undergone disturbance.

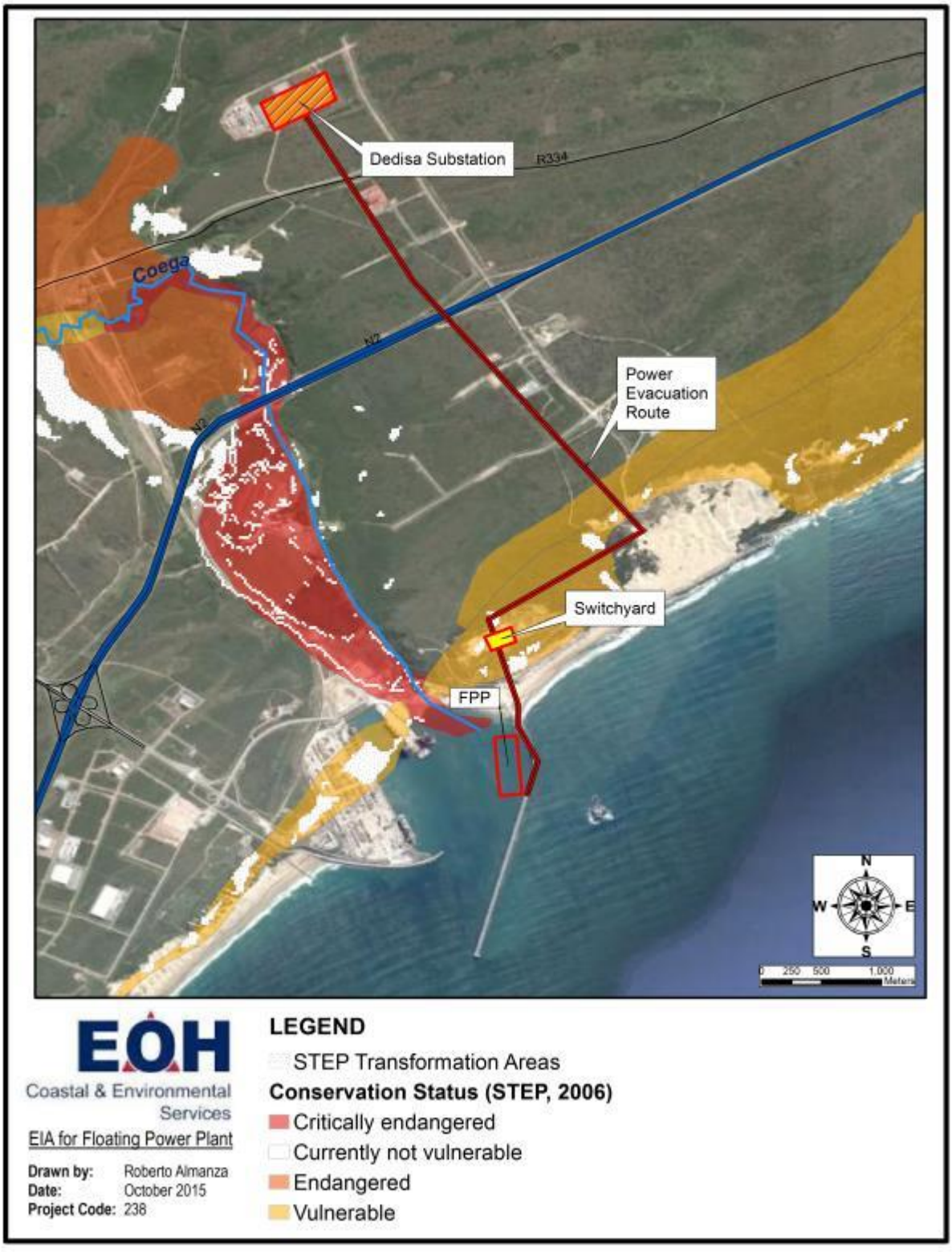

Figure 4.9: Conservation Status Map of the proposed project area (STEP, 2006)

Figure 4.10: Coastal corridors of the proposed project area (STEP, 2006)

Figure 4.11: Transformed area of the proposed project area (STEP, 2006)

4.3.3.3. Regional Vegetation – The Eastern Cape Biodiversity Conservation Plan (ECBCP, 2007)

According to the ECBCP (2007) the entire project site falls within an Aquatic CBA 2. In addition to this, the proposed power line will transect an area demarcated as a terrestrial CBA 2, and occurs in close proximity to a CBA 1 in the northern section of the proposed power line (Figure 4.12 and Figure 4.13).

Terrestrial CBA 1 areas are defined by the following aspects:

- Critically endangered vegetation types (ecosystems) identified though the ECBCP systematic conservation assessment;
- Critically endangered vegetation types from STEP;
- Critically endangered forest patches in terms of the National Forest Assessment;
- Areas essential for meeting biodiversity targets for biodiversity features (SA vegetation types, expertly mapped priority areas);
- Systematic conservation planning priorities; and
- Forest clusters identified as critical in the forestry planning process (Berliner *et al* 2006).

Terrestrial CBA 2 areas are defined by the following aspects:

- Endangered vegetation types identified through the ECBCP systematic conservation assessment;
- Endangered vegetation types from STEP;
- Endangered forest patches in terms of the National Forest Assessment;
- All expert-mapped areas less than 25 000 ha in size (includes expert data from this project, STEP birds, SKEP, Wild Coast, Pondoland and marine studies);
- All other forest clusters (includes 500 m buffers);
- 1 km coastal buffer strip;
- Ecological corridors identified in other studies (e.g. from STEP, Wild Coast, Pondoland, WMA 12 SEA, etc.) and corridors mapped by experts; and
- Ecological corridors identified by the ECBCP using an integrated corridor design for the whole Province.

Aquatic CBA 2 areas are defined by:

- Important sub-catchments;
- Aquatic CBA 2 free-flowing rivers important for fish migration; and
- Important estuaries.

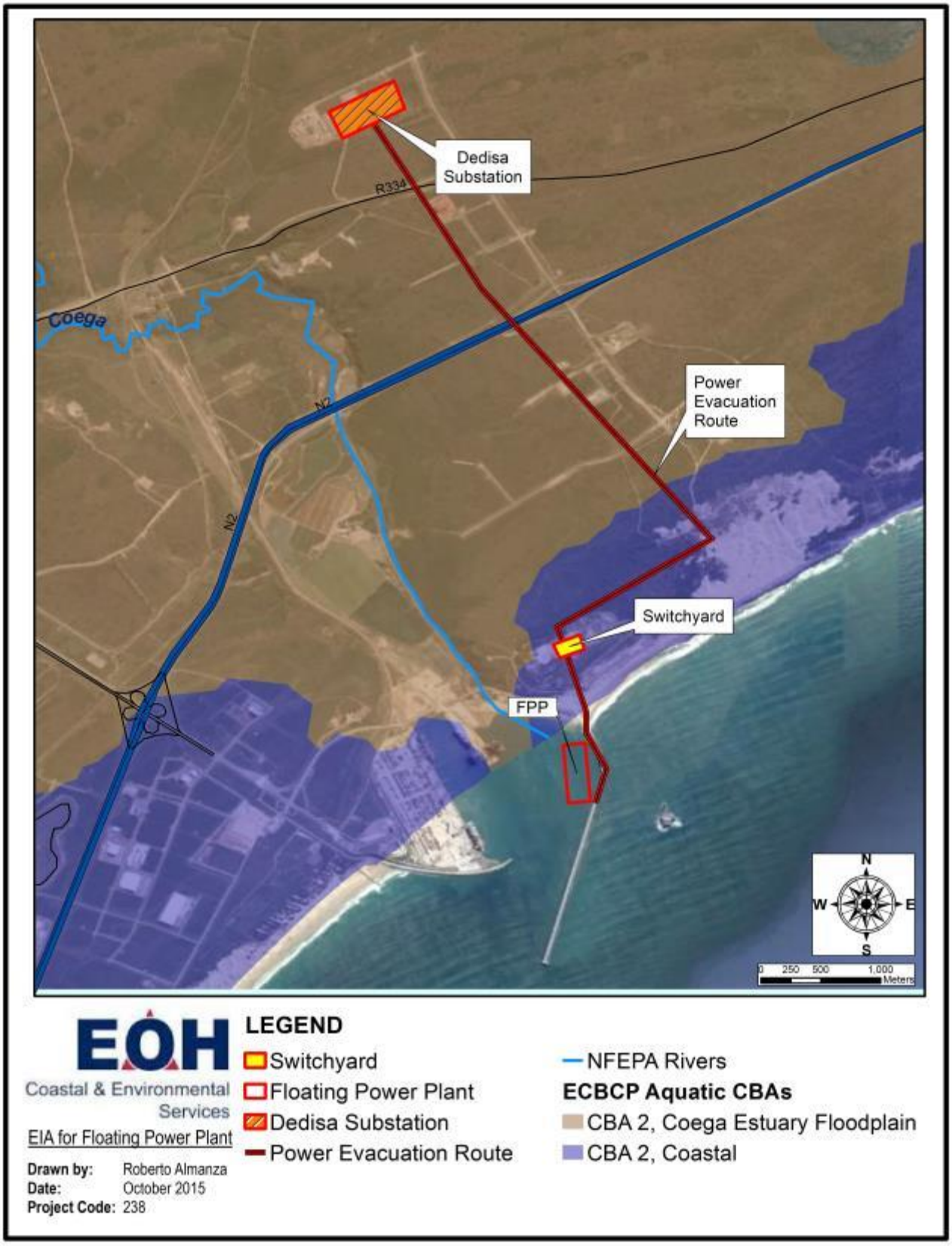

Figure 4.12: Aquatic CBA map of the proposed project area (ECBCP, 2007)

Figure 4.13: Terrestrial CBA Map of the proposed project area

4.3.3.4 Local Vegetation – The Metropolitan Open Space System (MOSS, 2009)

The MOSS defines the following vegetation types in the study area (Figure 4.14):

Sandy Beaches - classified as Azonal beach types dominated by the deposition of sand. Approximately 86.7% of the intact habitat remains. This vegetation type is classified as "Least Threatened" (Figure 4.16).

Algoa Dune Thicket is a subtropical thicket vegetation type dominated by protected trees such as the Milkwood (*Sideroxylon inerme*) and Candlewood (*Pterocelastrus tricuspidatus*). Waxberry shrubs are abundant in this vegetation type and rare succulents such as *Cotyledon adscendens* are characteristic. This vegetation type is present on calcareous sandstone, silt/siltstone, shelly limestone and coquinite. Approximately 38.4% of the intact vegetation remains. This vegetation type is classified as "Vulnerable" (Figure 4.16).

Colchester Strandveld is a subtropical thicket vegetation type consisting of thicket clumps in a matrix of shrubland (MOSS, 2009). This vegetation type is present on aeolianite/calcareous sandstone/sand (Figure 4.14). Approximately 43.4% of the intact vegetation remains. This vegetation type is classified as "Vulnerable" (Figure 4.16).

Grassridge Bontveld is a subtropical Valley Thicket consisting of small clumps of Sundays Valley Thicket in a matrix of veld that consists of a combination of species that are characteristic of fynbos (*Acmadenia obtusata, Euryops ericifolius*), succulent karoo (*Pteronia incana*) and grassland (*Themeda triandra, Eustachys paspaloides*). This unit contains many highly localized endemics and is found on the Alexandria Formation. Approximately 90.9% of the intact vegetation remains. This vegetation type is classified as "Vulnerable" (Figure 4.16).

A Conservation Assessment and MOSS plan was done for the Nelson Mandela Bay Municipal area in 2009. Various outcomes relevant to the study site include the following:

- The most southern section of the proposed power line is located within an area classified as a CBA (Figure 4.15). CBA areas should form part of the protected area system if found not to be degraded beyond the ability for restoration. Suggested land use guidelines are biodiversity conservation, game farms, and low density settlements; provided they are all ecologically sustainable.
- The ecosystem status of the majority of the proposed development site is classified as 'Vulnerable' (Figure 4.14). According to MOSS, Vulnerable areas outside of CBAs must be managed for sustainable development. This means that some loss of natural habitat is allowed but this needs to be within the limits of cumulative impacts of the transformation threshold of the Ecosystem Status.
- Vegetation types found on site include Grassridge Bontveld, Colchester Strandveld, Algoa Dune Thicket and Sand Beaches (Figure 4.13).

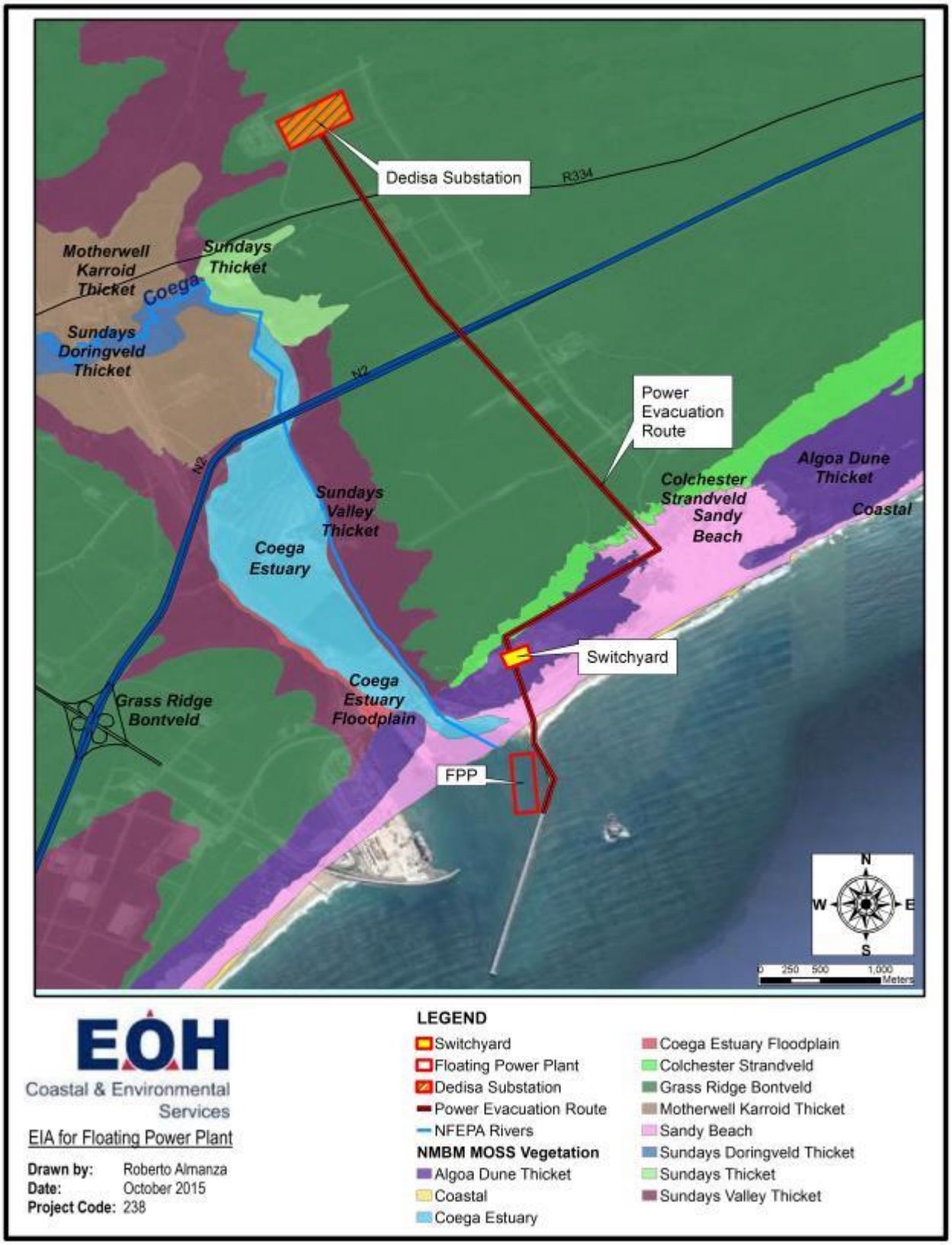

Figure 4.14: Vegetation Map of the proposed project area (MOSS, 2009)

Figure 4.15: Critical Biodiversity Areas of the proposed project area (MOSS, 2009)

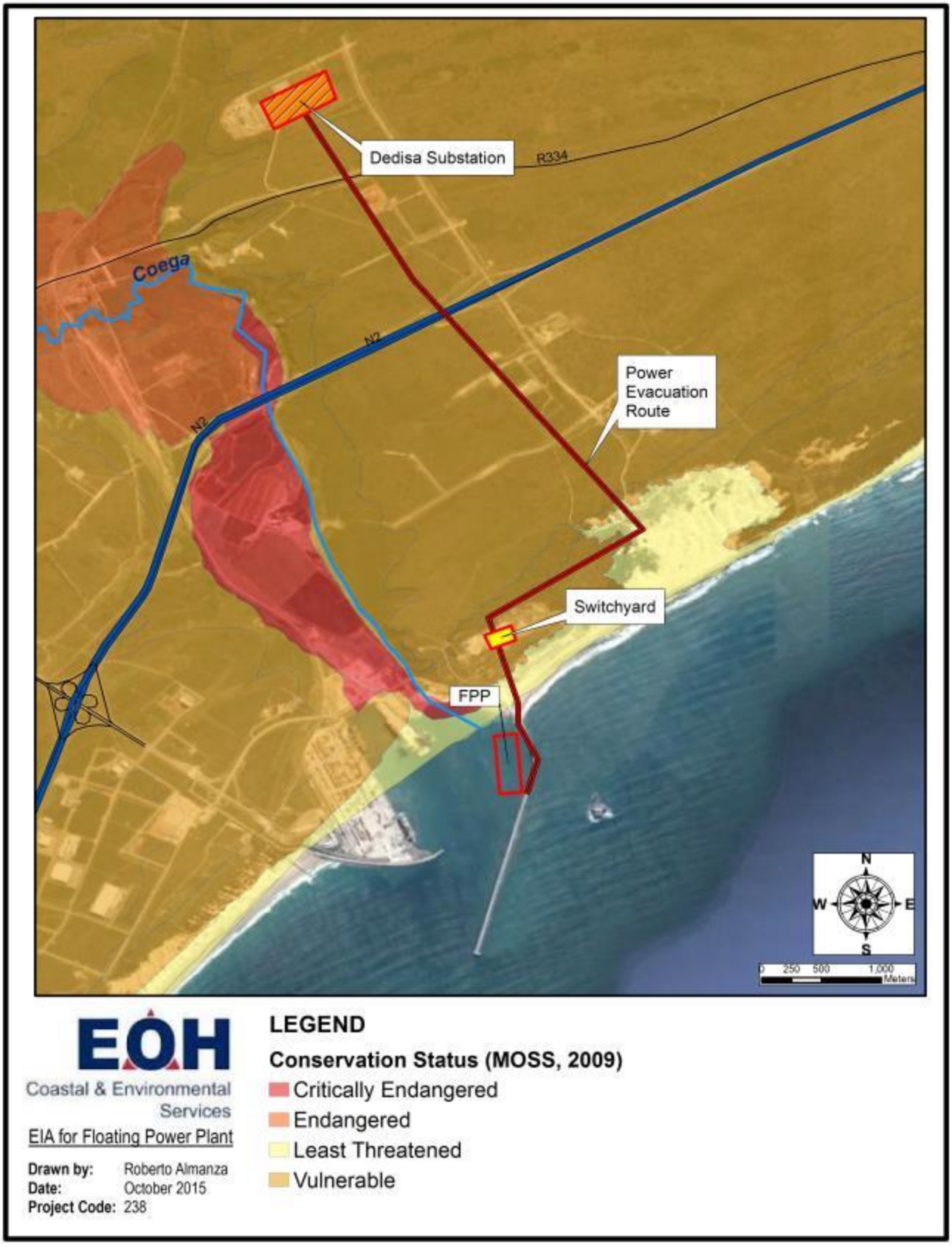

Figure 4.16: Conservation Status Map of the proposed project area (MOSS, 2009)

Floristics

Potential Species of Conservation Concern (SCC) which are likely to occur within the vegetation types within the project area are derived from plants listed in terms of the IUCN, the South African Red Data List, Provincial Nature Conservation Ordinance PNCO and national legislation (NEMBA). QDS 3325DC and 3325DA were consulted to compile the relevant species lists. Based on historical records for the region, it is likely that one Critically Endangered species, four Endangered species, two Protected and two Near Threatened species occur in this area (SIBIS, 2015). All three *Encephalartos* spp. are found on the NEMBA lists, whilst 11 species were listed on the PNCO. These can be seen in Table 4.2 below. In addition to the above, *Leucadendron argenteum* and *Sideroxylon inerme* are listed as protected trees under the national protected tree species list (National Forest Act).

Table 4.2: Species of Conservation Concern that are likely to occur within the study site

SCIENTIFIC NAME	IUCN	SA RED DATA LIST	NEMBA	PNCO	PROTECTED TREES
Carissa Bispinosa	-	Least Concern	-	Schedule 4	-
Corpuscularia lehmannii	-	Critically Endangered	-	-	-
Encephalartos horridus	Endangered	Endangered	Endangered	Schedule 3	-
Encephalartos caffer	Near Threatened	Protected	Protected-	Schedule 3	-
Encephalartos lehmannii	Near Threatened	Protected	Protected-	Schedule 3	-
Euyops cf ericifolius	-	Endangered	-	-	-
Gomphocarpus physocarpus	-	Least concern	-	Schedule 4	-
Haworthia fasciata	-	Near Threatened	-	-	-
Leucadendron argenteum	Vulnerable	Endangered	-	Schedule 3	Protected tree
Marsilea schelpeana	Vulnerable	-	-	-	-
Rapanea gilliana	Vulnerable	-	-	-	-
Rhombophyllum rhomboideum	Endangered	Endangered	-	-	-
Sarcostemma viminale	-	Least Concern	-	Schedule 4	-
Scadoxus puniceus	-	Least Concern	-	Schedule 4	-
Sideroxylon inerme	-	Least Concern	-	-	Protected Tree
Strelitzia cf juncea	-	Vulnerable	-	Schedule 4	-
Tritoniopsis antholyza	-	Least Concern	-	Schedule 4	-
Watsonia pillansii	-	Least Concern	-	Schedule 4	-

4.3.4. Fauna

Amphibians

Amphibians are an important and often neglected component of terrestrial vertebrate faunas. They are well represented in sub-Saharan Africa, from which approximately 600 species have been recorded (Frost, 1985). However, distribution patterns in southern Africa are uneven both in terms of species distribution and in population numbers (du Preez and Carruthers, 2009). A relatively rich amphibian fauna occurs in the Eastern Cape, where a total of 32 species and sub-species occur. This represents almost a third of the species known from South Africa. Knowledge of amphibian species diversity in the study area is limited. However, according to the Animal Demographic Unit's Reptile Database, 16 species of frog have been documented in the Quarter Degree Square that the project area falls in. Of these 16 species, none are listed on the IUCN Red List nor as a schedule 1 on the PNCO list. However, all frogs and toads are listed as schedule 2 species on the PNCO list and are therefore considered species of conservation concern. Permits will be required for the removal of all frogs and toads.

Reptiles

South Africa has 350 species of reptiles, comprising 213 lizards, 9 worm lizards, 105 snakes, 13 terrestrial tortoises, 5 freshwater terrapins, 2 breeding species of sea turtle and 1 crocodile (Branch, 1998). Of those 350 reptile species, the Eastern Cape is home to 133 which include 21 snakes, 27 lizards and eight chelonians (tortoises and turtles). The majority of these are found in Mesic Succulent Thicket and riverine habitats. The Animal Demography Unit historical records indicate that 83 species of reptiles are likely to occur in the project site. Only one Near Threatened species (*Nucras taeniolata - Albany Sandveld Lizard)* and one Critically Endangered species (*Bitis albanica- Albany adder*) on the IUCN Red Data List are likely to be found in the study area (Table 4.3). However, all lizards and tortoises are listed as a schedule 2 species on the PNCO list and will therefore require permits for their removal.

Table 4.3: Reptile species of conservation concern that are likely to occur in the project area (ADU)

FAMILY	SCIENTIFIC NAME	COMMON NAME	RED LIST STATUS	PNCO
Colubridae	*Philothamnus semivariegatus*	Spotted Bush Snake	-	Schedule 2
Colubridae	*Duberria lutrix lutrix*	South African Slug-eater	-	Schedule 2
Colubridae	*Lamprophis aurora*	Aurora House Snake	-	Schedule 2
Colubridae	*Lycodonomorphus rufulus*	Brown Water Snake	-	Schedule 2
Colubridae	*Lycophidion capense capense*	Cape Wolf Snake	-	Schedule 2
Colubridae	*Philothamnus natalensis occidentalis*	Western Natal Green Snake	-	Schedule 2
Colubridae	*Prosymna sundevalli*	Sundevall's Shovel-snout	-	Schedule 2
Lacertidae	*Nucras taeniolata*	Albany Sandveld Lizard	Near threatened	Schedule 2
Viperidae	*Bitis albanica*	Albany Adder	Critically Endangered	Schedule 2

Birds

Nine bird species are endemic to South Africa, but there are no Eastern Cape endemics. However, there are 62 threatened species within the Eastern Cape Province (Barnes, 2000). Most of these species occur in grasslands or are associated with wetlands, indicating a need to conserve what is left of these ecosystems (Barnes, 2000). According to Southern African Bird Atlas Project 2 (SABAP2) for the QDS 3325DA and 3325DC, 369 bird species (including marine species) have distributions which incorporate the project area. Species include; The Blue Crane (*Anthropoides paradiseus*), which is a critically endangered species according to NEMBA, as well as a listed species on Appendix II of CITES; Denham's Bustard (*Neotis denhami*) which is listed as protected on the NEMBA list; and the Martial Eagle (*Polemaetus bellicosus*) which is listed as threatened. Table 4.4 lists the bird species of conservation concern that are likely to occur in the project area. It must be noted that pelagic seabirds which have distribution ranges within the project area but do not nest within the project area have been removed from this table.

Table 4.4: Bird species of conservation concern that are likely to occur in the project area (ADU)

Family	Scientific Name	Common name	Red List status	CITES	NEMBA	PNCO
ACCIPITRIDAE	*Circus maurus*	Black Harrier	Vulnerable	-	-	Schedule 2
ACCIPITRIDAE	*Polemaetus bellicosus*	Martial Eagle	Near Threatened	-	Threatened	Schedule 2
ACCIPITRIDAE	*Stephanoaetus coronatus*	Crowned Eagle	Near Threatened	-	-	Schedule 2
ANATIDAE	*Oxyura maccoa*	Maccoa Duck	Near Threatened	-	-	Schedule 2
CHARADRIIDAE	*Charadrius pallidus*	Chestnut-banded Plover	Near Threatened	-	-	Schedule 2
CORACIIDAE	*Coracias garrulus*	European Roller	Near Threatened	-	-	Schedule 2
GRUIDAE	*Anthropoides paradiseus*	Blue Crane	Vulnerable	Appendix II	Critically endangered	Schedule 2
HAEMATOPODIDAE	*Haematopus moquini*	African Black Oystercatcher	Near Threatened	-	-	Schedule 2
OTIDIDAE	*Neotis denhami*	Denham's Bustard	Near Threatened	-	Protected Species	Schedule 2
PICIDAE	*Campethera notata*	Knysna Woodpecker	Near Threatened	-	-	Schedule 2
SAGITARIIDAE	*Sagittarius serpentarius*	Secretary Bird	Vulnerable	Appendix II	-	Schedule 2
SCOLOPACIDAE	*Limosa limosa*	Black-tailed Godwit	Near Threatened	-	-	Schedule 2
SCOLOPACIDAE	*Numenius arquata*	Eurasian Curlew	Near Threatened	-	-	Schedule 2
TIMALIIDAE	*Lioptilus nigricapillus*	Bush Blackcap	Near Threatened	-	-	Schedule 2

Mammals

Large game makes up less than 15% of the mammal species in South Africa and a much smaller percentage in numbers and biomass. In developed and farming areas, this percentage is greatly reduced, with the vast majority of mammals present being small or medium-sized.

Eighty-nine mammal species have distribution ranges which include the project area. According to NEMBA, three protected mammal species (South African Hedgehog, Honey Badger and Cape Fox) and one vulnerable species (Leopard) have distributions that coincide with the project area (Table 4.5). However, the likelihood of Leopard and/or Cape

Fox occurring on site is **low** as human activity within the area is likely to force the species away from the site. The White tailed mouse, which has a distribution that coincides with the project area is listed as Endangered. Sclater's Mouse Shrew and Schreibers Long-fingered bat are both listed as Near Threatened on the IUCN Red List and have distributions which co-inside with the project area.

Table 4.5: Mammal Species of Conservation Concern likely to be found within the project site

Scientific Name	Common Name	IUCN	NEMBA	PNCO
Atelerix frontalis	South African hedgehog	-	Protected	Schedule 2
Mystromys albicaudatus	White-tailed mouse	EN	-	-
Mellivora capensis	Honey Badger	-	Protected	Schedule 2
Vulpes chama	Cape Fox	LC	Protected	-
Myosorex sclateri	Sclater's Mouse Shrew	NT		
Miniopterus schreibersii	Schreibers Long-fingered bat	NT	-	Schedule 2
Panthera pardus	Leopard	NT	Vulnerable	Schedule 2

Conservation and Planning Tools

Several conservation planning tools are available for the area. These tools allow for the determination of any sensitive and important areas from a vegetation and faunal point of view. They allow for the fine-tuning of plans with a view to reducing potential environmental impacts at the planning stage of the development. The tools used are outlined in Table 4.6 below.

Table 4.6: Conservation and planning tools considered for the proposed project

Tool	Motivation	Relevancy	Implications
Nelson Mandela Bay Metropolitan Open Space System (MOSS, 2009)	The Nelson Mandela Bay Metropolitan Open Space System (MOSS) divides the metropolitan area into areas of biodiversity importance, nature reserves, natural open spaces and areas too expensive or too sensitive to develop (NMBM, 2009)	***Relevant.*** The site is situated in the NMBM in an area classified as a critical biodiversity area.	The management objective of CBA areas as per the MOSS plan (2009) indicates that natural structure and ecosystem functioning should be kept and or restored and that the area should maintain or obtain formal conservation protection.
Coega Open Space Management Plan (2014)	The primary objectives of developing an OSMP for the IDZ are to: • Promote preservation of the environment where natural systems and/or specific habitats require it. • Manage and preserve the cultural resources within the open spaces of Coega IDZ. • Manage and preserve land for its aesthetic or passive recreational value, for active recreational use,	***Relevant.*** The site is situated in the Coega IDZ	The site falls partially in Zones 6, 7, 8, 10 and 13 and is classified in two different land use areas: • Port Development Area • 132 kV power servitude

Tool	Motivation	Relevancy	Implications
	and for its contribution to the quality of life of the concessionaires, tenants and the public. • Meet recreation space demands as well as provide natural amenities for the IDZ working population. • Ensure proper management of open space areas. • Ensure that linkages to neighbouring open space areas are maintained. • Use education to promote and accomplish the goals of the environmental vision for Coega IDZ. • Address the social & cultural needs of workers and families if and where desired. • Promote educational opportunities within the IDZ and enhance the level of environmental awareness of the workers within the IDZ. • Improve environmental quality by means of development guidelines to ensure the IDZ can compete with other alternative locations on a global scale.		
Important Bird Area (IBA)	Important Bird Areas are globally recognized areas essential for the protection of bird species. In order to be classified as an IBA, an area must contain Globally threatened species, restricted range species, biome restricted species or congregations of species.	***Relevant.*** The Algoa Bay Islands are a proclaimed IBA.	Jahleel Island forms part of this group and is situated approximately 500 m from the eastern breakwater where the FPP is anticipated to be moored.

4.3.5. Air Quality

An ambient air monitoring network has been established in the Coega IDZ which consists of three monitoring stations namely the Saltworks, Motherwell and Amsterdamplein. These stations were not operational between November 2012 and January 2015. In 2008, a maximum daily average of Particulate Matter up to 10 micrometers in size (PM_{10}) with a concentration of 277 µg/m³ was recorded. SA standards only allow for 4 days of exceedance per calendar year. According to the monitoring data, the 75 µg/m³ standard was exceeded on 17 days in 2007 and 26 days in 2008 at all 3 stations. In more recent data obtained directly from the CDC, the SA standard was not exceeded in January and February 2015. Average maximum daily PM_{10} concentrations were recorded at 32.9 µg/m³ at the Motherwell station and 34.5 µg/m³ at the Coega Saltworks station. No PM_{10} monitoring data is available for the Amsterdamplein station at this stage.

4.3.6. Surface and Groundwater

The Coega River is located to the west of the proposed project area. The Coega River Valley represents the only major incision into the coastal landform in the area between the Swartkops and Sundays rivers. Over time, the Coega River has created a floodplain valley between 400m and 1 000m wide. It is a relatively small sand-bed river, and is the most significant surface water feature associated with the Coega IDZ. Due to the absence of water within the Coega River for most of the year and the impermeability of underlying clays, flow may primarily be made up of run-off and effluent. The Coega estuary is the only major 'wetland'-defined area surrounding the proposed project area, but there are also a number of small wetlands surrounding the proposed site (Figure 4.17).

The southern portion of the IDZ is underlain by an artesian aquifer formed by sandstones and quartzite of the Table Mountain Group. Confining this aquifer are a succession of eastward-thickening Cretaceous formations (Uitenhague Group) up to 1 200 m thick near the coast. Groundwater levels in the Coega area are generally between 3 and 5 m below surface i.e. just above the contact between the permeable sands and the underlying impermeable clays. The groundwater flow direction is to the southeast, following the surface water drainage direction (Jacobs, 2008).

Figure 4.17: NFEPA Map for the proposed project area showing the Coega River, the Coega Estuary and a number of small wetlands surrounding the project area

4.3.7. Marine environment

Oceanography

The Agulhas Current is the dominant feature along this area of the coast and as such the waters off the coast of Algoa Bay are considered to be warm temperate (since the Agulhas current brings warm water from the tropics to the east coast). Average sea temperatures range from approximating 17-22°C (Schumann et al. 2005). Temperature fluctuations may occur along the Eastern Cape coast from time to time for a number of reasons, one of which is upwelling. Upwelling occurs when surface waters are deflected from the coast and thus colder water rises up in order to replace displaced surface water. Even though upwelling occurs to a greater extent and degree along the western coast, wind driven (usually as a result of Easterly winds) upwelling has been responsible for fish kills, and water as cold as 6°C has been recorded in the area (Ross, 1988). These upwelling events are usually of short duration and as such harmful algal blooms seldom occur. In Algoa Bay, cold upwelled water usually originates from upwelling events at Cape Recife and Cape Padrone (Goschen et al. 2012). This is known to occur during periods when wind changes direction to that of westerly winds shortly after upwelling has occurred. According to Goschen and Schumann (1995), upwelled water moving into the bay has resulted in extremely sharp decreases in temperatures (up to 8^{o}C within 1 day)

The average (occurrence of 80% of the time) wave height within the bay is recorded to be less than 2 m. However, wave heights can reach in excess of 3 m during stormy conditions (maximum wave heights of 6 m have been recorded). It should however be noted that Algoa Bay is relatively protected against large swells mainly by the rocky headland at Cape Recife (Goschen and Schumann, 2011).

Water Quality

Urban and industrial activities within Port Elizabeth, the Coega IDZ and the Port Elizabeth and Ngqura Harbours currently present a risk to water quality within the area. The main sources and non-point source pollutants described in the Algoa Bay Management Plan (CSIR, 1999) are as follows:

- Pollution (including stormwater run-off) from a number of activities within the catchment, including informal settlements, poorly functioning sewage treatment facilities, industrial effluent, untreated waste, etc.
- Ballast discharge from vessels
- Oil spills from ships
- Litter and waste

The Algoa Management Plan states that as a result of the above mentioned pollutants and due to the difficulty of sampling a large number of diffuse pollutant sources, a comprehensive monitoring programme is required for the area.

Marine Ecology

In 2005, the Bird Island group and St. Croix Island group both located in Algoa Bay were proclaimed as part of the Greater Addo Elephant National Park. In addition to this, these islands have been proclaimed as an Important Bird Area (No SA 095). According to BirdLife International both of the Algoa Bay Island groups are of considerable importance as they are the only islands along a 1,777 km stretch of coastline between Cape Agulhas and Inhaca Island in Mozambique. Fourteen seabird, several shorebird and 33 terrestrial bird species have been recorded on the Algoa Bay Islands and eight seabird species currently breed there.

There are four globally threatened species, namely African Penguin, Cape Cormorant, Cape Gannet and the African Black Oystercatcher, and two regionally threatened species, namely Caspian Tern (*Sterna)*, and Roseate Tern. The species reaching the 1% or more congregatory threshold[4] are Kelp Gull (*Larus dominicanus)* and Antarctic Tern, while Swift Tern (*Thalasseus bergii)* and Ruddy Turnstone (*Arenaria interpres)* are thought to reach the 0.5% or more congregatory threshold (BirdLife International). Jahleel Island, which is the closest island to the proposed project area (less than 1 km), forms part of the St Croix Island Group (Figure 4.18).

In addition to the above, the proposed area and surrounds are the eastern most distribution of the Cape fur seal. Breeding occurs on Black Rocks in Algoa Bay (Mills and Hes, 1997).

On intertidal reefs, red algae dominate particularly *Plocamium corallorhiza, P. Cornutum, Pterosiphonia cloiophylla, Hypnea spicifera, Chondrococcus hornemannii, Gigartina paxillata, Laurencia flexuosa* and articulated corallines *Amphiroa bowerbankii, A. ephedraea, Arthrocardia duthiae, Cheilosporum cultratum, Corallina* sp. and *Jania* sp. (Seagrief, 1988). Brown algae are also an important component, particularly species of *Dictyota* and *Dictyopteris, Zonaria subarticulata, Ecklonia biruncinata* and *Iyengaria stellata*. Green algae such as *Caulerpa filiformis, C. racemosa, Bryopsis* spp. and *Codium* spp. play a subordinate role to intertidal community composition (Seagrief, 1988). On intertidal and shallow subtidal reefs grazers and filter feeders are the most prolific fauna. In particular molluscs such as *Perna perna* and *Petella cochlear* and the *ascidian Pyura stolonifera* dominate the intratidal and shallow subtidal (Beckley, 1988). Deeper reefs are dominated by a high diversity of filter feeders, particularly colonial ascidians, sponges, soft corals and bryozoans (Porter *et al*., 2012).

Figure 4.18: Google earth image showing the location of Jahleel Island in proximity to the eastern breakwater in the Port of Ngqura

[4] This means 1% of the global population congregates in the area.

SANParks is currently in the process of proclaiming the coastal area stretching from the eastern breakwater past the Sundays River Mouth as a Marine Protected Area.

4.3.8. Port and Other Industrial Activities

The Coega Industrial Development Zone (IDZ) was established in 1999 and is adjacent to the modern deep-water port of Ngqura. The IDZ consists of approximately 11,500 ha and has been divided into 14 zones based on the various land uses within the IDZ. The IDZ is customised for heavy, medium and light industries as well as the construction of factories, warehouses and office complexes. Existing companies operating within the IDZ form part of various sectors including logistics and infrastructure (road, rail, and marine transport), telecommunications and a variety of industries. The IDZ is developed and managed by the Coega Development Corporation (CDC) which looks to initiate local and foreign direct investments in export-oriented industries.

4.4. SOCIAL

4.4.1. Administrative Structure

The project is located within the Nelson Mandela Bay Municipality (NMBM) within the Sarah Baartman District Municipality (formerly the Cacadu District Municipality) of the Eastern Cape Province. The NMBM is divided into several Wards which are governed by separate councillors. The project falls into Ward 53 and borders Ward 60 (Figure 4.19). The Coega Industrial Development Zone (CIDZ) is located within these wards and falls under the stewardship of the Coega Development Corporation (CDC). The administration of the Port of Ngqura falls under the Transnet National Ports Authority (TNPA).

4.4.2. Demographic Profile

According to StatsSA (2011c), the municipality had a total population of 1,152,114 in 2011, constituting approximately 60.1% black residents, 23.6% coloured, 14.4% white and 1.9% Indian/Asian residents. Of importance to note is that the metropolitan's population seems to have increased over the last decade. In 2001 the population of the municipality stood at 1,005,779. This indicates a growth rate of 1.36% (StatsSA, 2011b). However, in relation to other metropolitan areas in the country, this is a relatively slow growth rate. For example, the growth rate between 2001 and 2011 in Johannesburg was recorded at 3.18% (*ibid*). The youth comprises a substantial portion of the population. Approximately 35% of the metro are below the age of 20 years. More specifically, 25.5% are between the ages of 0 to 14, whilst 68.5% of the population are between the working ages of 15 and 64 (*ibid.*).

With 588 persons per km^2, the population density of the municipality is less than other cities, such as Johannesburg (estimated at 2,696 persons/km^2). There are 324,292 households living in the municipality, with an average household size of 3.4 members (StatsSA, 2011b). Lastly, in terms of gender, the male-to-female ratio can be calculated at 1:1.08, which indicates slightly more females

Figure 4.19: Ward Map of the proposed project area. The project area only falls into Ward 53 and borders Ward 60.

4.4.3. Education

Access to education in the Metro is illustrated in Table 4.7 below in terms of the various education levels and categories. Altogether 3% of residents have no schooling, 13% have Grade 7 or less (primary school level) and 75% have Grade 12 or less (secondary school level), these figures exclude the current population of pre-school and school-going age; i.e. 0-19 years (2011 Census). Factors contributing to low education levels could include poverty and other social challenges, forcing the Municipality to look at strategies, along with other sectors of government and the private sector, aimed at promoting education from early learning development up to tertiary levels (NMBM IDP, 2015).

Table 4.7: Education statistics for the Nelson Mandela Bay Metropolitan Municipality (from StatsSA, 2011)

Institution	Male	Female	Grand Total
Pre-school, including day care; crèche; Grade R and Pre-Grade R in an ECD centre	1177	1149	2325
Ordinary school including Grade R learners who attend a formal school; Grade 1 - 12 learners & learners in a special class	122286	119546	241832
Special schools	1087	832	1919
Further Education and Training Colleges (FET)	4663	5527	10190
Other Colleges	1824	2511	4335
Higher Educational Institution University/University of Technology	11813	13691	25504
Adult Basic Education and Training Centres (ABET Centres)	1564	1995	3559
Literacy classes e.g. Kha Ri Gude; SANLI	277	395	672
Home-based education/ Home schooling	590	554	1143
Not applicable	407713	452922	860636
Grand Total	552994	599121	1152115

Source: StatsSA Census 2011

4.4.4. Health

Health and safety aspects will mostly pertain to activities defined under the Occupational Health and Safety Act (Act No. 85 of 1993). According to the 2011 Statistics in the Eastern Cape Department of Health (ECDOH) Annual Report 2012/2013, the life expectancy of people living in the Eastern Cape is 59.3 years for females and 53.7 years for males. 6.1% of the population are classified as disabled and only 11.1% of people have medical aid coverage. There are 213 nurses and 28 medical practitioners per 100 000 people in the Eastern Cape (ECDOH, 2013).

According to StatsSA (2013), the leading natural cause of death in the Eastern Cape is Mycobacterium tuberculosis (TB) which accounted for 12.7% of deaths in 2010. The other leading underlying natural causes of Eastern Cape deaths were influenza, pneumonia, heart disease, chronic lower respiratory diseases, cerebrovascular diseases, intestinal infectious diseases, diabetes, HIV, hypertensive diseases and other viral diseases (Figure 4.20). In the Nelson Mandela Bay Municipality, the cure rate for TB is 69.4% in comparison to the province cure rate of 68.9%. TB is also the leading cause for admission in Eastern Cape hospitals according to 2004 statistics presented by Buso et al, and is followed by diarrhoeal disease, pneumonia and HIV (ECDOH, 2013). The number of people living with HIV in Nelson Mandela Bay has begun to decline. Within Nelson Mandela Bay strides have been made to ensure that the spread of HIV/AIDS is reduced and treatment is made available.

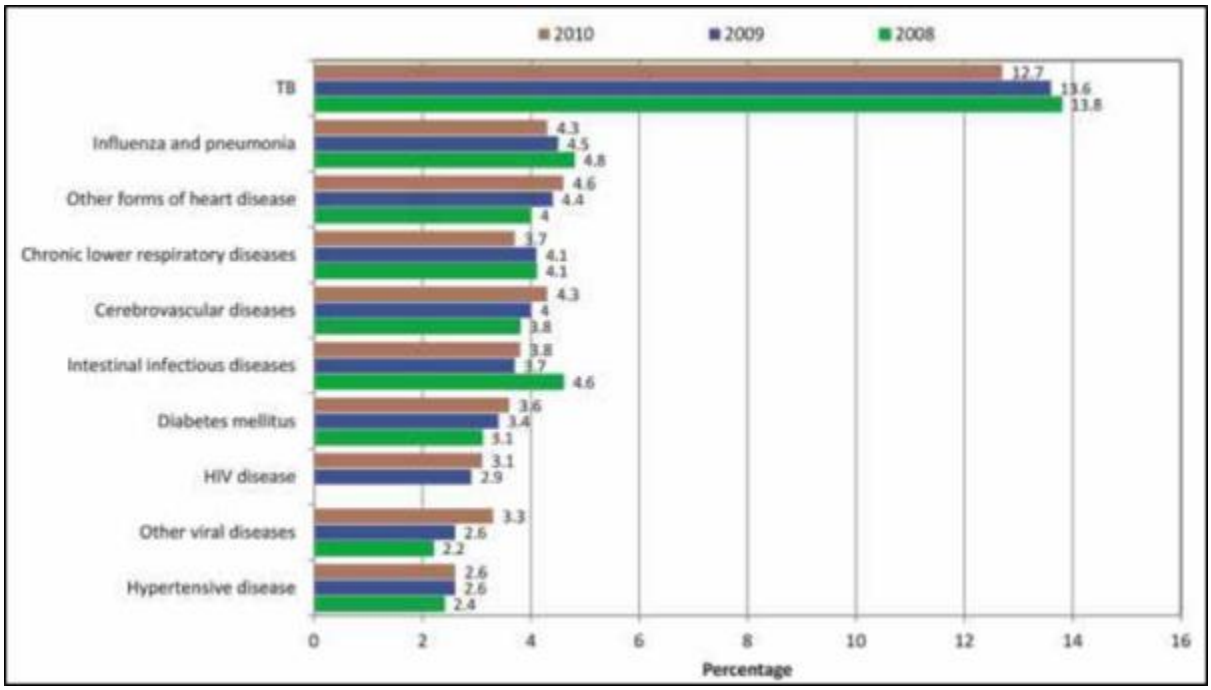

Figure 4.20: Ten leading underlying natural causes of deaths in the Eastern Cape Province from 2008 until 2010 (from StatsSA, 2013 in ECDOH Annual Report, 2013).

The infant mortality rate has been used as a measure of population health. It remains an important indicator reflecting the notion that structural factors affecting the health of the entire population have an impact on the mortality rate of infants. According to StatsSA's 2013 statistics, the leading cause of death in Eastern Cape children (aged 0 to 14 years old) is intestinal infectious diseases which accounts for 15.3 % of these deaths (Figure 4.21). Infant mortality rates declined for the 2007 to 2011 period.

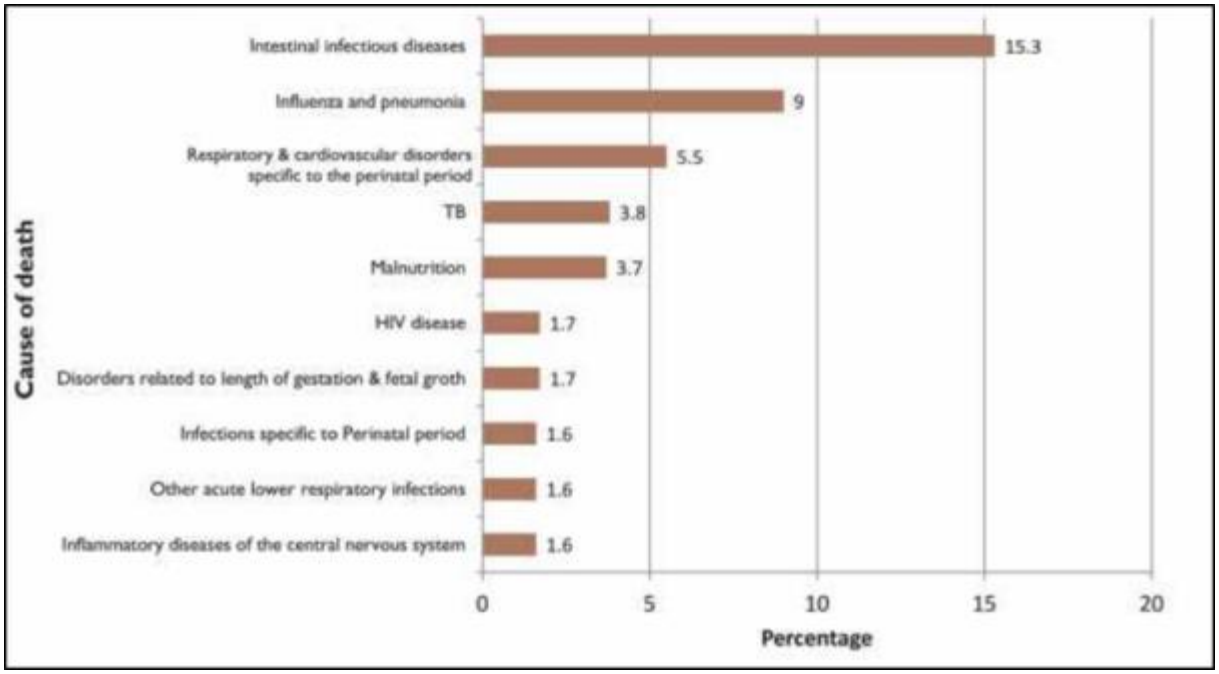

Figure 4.21: Ten leading causes of deaths to Eastern Cape children (0 to 14 years of age) (from StatsSA, 2013 in ECDOH Annual Report, 2013).

4.4.5. Economic Profile

Although the municipality is renowned for its industrial character and manufacturing sector, employment seems to be a prevailing issue in the metropolitan area. Data presented by the NMBM Municipality IDP (2011-2016) appraises the official unemployment rate at 28.2% (NMBM, 2011-2016). StatsSA (2011c) estimates this rate at 36.6%. This might be explained by the fact that the metropolitan has a recorded number of 22,411 informal households and 49,000 backyard shacks (*ibid.).* According to de Wit (2012), industrial development in the NMBM area faced several inhibiting effects in the recent global economic recession, which included the national energy deficit.

The municipality's Gross Domestic Product (GDP) growth rate was around 2.1% in 2010, whereas the growth rate of the GDP per capita is appraised at R52,147 (StatsSA, 2011b). According to the South African Local Economic Development (LED) Network (2015), the metro contributes approximately 44% to the regional GDP for the Eastern Cape Province (SA LED Network, 2015). The largest economic sectors in the metro area are manufacturing, finance, community services and transport. Manufacturing contributes 33% to the metro's GDP (ibid.). Community services, trade and the manufacturing sectors are the sectors that create the most employment in the metro.

The region's economic centres include the nodes of Port Elizabeth, Uitenhage, Despatch and the Coega IDZ and Port of Ngqura. From an economic perspective, the Coega IDZ has been very successful in attracting large-scale investments to the metropolitan area. The IDZ has been designed primarily to cater for the area's manufacturing sector, as well as to stimulate socio-economic development, skills development and job creation.

Aligned with the South African economic development agendas (as explained), the NMBM has set in motion several strategies specifically aimed at rural development and social service delivery. One of these includes the Municipality's Turnaround Strategy of 2009, which specifically addresses the metropolitan's poverty and LED. This strategy aims to develop a shared agenda for growth which connects households to basic social services. Another strategy includes the municipality's Provincial Growth and Development Plan

(PGDP), which attempts specifically to fight poverty and provide basic social services and infrastructural development. The municipality is also developing the Coega IDZ in alignment with the Government's National Spatial Development Perspective (NSDP), which promotes economic development.

The NMBM's IDP identifies several ward priorities which could be addressed through economic development. Some of these could assist with integrating human settlements with adequate provision of water, sanitation and electricity. The need to prevent water leakages and electricity disruptions has also been identified as ward priority areas, together with the need to stimulate rural economies and to develop the youth, women and the disabled.

The NMBM LED strategies are aligned to the national priority areas of the Government of South Africa (GoSA). These are all framed by various guidelines and targets, such as the Government's National Industrial Policy Framework (2012-2015), or the National Development Plan (NDP) (of Vision 2030), released on 11 November 2011 (*cf.* GoSA, 2011). One of several aims of the NDP is to create 11 million employment opportunities and to grow the economy at a steady rate of around 5.4% per annum by 2030. Most of these strategies are based upon particular Key Performance Indicators (KPIs), such as improved service delivery and infrastructural investment, but also sustainable LED (such as the creation of employment opportunities) and social development.

The NMBM's IDP and the Metropolitan Spatial Development Framework (MSDF) outline a number of strategic development areas which the metro is committed to achieve (NMBM, 2011-2016). The framework supports any development which could enhance urban development, with a key focus on infrastructural development. According to the IDP, some of the metro's development priorities include the development and maintenance of infrastructure for economic development, and access to social services and amenities, especially to disadvantaged communities. The latter, is the first mentioned IDP performance area, whereas LED is the second. Job creation, poverty alleviation and the development of the youth, women and disabled are all priority areas under the IDP and MSDF. What should not be overlooked is the importance of providing adequate housing for growing informal settlements, with a housing backlog of 71,411 (*ibid.*).

The dominant household annual income range seems to be between R19,601 and R76,400 (approximately R1,633 to R6,366/month) (StatsSA, 2011c). This data is presented in Table 4.8 below. Compared to the international poverty line of US$1.25 per day (R8.48 or R169.6 per month, as re-figured by the World Bank in 2005), this is well-above the acceptable international poverty threshold. Although this is the case, 42% of households earn less than R19,601 annually (R1,633/month), whereas 16% earn no income. However, it should be noted that, according to StatsSA, the average household annual income per annum increased to approximately R51,698 between 2001 and 2011.

Table 4.8: Income brackets*

Income Ranges	Percentage
No income	16%
R1-R4,800	4%
R4801-R19600	22%
R19601-R76400	30%
R76401-R307600	20%
R307601-R2457600	7.7%
R2457601 >	0.30%

**Source: StatsSA, 2011c.*

4.4.6. Land Use

The proposed project area is located within Zone 8, Zone 10, Zone 7, Zone 6 and Zone 13 of the Coega IDZ (Figure 4.22). The zones are defined by the Coega Open Space Management Plan of 2014. Zone 8 is the 'Port Area' and refers to the Port of Ngqura including the harbour breakwaters, harbour terminals, container yard and surrounding infrastructure. Zone 10 is the 'Mariculture & Aquaculture Cluster' referring to activities pertaining to the marine environment. Only a small portion of Zone 10 will be affected by the proposed project. Zone 7 is the 'Chemical Clusters' zone and is currently occupied by Cerebos. Zone 6 is the 'Ferrous Metals Clusters' currently occupied by Agni Steels SA and Electrawinds. Zone 13 is the 'Energy Cluster' zone and pertains to the Dedisa power station which is the northernmost point of the proposed project area.

4.4.7. Cultural Heritage[5]

"Most of the more than 9 200 hectares of the Coega IDZ is covered by dense low and high grass and impenetrable thicket vegetation, which made it difficult to find archaeological sites/materials. Although most of the inland areas of this large property (the inland zones) are relatively undeveloped, it has been disturbed in the past by small scale farming activities, and more recently by power line and road construction. In a few of the zones large areas have been cleared of vegetation and large scale developments have taken place. These cleared areas provided windows to search for archaeological sites and materials which were not possible due to the dense vegetation. Unfortunately the areas are so disturbed by other infrastructural developments such as drainage channels, pipelines, buildings, power lines and other activities that any archaeological sites/materials which may have been present were destroyed.

Although the area/zones investigated were occupied extensively in the past (judging from the large quantity of flaked stone randomly scattered throughout the area), it would appear that the area is relatively poor in large and important archaeological sites. However, many sites/materials and human remains may be covered by soil and vegetation. These may only be exposed when development takes place, as is evident in Zone 7 where archaeological remains were exposed when an area was cleared by bulldozers for the construction of a road.

The most important archaeological sites were found along the coast (on TNPA property) and included mainly shell middens which date from the past ca 8-6 000 years. Similar sites in the shifting sand dunes and coast east of the harbour area were much smaller in size, in terms of depth of deposit, quality and quantity of food waste and cultural material. These archaeological features are usually found between two to five kilometres inland from the coast. The large scale developments which have taken place in areas close to the coast, such as Zone 1, may have destroyed many of these features. Roads and large drainage channels were constructed a few hundred metres from the beach and over sand dunes.

Earlier, Middle and Later Stone Age stone tools were found throughout the Coega IDZ where pebble/cobble gravel were exposed. However, no spatial patterning or activity areas such as 'manufacturing' sites were located, although such sites may exist, they are not visible. All stone tools were in secondary context and not associated with any other remains. They are of low significance, but concentrations of stone tools may be buried, especially areas around pans, for example in the inland zones 6, 11, 12 and 14."

[5] 1. Source: Phase 1 Archaeological Impact Assessment undertaken for the IDZ (Binneman, 2010))

4.4.8. General Infrastructure and Services

According to StatsSA (2011c), 100% of the metropolitan's households have access to the national electricity grid, although 12% of the households situated in un-demarcated informal areas do not have such access. Concerning sanitation services, on the other hand, the metro seems to have the highest percentage of households with access to flush/chemical toilets compared to other district municipalities in the Eastern Cape. Over 90% of households have access to proper sanitation services, whereas 99.68% of households have basic refuse collection. In terms of water access, 100% of the households have access to a water point at least within a 200 m radius. Approximately 74.1% of households have piped water inside their house; all formal households have direct water connections.

4.4.9. Noise

The proposed maximum permissible noise rating levels are based on national and international recommendations and guidelines. Most codes of practice and legislation relating to environmental noise incorporate the desired activity and time of day as part of the process that assesses and controls noise. In South Africa, the procedures for the measurement, assessment and control of environmental noise are contained in the Noise Control Regulations of the Environmental Conservation Act 73 of 1989 and the SABS Code of Practice 10103:2008 for "The measurement and assessment of environmental noise with respect to annoyance and speech communication". Specific guidelines for issues such as air and noise have been drawn up for the Core Development Area.

Even though the proposed development is within an established industrial zone care must be taken in regards to increased noise levels, especially in close proximity to Jahleel Island.

4.4.10. Visual

The proposed development site is within an established industrial zone and thus the proposed development is not anticipated to impact significantly on sensitive visual receptors. In addition the CDC has developed detailed Architectural and Landscape Design Guidelines, which needs to be adhered to by all developers. These guidelines "*seek to achieve an attractive development of distinction without impinging on the creativity of designers or detracting from the corporate identity of individual developers and tenants. An overall integrity of the development is sought which adds address-value and appreciated property values to each development within the Coega IDZ*." In addition to this, the Port of Ngqura also has a set of lighting guidelines for the Port in order to limited the overall impact on Jahleel Island. These will be incorporated into both the EIAR and the EMPr.

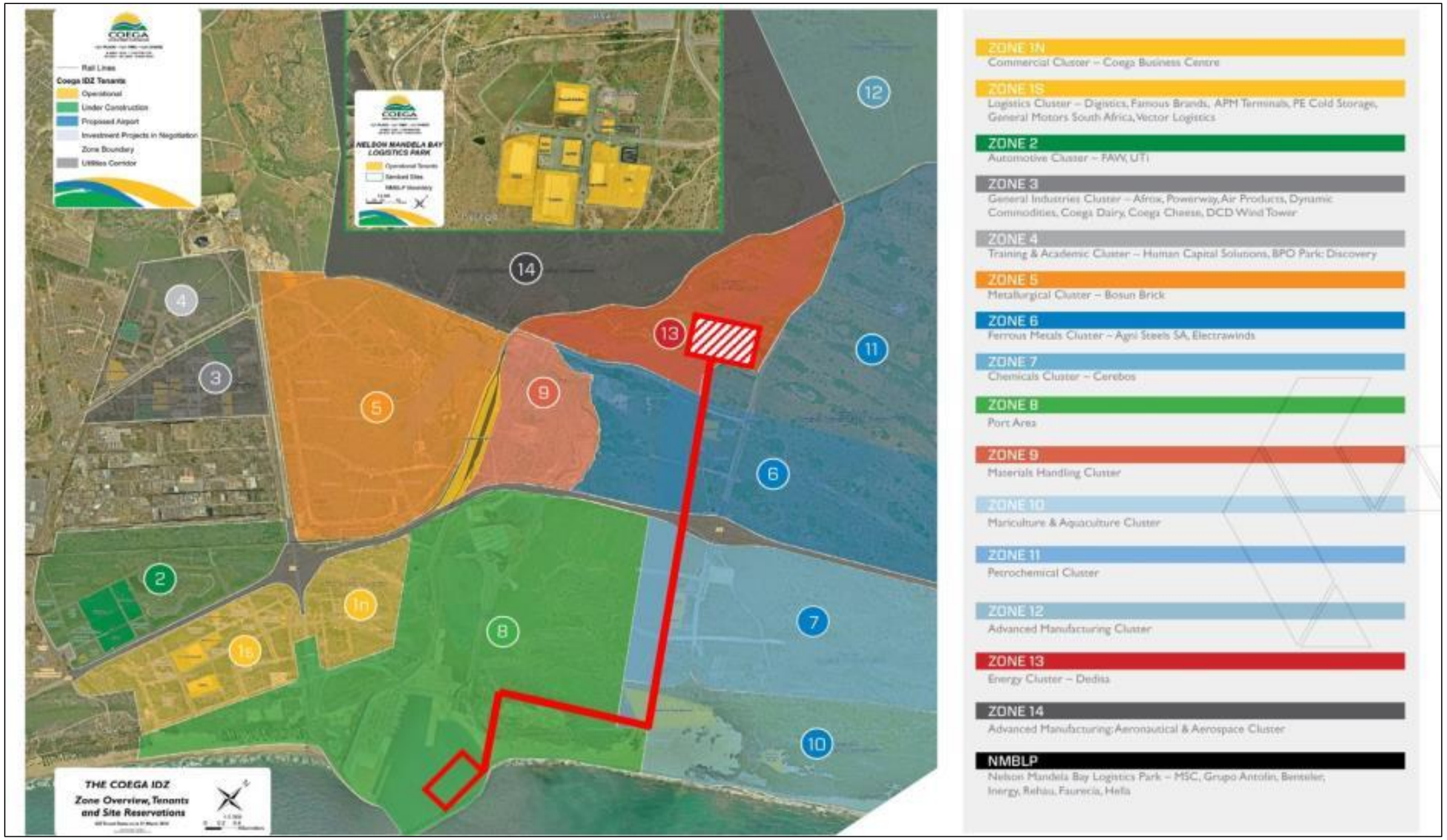

Figure 4.22: Coega IDZ Zone Map with the proposed project area overlay. The project will fall into Zone 8, Zone 10, Zone 7, Zone 6 and Zone 13 (Coega Open Space Management Plan, 2014)

5. THE EIA PROCESS

5.1. Introduction

In terms of the South African Environmental Legislative Framework, this project will be subject to the Environmental Authorisation process, which came into effect on the 4th of December 2014. This process has been implemented by South African National Government to streamline the environmental process due to the number of authorisations required for these types of projects. It is intended to save time, rationalise the management of the number of competent authorities and prevent delays due to the lack of resources and time for the review process. Based on the scope of work, this project requires an Environmental Authorisation in terms of the National Environmental Management Act (NEMA) (107 of 1998) and the EIA regulations of 2014, and the process triggered is a Scoping and Environmental Impact Assessment. All the phases including the Environmental Management Programme report (EMPr) must be prepared in terms of the National Environmental Management Act (107 of 1998) (with all its amendments) and its amended GN Regulation 982 and the associated listed activities under regulation GN 983, GN 984, and GN 985.

The Environmental Impact Assessment (EIA) must ensure that all parties involved are aware that the assessment is not solely focused on the biophysical environment, but is inclusive of social and economic considerations. EOH CES's approach to EIAs is to adopt a holistic and integrated view of the environment, with equal emphasis on the ecological and social components. Based on previous experience, incorporating both aspects at an early stage leads to a more comprehensive end product. In order to produce comprehensive and complete documents, the EIA must not only identify and evaluate the significance of environmental impacts, but also suggest ways to mitigate any negative impacts and optimise positive impacts.

5.2. Approach to Process

The EIA process is initiated through a Pre-Assessment Public Participation Process (PPP). The pre-assessment process is not a mandatory requirement in terms of the EIA Regulations (2014) but a beneficial option for the client and EAP in order to identify key stakeholders and Interested and Affected Parties (I&APs) as well as to identify any fatal flaws at the onset of a project.

This phase is followed by the scoping phase (inclusive of a notice of intent to the authorities), as shown in Figure 5.1. During the scoping phase the Terms of Reference for the full EIA is formulated, and requirements from the authorities clarified. The scoping process serves to bring stakeholders on board by means of consultation with relevant government departments, allowing for the identification of potential issues and concerns.

After completion of the scoping phase, detailed specialist studies will be undertaken in order to address issues identified during the scoping phase. Specialists are expected not only to provide baseline information in their particular field of expertise for the study area, but also to take this study further and identify which project actions will result in significant impacts. Consultants are also expected to suggest ways in which these negative impacts could be mitigated, to reduce their severity.

All draft reports are submitted for public review, during which time EOH CES present the key findings to all interested and affected parties (I&APs) at the provincial and local levels. All comments made by I&APs are captured in a Issues and Response Trail, and in this report responses to all issues and concerns raised during the public review period are provided.

All recommendations cited in the EIA report must be detailed in an Environmental Management Programme report (EMPr), which defines the actions to be implemented. EMPs are recognised as very important tools for the sound environmental management of projects.

PRE-ASSESSMENT PPP PHASE

- Identification of key stakeholders and I&APs
- Distribution of PPP documents (BID, Notification letters, emails etc)

SCOPING PHASE (44 DAYS)

ACTIVITY	TIMEFRAME
Submission of Application	Authority Acknowledgement = 10 days
Public & Authority review of the Draft Scoping Report	30 days
Submission of Final Scoping report	44 Days from receipt of Acknowledgement of Application
Consideration by Authorities	43 days from receipt of Scoping report

SPECIALIST PHASE

EIA PHASE (106 DAYS)

ACTIVITY	TIMEFRAME
Public Participation on DEIR	30 days
Submission of FEIR to Authorities	106 days from Acceptance of Scoping Report
Notice of extension	Must be lodged within 106 days from Acceptance of Scoping Report. Extension period allows for a further 50 days to submit the EIR, i.e. within 156 days
Environmental Authorisation	107 Days from receipt of FEIAR
EA notification	Authority to notify Applicant within 5 Days 14 Days to notify I&APs

Figure 5.1: EIA Process

5.3. Scoping Phase

The Scoping phase is outlined in GN R 982, EIA Regulations (2014) under Part 3, section 21 as well as Appendix 2. The process to be followed is outlined below.

5.3.1. Desktop Review

All aspects of the proposed project are first analysed using a high-level desktop study which looks at the basic description of the project and what the initial environmental and social concerns may be. This includes background information for the project area as well as the proposed activity, details of the activity applied for according to the EIA Regulations (the listed activities) and the type of assessment which will be required. The desktop review involves the interpretation of maps covering the proposed project area, as well as available reports and planning instruments in order to familiarise the project team with the area and the various physical and biological properties of the area. The desktop review also identifies if the project requires any additional licences in terms of water use, waste, air quality, land use or any other environmental requirements.

5.3.2. Site Visit

EOH CES consultants visited the proposed development site together with representatives from the engineering team (PRDW) on the 24th of August 2015 in order to discuss potential site alternatives and to confirm the terms of reference for the Scoping Report and initiate the scoping phase. Baseline social and ecological data was collected at a screening level.

5.3.3. Public Participation

Interested and Affected Parties (I&APs) play an important role in the EIA process, as many of their concerns and issues can be included in the project proposal, to ensure a development which is as environmentally and socially acceptable as possible.

The general public, key stakeholders, landowners, adjacent landowners and government authorities at National, Provincial and Local level, where notified of the proposed development on the 23rd of October 2015. The means by which I&APs were notified are described in full in Section 5.6.2 below.

5.3.4. Scoping Report

Draft Scoping Report

The information gathered through the initial PPP phase, as well as the information from the site visit and from the client with regard to the design of the project was integrated into this draft Scoping Report. In addition to identifying issues, this report also provides:

- A preliminary assessment of the impacts of these issues based upon baseline information, which provides a very useful source of information.
- An overview of the project in relation to South African National Standards and guidelines.
- Terms of Reference (ToR) for the EIA phase, identifying the issues that need to be addressed in the EIAR.

The Draft Scoping Report will be made available to the public for a period of 30 days for comment, during which time an open house/public meeting will be held. Registered I&APs will be informed of the release of the Draft Scoping Report by e-mail and/or registered mail. The release of the report will also be advertised in one provincial and/or one local newspaper. Hard copies of the report will be made available in publicly accessible places such as the Port Elizabeth public library, and the local ward councillors' office, the CDC offices, and it will also be posted electronically on EOH CES's website.

Final Scoping Report

Any comments, issues and concerns raised by I&APs and the authorities during the review period of the Scoping Phase will be included in the Final Scoping Report in the form of an Issues and Response Trail.

The Final Scoping Report will be submitted to DEA, who will decide whether the main phase of the EIA can be initiated. DEA will also approve, with or without amendments, the Terms of Reference for the proposed specialist studies, and the Plan of Study for the EIA phase of the assessment, which is presented in chapter 7 of this report.

5.3.5. Submission of Application Form

An application for environmental authorisation will be submitted to the environmental authority (Department of Environmental Affairs) as per the requirements of Section 16 of the EIA Regulations. It should be noted that two (2) separate applications will be submitted, one for the medium term project (LNG) and one for the short term project (FPP). This scoping report deals with the short term solution only.

5.4. Specialist Study Phase

In order to assess both the environmental and social impacts associated with the proposed project, a number of specialist studies will be undertaken as part of the EIA. These studies will cover issues identified at this stage but additional issues may be identified or additional studies may be requested by the authorities following the Scoping Phase.

At this stage, and based on our knowledge of the area, we have identified the following key issues that are likely to be raised by I&APs or that will require specialist investigation:

- Cultural and Heritage
- Palaeontology
- Air Quality
- Terrestrial Ecology (Transmission Line)
- Noise
- Marine Ecology/Plume Modelling
- Marine traffic risks
- OSCP Review

The objectives of the specialist studies are as follows (full terms of references for each of the above mentioned assessment are available in Chapter 7, Section 7.3):

- Assist in defining possible constraints associated with the proposed project;
- Determine the potential environmental indirect, direct and cumulative risks/impacts to receptors; and
- Advise on mitigation measures for identified significant risks/impacts and measures to enhance positive opportunities of the project.

5.5. Integration and Assessment Phase

The EIA phase is outlined in GN R 982, EIA Regulations (2014) under Part 3, section 23 as well as Appendix 3. The process to be followed is outlined below.

This task involves the integrated writing of the environmental impact assessment report. Specialist input to the proposed project will be undertaken during preparation of the Draft EIAR. The report will consist of an introductory section, followed by a detailed project description, sections in which

the results of all specialist reports are summarised, and an environmental impact section, where impacts are assessed and rated according to a predefined rating scale. Measures to mitigate negative impacts as proposed by the specialist consultants are also presented.

The primary objective is to prepare a report that is scientifically credible but also understandable, with enough detail to deal with all the issues but not too much detail to confuse I&APs.

The EIAR will include a detailed Environmental Management Programme report (EMPr) (to be submitted as a separate report) for the proposed project, which will contain proposals to manage and mitigate impacts identified during the EIA process, for both the construction and operational phases of the development. These measures be informed by the findings of the EIA, and particularly by the specialist studies undertaken as part of the EIA process. The measures presented in the EMPr will be aimed at enhancing the potential benefits and minimizing the potential negative impacts of the project. The EMPr will specify responsibilities for the implementation of the plan, for monitoring of the project as well as the periodicity of the audits to be carried out.

The Draft EIAR and EMPr will be made available for public review for a period of 30 days as legislated. The availability of the Draft EIAR and EMPr to the public will be advertised in one provincial and/or one local newspaper. Hard copies of the report will be made available in publicly accessible places such as the Port Elizabeth public library and the local ward councillors' offices, and it will also be posted electronically on CES's website.

Further public meetings / open houses / focus group meetings (as required) will be held during the public review period, to inform stakeholders and I&APs of the detailed findings of the EIA, and to enable them to raise any issues or concerns.

When the Draft EIAR and EMPr has been amended to reflect public comments the deliverables from the entire EIA process – the Final (EIAR) will be prepared. This will include the additional comments, issues and concerns raised by I&APs and the authorities, provided in an updated Issues and Response Trail. The final EIAR, and the final Specialist Report Volume and final Environmental Management Programme will be submitted to DEA for decision making purposes.

5.5.1. Proposed Timeframe for the EIA

The EIA is expected to be completed by May 2016, with completion being defined as the submission of all final reports to the regulatory authority.

The fundamental assumption to this time line is the Department of Environmental Affairs (who will be the Competent Authority and process the application) is able to review both the Scoping and EIA reports (), and prepare the Environmental Authorisation in a shorter period than the maximum number of days provided for in the regulations.

The draft scoping report will be completed in November 2015. Due to the urgency of the project specialist studies will be undertaken in conjunction with the Scoping Phase in order to meet the required timeframe. The specialist assessment phase will be completed by 18 January 2016, utilising the Christmas break to finalise documents internally.

The initial site visit took place in August 2015, and the pre-assessment public participation was conducted in early November 2015. The results of this focused engagement are incorporated into this draft Scoping Report The mandatory 30 day public review period will run from the 12th of November to the 12th of December, after which the Final Scoping Report will be submitted to the DEA (on 6 January 2016, immediately after the DEA's Christmas shut-down period).

According to the EIA Regulations (2014) Section 22, DEA must within 43 days of receipt of the Final Scoping Report either accept or reject it. It is anticipated that this review period can be reduced to 15 working days due to the urgent need for power generation, based on planned discussions with DEA at the inception of the project, as stated above.

The environmental impact report will be submitted 2 weeks after the anticipated date of the authority decision on the Scoping Report. This will be followed by a mandatory 30 day public review period, anticipated to run from the 15th of February to the 14th of March 2016, after which the Final EIAR will be submitted to the DEA (8th of April 2016).

According to the EIA Regulations (2014) Section 24, DEA must within 107 days of receipt of the Final EIAR and EMP either grant or refuse authorisation. It is anticipated that this review period can be reduced, based on discussions with DEA at the inception of the project as stated above.

5.6. Public Participation during Initiation and Scoping

5.6.1. Objectives of Public Participation

Public Participation aims to:

- Disclose activities planned by the project proponent and the EIA team.
- Identify concerns and grievances from interested and affected parties.
- Harness local expertise, needs and knowledge from the interested and affected parties.
- Respond to grievances and enquiries from I&APs.
- Identify additional or new stakeholders and people affected by, or interested in, the proposed project.
- Gather perceptions and comments on the proposed terms of reference for the specialist studies.
- Ensure that all issues raised by I&APs have been adequately assessed.
- Share the findings of the EIA and specialists studies, such as significant impacts, mitigation measures, management actions, and monitoring programmes.
- Include any new concerns or comments that arise.

This information is used to:

- Identify underestimated or unanticipated impacts.
- Alert the project to possible communication breakdowns and emerging problems and concerns.
- Encourage the use of local resources and knowledge in the project.
- Identify development opportunities and community projects.
- Ensure that all issues and concerns raised during scoping and subsequently are dealt with adequately in the EIA process. This is achieved through the preparation of an issues and response trail, also referred to as a Comments Reports.

5.6.2. Legislative Context

According to Section 41(2) of the National Environmental Management Act, 107 of 1998 as amended (NEMA) "*the person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by*:

(a) Fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of -
  (i) The site where the activity to which the application or proposed application relates is or is to be undertaken; and

(ii) Any alternative site."

Action - Due to the remote location of the site (in the Coega IDZ), the CDC has an agreement with DEDEAT/DEA that site notices for projects situated in the IDZ can be placed on the e-notice board in the CDC main building and no addition site notices need to be erected. Site notices has therefore been digitally displayed at the CDC as per common practice. After discussion with Transnet Port Authority, additional site notices were placed at the site entrance to the Port Registration Office, at the Port entrance and at the Bluewater Bay Super Spar Photographic evidence of the site notice placements is provided below.

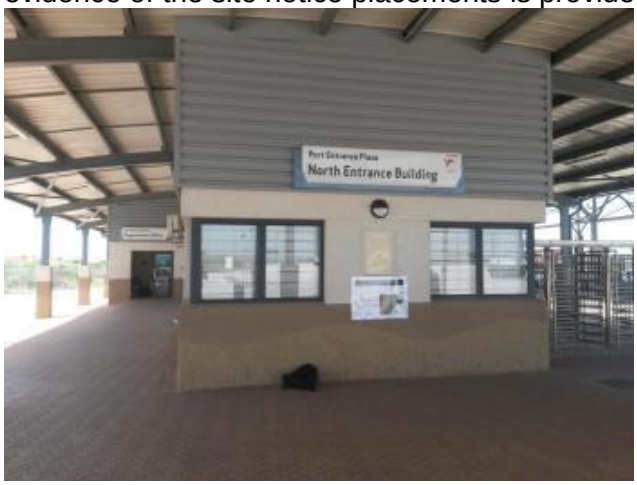

Plate 5.1. Proof of placement of site notice at thesite entracne to the Port Registration Office


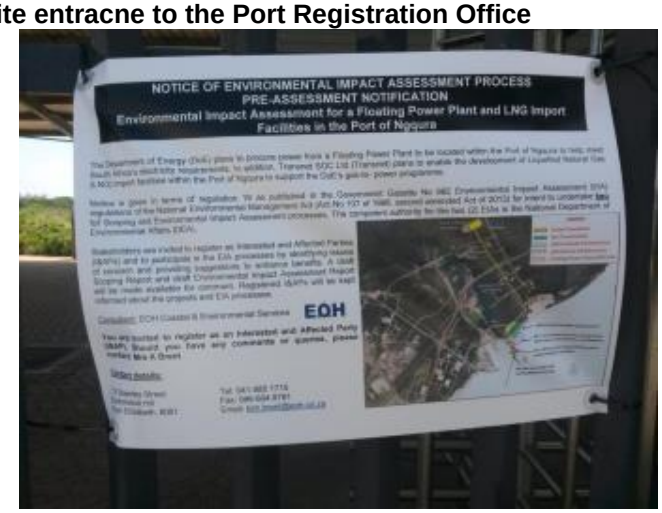

Plate 5.2. Proof of placement of site notice on the gate adjacent to the Port entrance


Plate 5.3. Proof of placement of site notice outside the Super Spar at Bluewater Bay

(b) Giving written notice, in any of the manners provided for in Section 47D of the Act, to:

(i) The occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
(ii) Owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
(iii) The municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
(iv) The municipality which has jurisdiction in the area;
(v) Any organ of state having jurisdiction in respect of any aspect of the activity; and
(vi) Any other party as required by the competent authority;

Action - Contact details of all stakeholders identified are available in Appendix 1. Letters of notification and Background Information Documents (refer to Appendix 1) were sent out via registered mail as well as via e-mail (for those stakeholders for which e-mail addressed are available) on the 30th of October 2015.

(c) Placing an advertisement in:
(i) One local newspaper; or
(ii) Any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
(d) Placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph; and

Action - Newspaper advertisements were placed in The Herald and Die Burger (proof of placemen in Appendix 1-3) on the 2nd of November 2015 in order to notify the general public of the proposed development.

(e) Using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to-
(i) Illiteracy;
(ii) Disability; or
(iii) Any other disadvantage.

Action - an open house will be held at the conference facilities at Coega Village in the IDZ during the release of the Draft Scoping Report. Should there be significant interest from stakeholders in the general Port Elizabeth area, an additional meeting will be held in Port Elizabeth.

In addition to the above and according to Section 42 of the EIA Regulations "*a proponent or applicant must ensure the opening and maintenance of a register of interested and affected parties and submit such a register to the competent authority, which register must contain the names, contact details and addresses of-*
(a) All persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP;
(b) All persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and
(c) All organs of state which have jurisdiction in respect of the activity to which the application relates."

5.6.3. Public Participation Tasks

The Public Participation Process will be divided into three phases which will allow for stakeholder engagement at a pre-assessment phase, a scoping phase as well as at the EIA phase. The tasks which will be carried out at each phase are described in the table below:

Date	Phase	Meeting and/or deliverable	Objective
5-16 October 2015	Pre-Assessment	CDC	The CDC will be a key stakeholder of the proposed project. A meeting will be held with them in order to inform and/or receive input from them, in regards to the proposed project
19 October 2015		Distribute pre-assessment notifications as stipulated in the Sections outlined above	To comply with Section 41 of NEMA
9-10 November 2015		Compile Comments and Response Trail	As per legal requirements all issues and/or comments raised by registered interested and affected parties needs to be documented in writing and responded to by the EAP
12 November 2015	Scoping Phase	Distribute notifications of the availability of the Draft Scoping Report for public review as stipulated in the Sections outlined above	To comply with Section 40 of NEMA
23-27 November 2015		Open House/Public Meeting	In order to inform all I&APs of the outcome of the Scoping Report
15-18 December 2015		Compile Comments and Response Trail for incorporation into the Final Scoping Report	As per legal requirements all issues and/or comments raised by registered interested and affected parties needs to be documented in writing and responded to by the EAP
15 February 2016	EIA Phase	Distribute notifications of the availability of the Draft EIAR for public review as stipulated in the Sections outlined above	To comply with Section 40 of NEMA
23-27 February 2016		Hold open house event	In order to ensure that all I&APs have the opportunity to provide input to the proposed project and have their concerns addressed.
15 March 2016		Compile Comments and Response Trail for incorporation into the Final EIAR	As per legal requirements all issues and/or comments raised by registered interested and affected parties needs to be documented in writing and responded to by the EAP

6. IDENTIFICATION OF POTENTIAL IMPACTS

6.1. Introduction

EOH CES has developed a revised rating scale for the Scoping Phase of the EIA process in accordance with the requirement outlined in Appendix 2 of the amended EIA Regulations (2014). This scale takes into consideration the following variables:

- Significance
- Consequence
- Extent
- Duration
- Probability
- Reversibility and Mitigation

It is however important to note that impacts are assessed and rated on a broader issues level, and are regarded as preliminary. This is because, at the Scoping Phase of the EIA process, a limited amount of information on project related detail is available, and baseline data on the project affected environment and social systems has not been gathered yet. This information requires input from a number of specialist assessments, which are only completed after the Scoping phase thus, a definitive assessment of project specific impacts cannot be completed at the Scoping phase, and our interpretation of the new requirements is that the environmental and social consequences of the project and alternatives needs to be discussed more broadly than what is required in the EIAR. This we refer to as an issues level assessment.

6.2. Issues Identification matrix

Six factors are considered when assessing the significance of the identified issues, namely:

1. ***Significance*** - Each of the below criterion (points 2-6 below) are ranked with scores assigned, as presented in Table 6.1 to determine the overall significance of an activity. The total scores recorded for the effect (which includes scores for duration; extent; consequence and probability) and reversibility / mitigation are then read off the matrix presented in Table 6.2, to determine the overall significance of the issue. The overall significance is either negative or positive.

2. ***Consequence*** - the consequence scale is used in order to objectively evaluate how severe a number of negative impacts might be on the issue under consideration, or how beneficial a number of positive impacts might be on the issue under consideration.

3. ***Extent*** - the spatial scale defines the physical extent of the impact.

4. ***Duration*** - the temporal scale defines the significance of the impact at various time scales, as an indication of the duration of the impact.

5. The ***probability*** of the impact occurring - the likelihood of impacts taking place as a result of project actions arising from the various alternatives. There is no doubt that some impacts would occur (e.g. loss of vegetation), but other impacts are not as likely to occur (e.g. vehicle accident), and may or may not result from the proposed development and alternatives. Although some impacts may have a severe effect, the likelihood of them occurring may affect their overall significance.

6. ***Reversibility / Mitigation*** – The degree of difficulty of reversing and/or mitigating the various impacts ranges from very difficult to easily achievable. The four categories used are listed and explained in Table 6.1 below. Both the practical feasibility of the measure, the potential cost and the potential effectiveness is taken into consideration when determining the appropriate degree of difficulty.

Table 6.1: Ranking of Evaluation Criteria

Effect			Score
	Duration		
	Short term	Less than 5 years	1
	Medium term	Between 5-20 years	2
	Long term	More than 20 years	3
	Extent		
	Localised	The proposed site and its immediate environs	1
	Moderate	District / Municipal and Provincial level	2
	Extensive	National and International level	3
	Consequence		
	Slight	Slight impacts or benefits on the affected system(s) or party(ies)	1
	Moderate	Moderate impacts or benefits on the affected system(s) or party(ies)	2
	Severe/ Beneficial	Severe impacts or benefits on the affected system(s) or party(ies)	3
	Probability		
	Unlikely	The likelihood of these impacts occurring is slight (low probability)	1
	May Occur	The likelihood of these impacts occurring is possible (high probability)	2
	Definite	The likelihood is that this impact will definitely occur	3
Reversibility / Mitigation	**Reversibility / Mitigation**		
	Easily achievable	The impact can be easily, effectively and cost effectively mitigated/reversed	1
	Achievable	The impact can be effectively mitigated/reversed without much difficulty or cost	2
	Difficult	The impact could be mitigated/reversed but there will be some difficultly in ensuring effectiveness and/or implementation, and significant costs	3
	Very Difficult	The impact could be mitigated/reversed but it would be very difficult to ensure effectiveness, technically very challenging and financially very costly	4

** In certain cases it may not be possible to determine the severity of an impact thus it may be determined: Don't know/Can't know*

Table 6.2: Matrix used to determine the overall significance of the impact based on the likelihood and effect of the impact.

Likelihood		Effect								
		4	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	1	5	6	7	8	9	10	11	12	13
	2	6	7	8	9	10	11	12	13	14
	3	7	8	9	10	11	12	13	14	15
	4	8	9	10	11	12	13	14	15	16

Table 6.3: Description of Issues Level Significance Ratings and associated range of scores

Significance Rate	Description	Score
Low	The impacts on this issue are acceptable and mitigation, whilst desirable, is not essential. The impacts on the issue by themselves are insufficient, even in combination with other low impacts, to prevent the development being approved. Impacts on this particular issue will result in either positive or negative medium to short term effects on the social and/or natural environment.	5-8
Moderate	The impacts on this issue are important and require mitigation. The impacts on this issue are, by themselves, insufficient to prevent the implementation of the project, but could in conjunction with other issues with moderate impacts, prevent its implementation. Impacts on this particular issue will usually result in either a positive or negative medium to long-term effect on the social and/or natural environment.	9-12
High	The impacts on this issue are serious, and if not mitigated, they may prevent the implementation of the project (if it is a negative impact). Impacts on this particular issue would be considered by society as constituting a major and usually a long-term change to the (natural and/or social) environment, and will result in severe effects or if positive, substantial beneficial effects.	13-16

The ***issues level environmental significance*** scale needs to take the context into account, and at the relevant level. For example, if the issue under consideration is "changes to the terrestrial biological environment", the impacts to be considered when assessing this issue might include (1) loss of a particular vegetation type, (2) disruption to, or loss of, faunal habitats, (3) fragmentation of habitats (4) loss of species of conservation concern (if known at the Scoping stage of the assessment, and so on). The evaluation of the significance of the issue therefore relies heavily on the information that is available at the Scoping stage of an EIA, and out of necessity must be broad and value laden. For this reason, impacts need to reflect the values of the affected society.

Prioritising

The evaluation of the issues, as described above, is used to prioritise which issues require mitigation measures, or which issues might lead to a conclusion that the particular alternative under assessment is not appropriate.

Negative issues that are ranked as being of "**HIGH**" significance will need to be investigated further to determine how the impacts can be minimised, or what alternative activities or mitigation measures can be implemented.

For issues identified as having a negative impact of "**MODERATE**" significance, it would be standard practice to investigate alternate activities and/or mitigation measures. The most effective and practical mitigation measures will then be proposed.

For impacts ranked as "**LOW**" significance, no investigations or alternatives will be considered. Possible management measures will be investigated to ensure that the impacts remain of low significance.

6.3. Assessment of Issues

The table below shows the issues identified at the Scoping level for the proposed project, and its alternatives (Fig 2.4) and presents the results of the assessment using the approach described above. It also presents possible mitigation measures at a high level, and the residual risk associated with the issue for each alternative.

IMPACT	ALTERNATIVE	CAUSE AND COMMENT	SIGNIFICANCE OF IMPACT (SIGNIFICANCE WITHOUT MITIGATION)	CONSEQUENCE OF IMPACT	EXTENT OF IMPACT	DURATION OF IMPACT	PROBABILITY OF IMPACT	DEGREE OF REVERSIBILITY AND/OR MITIGATION	MITIGATION MEASURES (SIGNIFICANCE WITH MITIGATION)	RESIDUAL RISK
IMPACTS ON THE PHYSICAL ENVIRONMENT										
Impacts on topography and geology (construction and decommissioning phase)	Site 6	It is envisaged that only minor changes to topography will be required during the construction phase of the development, and only at localised areas, such as the switchyard. In addition, large parts of the area are relatively flat.	**LOW**	Slight	Localised	Short Term	May Occur	Easily Achievable	None required	**LOW**
	Site 7									
Impacts on land use (construction, operational and decommissioning phase)	Site 6	The power evacuation route is much longer within the port area than that proposed for Site 7. In addition the proposed powerline will run along the back of Port area reducing the capacity of the Port.	**MODERATE**	Moderate	Localised	Long Term	Definite	Achievable	No mitigation available	**MODERATE**
	Site 7	The power evacuation route is approximately 7 km in length and will pass through both TNPA and CDC owned land within the Coega IDZ - zoned for industrial purposes. The majority of this route is within existing power servitude within the IDZ. A new servitude will need to be registered for a short distance from the FPP to where it will connect to the existing servitude.	**LOW**	Slight	Localised	Long Term	Definite	Easily Achievable		**LOW**
Removal of Top Soil and Soil Erosion (construction and decommissioning phase)	Site 6	The construction of the associated infrastructure such as the powerline and switchyard will require the clearing of vegetation which will result in exposed soil surfaces. This will increase the chances of soil erosion. Even though the route for Site 6 is considerably longer than that of Site 7, since only a limited amount of vegetation will need to be cleared for the pylons of the powerline, this is considered to be a slight impact in both cases.	**LOW**	Slight	Localised	Short Term	May Occur	Easily Achievable	Disturbance and clearing of natural vegetation should be kept to the minimum required for construction. Newly cleared and exposed areas must be promptly rehabilitated with indigenous vegetation to avoid soil erosion. Where necessary, temporary stabilization measures must be used until vegetation establishes. Plan for the worst case, that is, for heavy rainfall and runoff events, or high winds. Appropriate erosion control measures must be implemented and a monitoring programme established to ensure that no erosion is taking place. At the first sign of erosion the necessary remedial action must be taken. Care must be taken to ensure that runoff is well dispersed so as to limit erosion.	**LOW**
	Site 7									

Impacts on Surface and Groundwater Resources *(construction, operational and decommissioning phase)*	Site 6 Site 7	Various substances may result in the pollution of surface and groundwater sources. Construction activities may lead to sediment being deposited into drainage lines (specifically Coega River), pollution from litter and general construction wastes may occur due to improper site management. Washing down of vehicles and equipment may result in the pollution of drainage areas and the Coega River, and pollution may occur from poor vehicle maintenance and improper storage of hazardous materials such as fuel, etc.	**MODERATE**	Severe	Moderate	Long Term	May Occur	Easily Achievable	All hydrocarbons must be stored on impermeable surfaces with appropriately-sized containment bunds and grease traps. Traps must be regularly cleaned. All chemicals of all types must be stored on impermeable surfaces in secure and bunded designated storage areas. Cement must be stored on impermeable storage areas protected from the rain and mixed only in designated areas. Cement residue must be cleaned up immediately. Vehicle repairs, servicing, refuelling and washing must be done only in designated areas with impermeable surfaces with appropriately-sized containment bunds and grease traps. Where it is necessary to service, repair or refuel a vehicle or item of plant in the field drip trays must be used to catch drips, spills and leaks. Spill kits must be available at all locations where chemicals of hydrocarbons are stored, handled or used, and spills must be cleaned up immediately in accordance with an established protocol appropriate to the material in question.	**LOW**
IMPACTS AS ON THE BIOLOGICAL ENVIRONMENT										
Disruption to Terrestrial Ecosystems (construction and decommissioning phase)	Site 6 Site 7	During the construction phase there may be impacts on natural vegetation including destruction of or damage to indigenous and riparian vegetation, the removal of intact communities, loss of species of special concern and/or trees protected in terms of the Forest Act, and the introduction of alien species. Even though the route for Site 6 is considerably longer than that of Site 7, since only a limited amount of vegetation will need to be cleared for the pylons of the powerline, this is considered to be a slight impact in both cases.	**LOW**	Slight	Localised	Short Term	May Occur	Easily Achievable	Work areas must be clearly demarcated with danger tape so that construction workers limit their impact to these areas alone. In areas to be disturbed, indigenous vegetation and species of special concern must be removed and stored in an on-site nursery area for site rehabilitation. Any necessary permits (i.e. in accordance with the National Forest Act, Nature Conservation Ordinance and National Environmental Management: Biodiversity Act) must be obtained prior to the removal of protected and/or threatened species. All construction vehicles must stay on single demarcated access tracks to avoid compaction of soil and roots. Rehabilitation should be undertaken in a progressive manner. Re-vegetation of the disturbed areas with indigenous material should be undertaken as soon as construction activities at an individual site have been completed.	**LOW**

									Only indigenous vegetation that occurs naturally on site is to be planted in site rehabilitation and in landscaping activities. All alien vegetation must be removed from site and an alien monitoring programme should be initiated to ensure that the site remains clear of all alien vegetation. Safe cooking areas must be provided for staff and no open fires must be allowed on site. All construction staff must receive training on environmentally safe work methods.	
Disruption to Aquatic Ecosystems	Site 6 Site 7	It is not anticipated that the ecological functioning of any drainage areas and/or surface water features will be impacted upon by the proposed project	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Disruption to Marine, Near-Shore and Coastal Ecosystems (operational phase)	Site 6	The vessels used in construction and operation are a potential source of hydrocarbon and other hazardous contaminants if not appropriately managed on board. Similarly, any hydrocarbons in waste streams that are inappropriately handled or disposed of may enter the marine environment either through a spill, accident or poor waste management event. In addition, noise and air emissions from the FPP may result in the disturbance of birds on Jahleel Island if not managed appropriately. The discharge of heated water may result in the disruption of marine ecological processes. It is anticipated that spills and/or heated water could be better contained within the Port at Site 7 than it would be possible for Site 6.	**HIGH**	Severe	Extensive	Long Term	May Occur	Difficult	The fuel storage, transfer and handling facilities on barges and vessels (as well as shore based plant that can possibly be an additional point source of hydrocarbon pollution) must be designed and operated to relevant South African and international standards (MARPOL) with facilities for containing and handling an oil spill. Contingency plans and equipment must be installed for the management of unconfined oil pollution. The containment of an oil spill will be better at site 7, as well be the clean-up operation.	**MODERATE**
	Site 7		**MODERATE**	Severe	Moderate	Medium Term	May Occur	Achievable		**LOW**
IMPACTS AS ON THE SOCIO ECONOMIC ENVIRONMENT										
Health and Safety (construction, operational and decommissioning phase)	Site 6 Site 7	Health and safety aspects will mostly pertain to activities defined under the Occupational Health and Safety Act (Act No. 85 of 1993).	**LOW**	Slight	Localised	Short Term	May Occur	Easily Achievable	All aspects of the Occupational Health and Safety Act (Act No. 85 of 1993), must be adhered to at all times.	**LOW**

Impacts on Archaeological, Palaeontological and/or Cultural Sites *(construction phase)*	Site 6 Site 7	It is possible that sites of archaeological, palaeontological and/or cultural significance are present on or near the proposed development site.	**LOW**	Slight	Localised	Short Term	May Occur	Easily Achievable	Should any archaeological or cultural sites or objects be located during the construction of the proposed project, it should immediately be reported to the National Heritage Council. Failure to report a site or object of archaeological and/or cultural significance is a contravention of the National Heritage Act (Act No. 25 of 1999). All construction site staff should be briefed to immediately report any sites or objects, which are located during the construction of the facility. In the event of finding what appears to be an archaeological site or a cultural and/or historic site or object, work should be terminated until a qualified archaeologist or historian can examine the item or find.	**LOW**
Social disruptions	Site 6 Site 7	Social disruptions are not anticipated as the proposed development falls within an established industrial zone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Social benefits from the project *(construction and decommissioning phase)*	Site 6 Site 7	This would include the potential for the provision of employment in the short term, utilization of local businesses where possible	**MODERATE**	Moderately Beneficial	Extensive	Medium Term	Definite	Easily Achievable	As far as possible utilise local labour As far as possible source construction material locally	**HIGH**
Provision of electricity *(operational phase)*	Site 6 Site 7	The project would result in the provision of 600 MW of power to the National Grid	**HIGH**	Highly Beneficial	Extensive	Medium Term	Definite	-	None required	**HIGH**
CROSS CUTTING IMPACTS										
Noise Impacts *(construction, operation and decommissioning phase)*	Site 6 & 7	It is anticipated that there will be an increase in noise levels during the construction and operational phases of the proposed development.	**MODERATE**	Moderate	Localised	Medium Term	Definite	Easily Achievable	Standard mitigation measures are available to reduce noise	**LOW**

Traffic *(construction, operation and decommissioning phase)*	Site 6 Site 7	During the construction phase large construction vehicles will be utilizing the existing road network. This may result in the impeding of traffic flow and damage to the existing.	**LOW**	Slight	Localised	Short Term	May Occur	Easily Achievable	Large construction vehicles must not be permitted to utilize public roads during peak hours. Damaged to public roads caused by large construction vehicles must be repaired immediately.	**LOW**
Air Quality *(construction, operation and decommissioning phase)*	Site 6 Site 7	Impacts on air quality during the construction phase will primarily result from increased dust levels associated with the required excavation, vegetation clearing, grading and other construction activities. During the operational phase this will be related to emissions from the FPP.	**MODERATE**	Moderate	Localised	Medium Term	Definite	Easily Achievable	Standard mitigation measures are available to reduce emissions.	**LOW**
Alignment with planning instruments *(construction, operation and decommissioning phase)*	Site 6 Site 7	The proposed project is in line with the SDF, IDP and the Coega Open Space Development Plan	**LOW**	Slightly Beneficial	Localised	Short Term	May Occur	Easily Achievable	No mitigation required	**LOW**
CUMULATIVE IMPACTS										
Discharge of effluent into the marine environment *(operations phase)*	Site 6 Site 7	There are currently a number of outfalls within the Port as well as within close proximity of the Port	**MODERATE**	Moderate	Localised	Medium Term	Definite	Easily Achievable	Standard mitigation measures are available	**LOW**
Noise emissions *(construction, operation and decommissioning phase)*	Site 6 Site 7	As the proposed development lies within an industrial area there are already high levels of noise within the area and sensitive receptors are far from the site. This impact considers both biophysical and social impacts	**MODERATE**	Moderate	Localised	Medium Term	Definite	Easily Achievable	Standard mitigation measures are available to reduce noise	**LOW**
Air emissions *(construction, operation and decommissioning phase)*	Site 6 Site 7	As the proposed development lies within an industrial area there are already impacts	**MODERATE**	Moderate	Localised	Medium Term	Definite	Easily Achievable	Standard mitigation measures are available to reduce emissions.	**LOW**

7. PLAN OF STUDY FOR EIA

According to Appendix 2(2) of the EIA Regulations (GNR982 of 2014), A scoping report must contain all the information necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process, and must include:

(i) a plan of study for undertaking the environmental impact assessment process to be undertaken including –

- *(i) a description of the alternatives to be considered and assessed within the preferred site, including the options of not proceeding with the activity;*
- *(ii) a description of the aspects to be assessed as part of the environmental impact assessment process;*
- *(iii) aspects to be assessed by specialists;*
- *(iv) a description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists;*
- *(v) a description of the proposed method of assessing duration and significance;*
- *(vi) an indication of the stages at which the competent authority will be consulted;*
- *(vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and*
- *(viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process;*
- *(ix) identify suitable measures to avoid, reverse, mitigate and manage identified impacts to determine the extent of the residual risks that need to be managed and monitored.*

In line with the above-mentioned legislative requirement, this Chapter sets out the Plan of Study (PoS) for the EIA phase of the assessment. Consultation with DEA will be ongoing throughout this EIA. However, it is anticipated that DEA will provide relevant comment with respect to the adequacy of this Plan of Study for the EIA, as it informs the content of the EIAR and sufficiency thereof.

7.1. ALTERNATIVES

Fundamental Alternatives and Incremental Alternatives have been assessed in Section 2.5 of this Scoping Report.

7.1.1. Fundamental Alternatives

Fundamental alternatives are developments that are totally different from the proposed project and usually involve a different type of development on the proposed site, or a different location for the proposed development.

An alternative type of activity for the proposed project will not be assessed as the proponent, the Department of Energy, has a sole mandate to provide adequate energy supply to the national grid through the Independent Power Producer Programme. Thus, fundamental alternatives of a development other than the proposed infrastructure for the provision of electricity are technically not feasible in this instance.

After consideration of Port alternatives (Port Elizabeth, Mossel Bay and East London), it has been determined that the Port of Ngqura is the best option in the region for the development of the proposed project, as the largest amount of spare capacity at the substation is available, and the site is not close to residential areas. The floating power plant (FPP) and the powerlines do not have site alternatives, as the FPP has to be moored within an existing port and the powerlines are limited to the start (FPP) and end (Dedisa Substation) connections.

No fundamental alternatives for the proposed development can be assessed at the EIA stage. Alternatives locations within the Port of Ngqura will be explored for placement of the FPP as Incremental Alternatives.

7.1.2. Incremental Alternatives

Incremental alternatives are modifications or variations to the design of a project that provide different options to reduce or minimise environmental impacts. There are several incremental alternatives that will be considered during the EIA phase of the project, including:

- The design or layout of the activity;
- The technology to be used in the activity;
- The operational aspects of the activity, such as fuel type.

To date only alternatives related to the layout of the activity have been investigated. Within the Port of Ngqura seven probable sites for the location of the FPP were identified by the coastal engineers, PRDW. Five layouts were deemed to be unfeasible in the Scoping Phase, with two options considered for further investigation in the EIA phase.

In addition to the above, technology and operational alternatives will also be assessed during the EIA Phase of the project once more information has been made available. These will include types of generators (e.g. gas turbines, combustible engine etc.) and types of fuel (e.g. heavy or light fuel oil; marine diesel etc.).

7.1.3. No Development Alternative

The no development option assumes the site remains in its current state, i.e. undeveloped land and underutilised port infrastructure within the Port of Ngqura and the Coega Industrial Development Zone. In addition no additional power will be supplied to the National Grid. The no-go alternative will be used as a baseline throughout the assessment process against which potential impacts will be compared in an objective manner and assessed in the EIA.

7.2. SPECIFIC CHALLENGES AND APPROACH TO THIS EIA

7.2.1. Context and challenges

This EIA needs to assess the impacts associated with the generation of up to 600 MW of power from a Floating Power Plant, the details for which are not known at this time. This is because the EIA application is being submitted by the IPP office of the DOE on behalf of an unknown successful bidder who will respond in time to the Request for Proposal issued by the IPP office. The successful independent power producer will design, select and install a bespoke FPP, the details of which will only be known after submission of the draft EIA. Consequently, the exact details of the following parameters are not known at this time:

- Whether a power ship or dumb barge (un-motorized) will be used.
- The size of the power ship or barge.
- The number of FPP's. It is likely that to achieve a target of 600MW, more than one FPP will be required.
- The type of refuelling option, which might range from tanker to FPP, tanker to floating fuel bowser or possibly shore to ship refuelling, although unlikely at Ngqura.
- Whether the stationary engines used for steam raising and electricity generation will use liquid and/or gas fuel. Engine options include combustion engines using liquid fuels, turbines using liquid fuels and gas turbines using natural gas such as LNG. Further options might include Open Cycle gas Turbines (OCGT) and Combined

Cycle gas Turbines (CCGT). These options also markedly influence noise generation and the impacts from noise generation.

- The type of fuel to be used, and especially the sulphur content, as this will influence the emissions from the power plant. Options include distillate and blended marine diesel; various grades of intermediate fuel oil (IFO-380; IFOs <380); marine gas oil and LPG or LNG.
- The type of cooling system. The two main options are air cooled or water cooled. The former might require some land or additional berth space, and a specifically designed FPP to have deck space for air cooling. Water cooling required the uptake of sea water and the warmer water discharged back into the marine environment. Critical considerations are the volume of warm water to be discharged, and the temperature (how much warmer would it be).

7.2.2. The Rochdale Envelope Approach

Because of the uncertainty about the final design of the FPP, the approach adopted for the air quality, noise and marine discharge of warm water is to apply industry standards and where possible determine maximum acceptable emission levels (thresholds). This approach will be guided by the Rochdale Envelope approach (Infrastructure Planning Commission, 2011). The 'Rochdale Envelope' is an acknowledged way of dealing with an application comprising EIA development where details of a project have not been resolved at the time when the application is submitted.

This approach has been adopted in the UK by the Infrastructure Planning Commission when there are good reasons why the details of the whole project are not available when the EIA application is submitted.

The 'Rochdale Envelope' arises from two cases: *R. v Rochdale MBC ex parte Milne* (No. 1) and *R. v Rochdale MBC ex parte Tew* [1999] and *R. v Rochdale MBC ex parte Milne* (No. 2). These cases dealt with outline planning applications for a proposed business park in Rochdale. It allows for the environmental impact assessment to take account of the need for details of a project to evolve over time, within certain parameters, and reflects the likely significant effects of such a flexible project in the environmental impact assessment. The authorisation must create 'clearly defined parameters' as a framework within which the development must take place. It is for the authority to grant permission and impose conditions to ensure that the process of project refinement keeps within the parameters applied for and assessed in the EIA. However, the level of detail must be sufficient to enable A proper assessment of the likely environmental impacts, and necessary mitigation, and if necessary must consider a range of possibilities. The assessment may conclude that a particular effect may fall within a fairly wide range. In assessing the 'likely' effects, a cautious 'worst case' approach should be adopted. This approach will then feed through into the mitigation measures, which must be adequate to deal with the worst case scenario, in order to minimise the effects of the development on the environment.

The requirement is that there must be sufficient information to enable the main, or most likely significant effects to be assessed, and the mitigation measures to be described. This approach does not give developers an excuse to provide inadequate descriptions of their projects. The competent authority must decide whether it is satisfied that it has enough information on the likely significant effects of the project. If there is an unnecessary degree of flexibility and hence uncertainty then more detail might be required. Thus, it is important to ensure that a range of possible effects arising from the flexibility provided by the Rochdale Envelope approach are assessed.

The challenge is that sufficient information and detail must be available to be able to identify and assess, and in the case of air quality and marine discharges, the discharges should be modelled so that a robust assessment is made. In the case of air quality and marine discharges, the discharges should be modelled so that a robust assessment is made. In the case of air emissions, an application for an Air Emissions Licence will be required, and as part of this application more specific information relating to air emissions will be provided in support of this application.

The competent authority needs to feel confident that any adverse effects have been adequately assessed. The approach adopted will be to work closely with the engineering teams during the course of the EIA process in order to identify environmental aspects that are likely to give rise to significant adverse impacts, so that the maximum potential adverse impacts of the project are properly assessed and taken into account as part of the decision making process. By doing this it is also possible to eliminate options that will result in significant impacts, as far as is practically possible. This will necessitate the assessment of a number of options (e.g. different fuel types and the emissions they cause), and in some cases certain details may remain unresolved. It is therefore anticipated that a number of options will need to be taken through to the EIA phase of the assessment. In terms of EIA process this is not a problem. In fact, it means that incremental alternatives have been assessed in detail, and that the EIA process has contributed to a more environmentally appropriate development. The EIA will assess the likely worst case scenario in terms of the various alternatives, and a range of other alternatives to ensure that the detailed design of the project does not vary beyond limits defined in the EIA.

Thus it is important to limit the potential range of options within the proposed development, to make managing the presentation of the options and their assessment easier, and make it clearer to understand that the project as finally built does not go beyond the limits set out using the Rochdale Envelope approach. Where elements have yet to be finalised, these will be clearly identified in the EIA, with reasons provided to explain why these cannot be finalised at this stage.

Potential cumulative impacts will also need to be carefully identified so that the likely significant impacts can be assessed against the baseline position (which would include other operational developments).

It is also important to limit the number of options within the envelope so that any proposed parameters are not so wide ranging as to represent effectively different projects. The parameters will need to be clearly defined in the draft EIAR and one must consider whether it is possible to robustly assess a range of impacts resulting from a large number of undecided parameters. The description of the parameters must not be too wide to become non-compliant with the EIA Regulations, and through an iterative process they will be narrowed down. The applicant must make every effort to finalise as much of the project as possible prior to submission. This is critical as the Rochdale Envelope approach is not intended to permit such a wide range of materially different options such that each option in itself might constitute a different project for which approval is sought. Nor is it intended to allow a scheme to be implemented which is materially different from that assessed in the EIA.

The challenge for this EIA is to ensure that all the realistic and likely worst case variations of the project have been properly considered and clearly set out in the EIA and so that the likely significant impacts have been adequately assessed.

7.3. IMPACTS

The following environmental aspects will be assessed as part of the EIA process, although additional impacts might be raised by I&APs, the EAP and/or the specialist consultants, and these will also be assessed. Thus, the list presented below must be regarded as preliminary.

Table 7.1 Impacts to be investigated in the EIA phase

ENV ASPECT	ALTERNATIVE	CAUSE AND COMMENT
Topography and geology	Site 6	It is envisaged that only minor bulk earthworks will be required during the construction phase of the development. Changes to topography will only be required within selected areas, such as the switchyard. In addition, large parts of the area are relatively flat.
	Site 7	
Land use	Site 6	The power evacuation route is almost double in length than that proposed for Site 7. In addition the proposed powerline will run along the back of Port area, possibly reducing the capacity of the Port.
	Site 7	The power evacuation route is approximately 7 km in length and will pass through both TNPA and CDC owned land within the Coega IDZ, zoned for industrial purposes. The majority of this route falls within an existing power servitude within the IDZ, however a new servitude will need to be registered for a short distance from the FPP to where it will connect to the existing servitude.
Removal of Top Soil and Soil Erosion	Site 6	The construction of the associated infrastructure such as the powerline will require the clearing of vegetation which will result in exposed soil surfaces. This will increase the chances of soil erosion.
	Site 7	
Surface and Groundwater Resources	Site 6	Accidental discharge of substances may result in the pollution of surface and groundwater sources. Construction activities may lead to sediment being deposited into drainage lines (specifically Coega River), pollution from litter and general construction wastes may occur due to improper site management. Washing down of vehicles and equipment may result in the pollution of drainage areas and the Coega River, and pollution may occur in the event of poor vehicle maintenance and improper storage of hazardous materials such as fuel, etc.
	Site 7	
Terrestrial Ecology	Site 6	During the construction phase there may be impacts on natural vegetation, including destruction of or damage to indigenous and riparian vegetation, the removal of intact communities, species of special concern and/or trees protected in terms of the Forest Act, and the introduction of alien species.
	Site 7	
Aquatic Ecology	Site 6	It is not anticipated that the ecology of any drainage areas and/or surface water features will be impacted upon by the proposed project
	Site 7	

ENV ASPECT	ALTERNATIVE	CAUSE AND COMMENT
Marine, Near-Shore and Coastal Ecology	Site 6	The vessels used in construction and operation could cause hydrocarbon or other hazardous material contamination if not appropriately managed. Similarly any hydrocarbons in waste streams that are inappropriately handled or disposed of may enter the marine environment either through a spill, accident or poor waste management event. In addition, noise and air emissions from the FPP may result in the disturbance of birds on Jahleel Island if not managed appropriately. The discharge of heated water from the FPP may disrupt marine ecosystems. It is anticipated that spills and/or heated water could be better contained within the Port at Site 7 than it would be possible for Site 6.
	Site 7	
Health and Safety	Site 6	Health and safety aspects will mostly pertain to activities defined under the Occupational Health and Safety Act (Act No. 85 of 1993).
	Site 7	
Archaeological, Palaeontological and/or Cultural Sites	Site 6	It is possible that sites of archaeological, palaeontological and/or cultural significance are present on or near the proposed development site.
	Site 7	
Social disruption	Site 6	Significant social disruption is not anticipated as the proposed development falls within an established industrial zone
	Site 7	
Social benefits	Site 6	This would include the potential for the provision of employment in the short term, utilization of local businesses where possible and the provision of electricity
	Site 7	
Noise	Site 6	It is anticipated that there will be an increase in noise levels during the construction and operational phases of the proposed development.
	Site 7	
Traffic	Site 6	During the construction phase large construction vehicles will be utilizing the existing road network. This may result in the impeding of traffic flow and damage to the existing road surface.
	Site 7	
Air Quality	Site 6	Impacts on air quality during the construction phase will primarily result from increased dust levels associated with the required excavation, vegetation clearing, grading and other construction activities. During the operational phase this will be related to emissions from the FPP.
	Site 7	
Alignment with planning instruments	Site 6	The proposed project is in line with the SDF, IDP and the Coega Open Space Development Plan
	Site 7	
Discharge of	Site 6	There are currently a number of outfalls within the Port as well

ENV ASPECT	ALTERNATIVE	CAUSE AND COMMENT
effluent into the marine environment	Site 7	as within close proximity of the Port

7.4. SPECIALIST STUDIES

The following Specialist Studies are proposed for the EIA Phase of the assessment:

- Terrestrial Ecological Assessment (Transmission Line)
- Marine Ecology Assessment and Modelling
- Cultural, Heritage and Palaeontology Assessment
- Air Quality Assessment
- Noise Assessment
- Marine Traffic Risk Assessment

The Terms of Reference for the above-mentioned studies, which outline the information required from the specialists, are provided below and the methodology for assessing the significance of impacts and alternatives is described in the section that follows. Specialists will also be required to address issues raised by I&APs in their reports.

7.4.1. Terrestrial Ecological Assessment (Transmission Line)

Objectives:

- Assist in defining possible constraints associated with the proposed switchyard and transmission line alignment.
- Determine the potential indirect, direct and cumulative risks/impacts to receptors (in this case the biodiversity).
- Advise on mitigation measures for identified significant impacts and measures to reduce negative impacts and enhance positive opportunities of the project.

Terms of Reference:

- Collect available baseline biodiversity data to establish the biodiversity value of the study area, particularly biodiversity hotspots and areas where populations of threatened species, Red Data Species, conservation worthy species and critical habitats are confirmed to occur. These areas will need to be mapped and used to inform the transmission line alignment;
- Undertake a physical survey of the switchyard and transmission line route to identify sensitive biodiversity habitats or species;
- Describe and map different vegetation units and ecosystems along the route and at the switchyard.
- Describe the floral biodiversity and record the plant species that occur in each vegetation type along the route and at the switchyard.
- Determine habitat units that perform critical ecosystem functions (e.g. erosion control, hydrological service etc.) along the route and at the switchyard.
- Prepare a baseline environment description, including a description of both fauna and flora;
- Identify impacts associated with the proposed development, according to EOH CES's standard impact assessment methodology;
- Document results of the impact assessment including proposed mitigation;
- Provide input into the environmental management plan as per the format to be prescribed by EOH CES.

7.4.2. Plume Modelling and Marine Ecology Assessment

Plume modelling

A hydrodynamic, three dimensional plume model is required to determine how warm water, discharged from the FPP, will be dispersed within the Port of Ngquara and outside the port precincts. The approach required is to apply advanced hydrodynamic models to assess the physical marine impact of warm water discharges. The modelling system used will be the 'MIKE by DHI' modelling system developed by DHI in Denmark, which has coupled modules for assessing all the anticipated physical marine impacts in either one-, two- or three-dimensions as required (Figure 7.1). In addition, the CORMIX model will need to be used for assessing near-field dilutions.

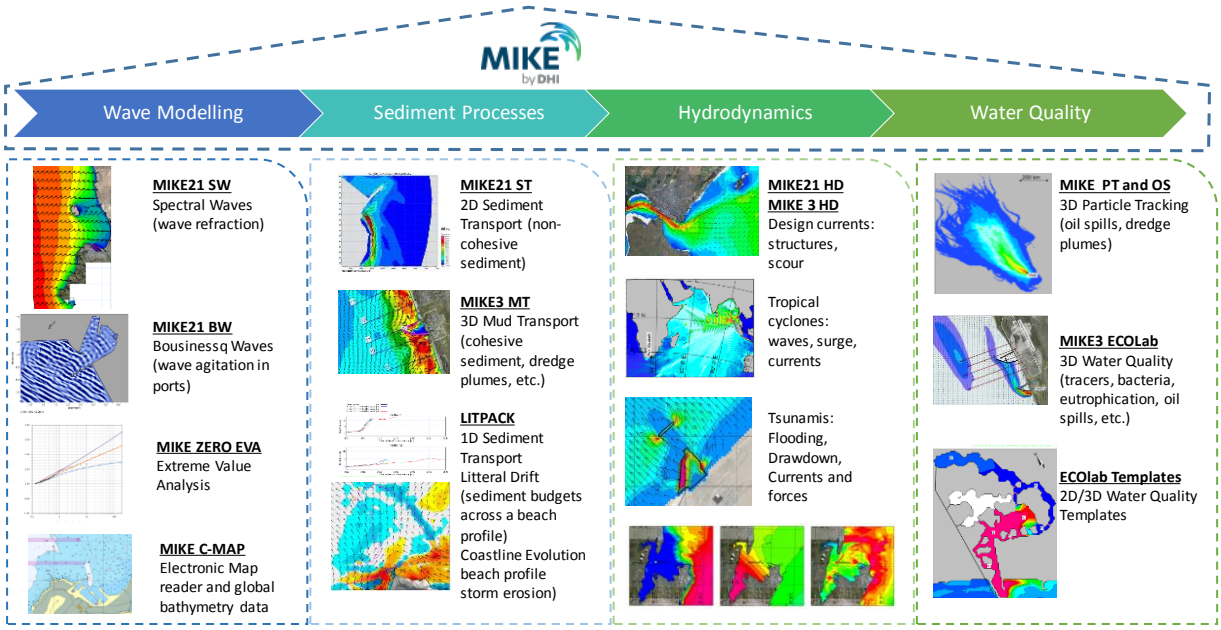

Figure 7.1 – Overview of the MIKE plume modelling approach.

The first task will be to set up and calibrate a three-dimensional hydrodynamic model of the site to simulate waves, currents and water temperatures due to tides, wind and atmospheric forcing. Three-dimensional hydrodynamic modelling must then be used to model the dispersion of the thermal plume. Model results ate then post-processed and plotted to allow comparison to water quality guidelines.

Marine ecology

The significant environmental aspects to be addressed in this specialist study include:

- Physical disturbance to the littoral active zone for the construction of the powerline.
- Constraints that may be placed on discharges due to limits imposed by the requirements for the maintenance of the integrity of the natural environment and linked conservation issues including marine protected areas and seabird populations, together with beneficial use aspects such as commercial and recreational fishing and aquaculture.
- Identification and description of the biological communities that may be at risk from the construction infrastructure in the servitude and their distributions in the alternative localities for the servitude;
- Assess alternative locations/sites for the discharge of heated water.

- Identification of existing natural environmental links and possible future beneficial uses that may be compromised by the powerline servitude;
- Identification and description of biological communities and environmentally sensitive areas that may be at risk from seawater intake and/or effluent discharges from the servitude;
- Identification of existing natural environmental linkes and possible future beneficial uses that may be compromised by warm water discharges;
- Identification of environmental boundaries that may limit warm water discharges;
- Recommendations regarding the type of monitoring and control measures which could be implemented and used for the proposed project.
- Address issues that were raised during the scoping phase through the public consultation process.

7.4.3. Cultural, Heritage and Palaeontology Assessment

As part of the Environmental Impact Assessment (EIA), it is necessary to undertake a phase one heritage and archaeological study to fulfil SAHRA requirements in accordance with the National Heritage Resources Act (Act No 25 of 1999) which requires that *"…any development or other activity which will change the character of a site exceeding 5 000m², or the rezoning or change of land use of a site exceeding 10 000 m², requires an archaeological impact assessment*".

A heritage and archaeological impact assessment will therefore be conducted, the primary objective of which is to determine whether there are any indications that the proposed site is of archaeological significance. This will be a phase 1 assessment and will be largely desk-top, although a site visit will be required to enable the specialist the opportunity to look for significant artefacts on the surface of the site, should this be necessary. It is not expected that a more detailed Phase 2 assessment will be required but this remains to be confirmed.

The terms of reference for the Phase 1 heritage and archaeological study will be to:

1. Determine the likelihood of heritage or archaeological remains of significance being present on the proposed site for the switchyard and power line route;
2. Identify and map (where applicable) the location of any significant heritage or archaeological remains;
3. Provide information on the location of all known shipwrecks, and comment on the potential for the project to impact on these;
4. Assess the sensitivity and significance of heritage and archaeological remains in the site; and
5. Identify mitigatory measures to protect and maintain any valuable heritage or archaeological sites and remains that may exist within the proposed site.

A palaeontological impact assessment will also be conducted, the primary objective of which is to determine whether there are any indications that the proposed site is of palaeontological significance.

This will be a phase 1 assessment and will be largely desk-top, although a site visit will be required to enable the specialist the opportunity to look for significant artefacts/fossils on the surface of the site. It is not expected that a more detailed Phase 2 assessment will be required but this remains to be confirmed. The terms of reference for the Phase 1 palaeontological study will be to:

- Provide a summary of the relevant legislation;
- Conduct a site inspection as required by national legislation

- Determine the likelihood of palaeontological remains of significance in the proposed site (the switchyard and power line route);
- Identify and map (where applicable) the location of any significant palaeontological remains;
- Assess the sensitivity and significance of palaeontological remains in the site;
- Assess the significance of direct and cumulative impacts of the proposed development and viable alternatives on palaeontological resources;
- Identify mitigatory measures to protect and maintain any valuable palaeontological sites and remains that may exist within the proposed site.
- Prepare and submit any permit applications to relative authorities

7.4.4. Air Quality Assessment

Objectives:

- By applying a Rochdale Envelope approach, advise on design constraints for the development based on the ambient air quality in Coega. These constraints are likely to relate to the type of generation plant (e.g. combustion, OCGT et.) as well as fuel type.
- Determine the potential impact on ambient air quality arising from a range of generation capacities, fuel types and generation plants within the Port of Ngqura.
- Advise on what thresholds cannot be exceeded, and what mitigation measures for identified significant risks/impacts must be implemented to minimize impact significance.

Scope of work:

- Collection and assessment of available ambient air quality data and information to describe the current state of the receiving atmospheric environment;
- Quantification of all air pollution emissions, including construction and operation;
- Prepare a baseline description for your specialist report
- Advise on the relevant air quality standards and guidelines relevant to the project;
- Collect an inventory of likely atmospheric emissions for the different technology, design and input alternatives and advise on the likely envelope for the impact assessment;
- Apply a suitable atmospheric dispersion model for the simulation of all anticipated air emissions. (It is anticipated that the US EPAs AERMOD or CALPUFF dispersion models would be employed to simulate the atmospheric dispersion of the pollutants, but the UK's regulatory model, ADMS may also be considered);
- Identify environmental and social impacts associated with the proposed development. This may also require input into the comments and response report to be prepared as part of the stakeholder engagement process during the Scoping and Impact Assessment Phases of the project
- Undertake a qualitative comparative assessment for the different technology, design and input alternatives;
- Undertake dispersion modelling in accordance with the legislation, based on the Rochdale Envelope approach used in the impact assessment;
- Assess air quality impacts of the project and various options and discuss the implications for human health by evaluating predicted ambient concentrations of air pollutants with the National Ambient Air Quality Standard (NAAQS);
- Rate the significance of impacts according to EOH CES's standard impact assessment methodology;
- Document results of the impact assessment including proposed mitigation
- Input into the environmental management plan as per the format to be prescribed by EOH CES;

- Suggest monitoring measures for the construction, operation and decommissioning phases of the project;
- A workshop with the client to discuss the results of the Air Quality study and potential mitigation;
- A meeting will be held with the AEL Authority early in the project to discuss the requirements of the AEL application. Following the compilation of the emission inventory and the impact assessment all sections of the AEL draft application will be completed using the necessary AEL application template and the required notification in the local press. The draft will be submitted to the AELA for comment and input.

7.4.5. Noise Assessment

The objective of the noise impact assessment will be to:

1. Identify all potential noise sensitive sites that could be impacted upon by activities relating to the construction and operation of the proposed FPP.
2. Identify all noise sources relating to the activities of the FPP facility during the construction and operation phases that could potentially result in a noise impact at the identified noise sensitive sites.
3. Determine the sound emission, operating cycle and nature of the sound emission from each of the identified noise sources.
4. Calculate the combined sound power level due to the sound emissions of the individual noise sources.
5. Calculate the expected rating level of sound at the identified noise sensitive sites from the combined sound power level emanating from identified noise sources.
6. Display the rating level of sound emitted by the noise sources in the form of noise contours superimposed on the map of the study area.
7. For items 2-5 above, analyse the noise generation capacity for a range of power generation capacities, and for a range of power generation plants, from combustion engines to gas turbines.
8. Determine the existing ambient levels of noise at identified noise sensitive sites by conducting representative sound measurements.
9. Determine the acceptable rating level for noise at the identified noise sensitive sites.
10. Calculate the noise impact at identified noise sensitive sites.
11. Assess the noise impact at identified noise sensitive sites in terms of:-
    - SANS 101 SANS 10103 for “The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication”.
    - Noise Control Regulations.
    - World Health Organsation - Guidelines for Community Noise.
    - World Bank - Environmental Guidelines.
12. Investigate alternative noise mitigation procedures, if required, in collaboration with the design engineers of the facility and estimate the impact of noise upon implementation of such procedures.
13. Prepare and submit a full environmental noise impact report containing detailed procedures and findings of the investigation including recommended noise mitigation procedures, if relevant.

7.4.6. Marine Traffic Risk Assessment

The delivery of fuel and the refuelling of the FPP will result in a large number of additional vessel movements in the port. Risks and marine safety aspects associated with these vessel movements requires assessment, to determine the potential risk of an oil spill from a ship to ship, or ship to berth collision. The main scope of work items for the marine traffic study will include the following:

- Review of statutory/port requirements;
- Quantification of the present and future traffic at the site;
- Analysis of vessel traffic flow;
- Determination of likely vessel trajectories in the port;
- Identification of marine risks associated with the refuelling operations;
- An assessment potential risks and possible impacts, using the EOH CES predefined rating scale;
- A determination of the frequency and conditions under which possible risks could occur;
- Recommendations to reduce the possible risks.

7.5. IMPACT ASSESSMENT METHODOLOGY

Although specialists will be given relatively free rein on how they conduct their research and obtain information, they will be required to provide their reports to the EAP in a specific layout and structure, so that a uniform specialist report volume can be produced. To ensure a direct comparison between various specialist studies, a standard rating scale has been defined and will be used to assess and quantify the identified impacts. This is necessary since impacts have a number of parameters that need to be assessed. Four factors need to be considered when assessing the significance of impacts, namely:

1. Relationship of the impact to **temporal** scales - the temporal scale defines the significance of the impact at various time scales, as an indication of the duration of the impact.
2. Relationship of the impact to **spatial** scales - the spatial scale defines the physical extent of the impact.
3. The severity of the impact - the **severity/beneficial** scale is used in order to scientifically evaluate how severe negative impacts would be, or how beneficial positive impacts would be on a particular affected system (for ecological impacts) or a particular affected party. The severity of impacts can be evaluated with and without mitigation in order to demonstrate how serious the impact is when nothing is done about it. The word ‘mitigation’ means not just ‘compensation’, but also the ideas of containment and remedy. For beneficial impacts, optimization means anything that can enhance the benefits. However, mitigation or optimization must be practical, technically feasible and economically viable.
4. The **likelihood** of the impact occurring - the likelihood of impacts taking place as a result of project actions differs between potential impacts. There is no doubt that some impacts would occur (e.g. loss of vegetation), but other impacts are not as likely to occur (e.g. vehicle accident), and may or may not result from the proposed development. Although some impacts may have a severe effect, the likelihood of them occurring may affect their overall significance.

Each criterion is ranked with scores assigned as presented in Table 7-2 to determine the overall **significance** of an activity. The criterion is then considered in two categories, viz. effect of the activity and the likelihood of the impact. The total scores recorded for the effect and likelihood are then read off the matrix presented in Table 7-3, to determine the overall significance of the impact (Table 7-4). The overall significance is either negative or positive.

The ***environmental significance*** scale is an attempt to evaluate the importance of a particular impact. This evaluation needs to be undertaken in the relevant context, as an impact can either be ecological or social, or both. The evaluation of the significance of an impact relies heavily on the values of the person making the judgment. For this reason, impacts of especially a social nature need to reflect the values of the affected society.

Negative impacts that are ranked as being of "**VERY HIGH**" and "**HIGH**" significance will be investigated further to determine how the impact can be minimised or what alternative activities or mitigation measures can be implemented. These impacts may also assist decision makers i.e. lots of **HIGH** negative impacts may bring about a negative decision.

For impacts identified as having a negative impact of "**MODERATE**" significance, it is standard practice to investigate alternate activities and/or mitigation measures. The most effective and practical mitigations measures will then be proposed.

For impacts ranked as "**LOW**" significance, no investigations or alternatives will be considered. Possible management measures will be investigated to ensure that the impacts remain of low significance.

Table 7-2: Criterion used to rate the significance of an impact

EFFECTS	**Temporal scale**			**Score**
	Short term	Less than 5 years		**1**
	Medium term	Between 5 and 20 years		**2**
	Long term	Between 20 and 40 years (a generation) and from a human perspective almost permanent.		**3**
	Permanent	Over 40 years and resulting in a permanent and lasting change that will always be there		**4**
	Spatial Scale			
	Localised	At localised scale and a few hectares in extent		**1**
	Study area	The proposed site and its immediate environs		**2**
	Regional	District and Provincial level		**3**
	National	Country		**3**
	International	Internationally		**4**
	Severity		**Benefit**	
	Slight / Slightly Beneficial	Slight impacts on the affected system(s) or party (ies)	Slightly beneficial to the affected system(s) or party (ies)	**1**
	Moderate / Moderately Beneficial	Moderate impacts on the affected system(s) or party(ies)	An impact of real benefit to the affected system(s) or party (ies)	**2**
	Severe / Beneficial	Severe impacts on the affected system(s) or party (ies)	A substantial benefit to the affected system(s) or party (ies)	**4**
	Very Severe / Very Beneficial	Very severe change to the affected system(s) or party(ies)	A very substantial benefit to the affected system(s) or party (ies)	**8**
LIKELIHOOD	**Likelihood**			
	Unlikely	The likelihood of these impacts occurring is slight		**1**
	May Occur	The likelihood of these impacts occurring is possible		**2**
	Probable	The likelihood of these impacts occurring is probable		**3**
	Definite	The likelihood is that this impact will definitely occur		**4**

Table 7-3: The matrix that will be used for the impacts and their likelihood of occurrence

Likelihood		Effect													
		3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	2	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	3	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	4	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Table 7-4: The significance rating scale

Significance Rate	Description	Score
Low	An acceptable impact for which mitigation is desirable but not essential. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in either positive or negative medium to short term effects on the social and/or natural environment.	4-8
Moderate	An important impact which requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in either a positive or negative medium to long-term effect on the social and/or natural environment.	9-12
High	A serious impact, if not mitigated, may prevent the implementation of the project (if it is a negative impact). These impacts would be considered by society as constituting a major and usually a long-term change to the (natural &/or social) environment and result in severe effects or beneficial effects.	13-16
Very High	A very serious impact which, if negative, may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are unmitigatable and usually result in very severe effects, or very beneficial effects.	17-20

7.6. THE PUBLIC PARTICIPATION PROCESS

The Public Participation Process will be divided into three phases which will allow for stakeholder engagement and consultation with the authorities at a pre-assessment phase, a scoping phase as well as at the EIA phase. The tasks which will be carried out at each phase are described in the table below:

Date	Phase	Meeting and/or deliverable	Objective
5-16 October 2015	Pre-Assessment	CDC	The CDC will be a key stakeholder of the proposed project. A meeting will be held with them in order to inform and/or receive input from them, in regards to the proposed project
19 October 2015		Distribute pre-assessment notifications	To comply with Section 41 of NEMA
9-10 November 2015		Compile Comments and Response Trail	As per legal requirements all issues and/or comments raised by registered interested and affected parties needs to be documented in writing and responded to by the EAP
12 November 2015	Scoping Phase	Distribute notifications of the availability of the Draft Scoping Report for public review	To comply with Section 40 of NEMA
23-27 November 2015		Open House/Public Meeting	In order to inform all I&APs of the outcome of the Scoping Report
15-18 December 2015		Compile Comments and Response Trail for incorporation into the Final Scoping Report	As per legal requirements all issues and/or comments raised by registered interested and affected parties needs to be documented in writing and responded to by the EAP
15 February 2016	EIA Phase	Distribute notifications of the availability of the Draft EIAR for public review	To comply with Section 40 of NEMA
23-27 February 2016		Hold open house events	In order to ensure that all I&APs have the opportunity to provide input to the proposed project and have their concerns addressed.
15 March 2016		Compile Comments and Response Trail for incorporation into the Final EIAR	As per legal requirements all issues and/or comments raised by registered interested and affected parties needs to be documented in writing and responded to by the EAP

The primary aims for the public participation process include the following:

- Disclose activities planned by the project proponent and the EIA team.
- Identify concerns and grievances from interested and affected parties.
- Harness local expertise, needs and knowledge from the interested and affected parties.
- Respond to grievances and enquiries from I&APs.
- Identify additional or new stakeholders and people affected by, or interested in, the proposed project.
- Gather perceptions and comments on the proposed terms of reference for the specialist studies.
- Ensure that all issues raised by I&APs have been adequately assessed.
- Share the findings of the EIA and specialists studies, such as significant impacts, mitigation measures, management actions, and monitoring programmes.
- Include any new concerns or comments that arise.

The **Public Participation Process** commenced during the Scoping Phase and will continue during the EIA phase, during which I&APs are afforded further opportunities to raise their issues, concerns and comments regarding the proposed project. It is possible that some of the project details may have changed in response to the preliminary findings presented in the Final Scoping Report, and as a result of design changes made by the project proponent. I&APs and key stakeholders are given the opportunity to review the Draft EIAR before it is submitted to the authorities for consideration. Comments on the Draft EIAR received from I&APs will be included and addressed in the final EIAR.

7.6.1. Identification of and Consultation with Key Stakeholders

I&APs and Key Stakeholders will be identified during the Scoping phase of the project. The identification and engagement if necessary, of I&APs and Key Stakeholders will continue through into the EIA phase of the project as the public participation process is a continuous process that runs throughout the duration of an environmental investigation.

7.6.2. I&AP Database

All I&AP information (including contact details), together with dates and details of consultations and a record of all issues raised is recorded within a comprehensive database of I&APs. This database will be updated on an on-going basis throughout the project, and will act as a record of the communication/ involvement process.

7.6.3. Advertising

In terms of the EIA Regulations, the availability of the Draft Scoping Report and the Draft EIR will be advertised in newspapers in the predominant languages (English and Afrikaans) of the area. The primary aim of these advertisements will be to ensure that the widest group of I&APs possible are informed of the project. Other advertisements to be placed during the course of the EIA phase of the project will relate to the availability of reports for public review, the dates of public meetings, as well as the advertising of the environmental authorisation/decision.

A newspaper advertisement will be placed in both The Herald and Die Burger to notify the general public of the proposed development in both English and Afrikaans. In addition, an advert will be place in the PE express, a local newspaper in Port Elizabeth.

7.6.4. Public Review of the Draft Scoping Report (DSR)

The Draft Scoping Report will be made available to the public for a period of 30 days for comment, during which time an open house/public meeting will be held. Registered I&APs will be informed of the release of the Draft Scoping Report by e-mail and/or registered mail. The release of the report will also be advertised in one provincial and/or one local newspaper. Hard copies of the report will made available in publicly accessible places such as the Port Elizabeth public library, and the local ward councillors' office, and it will also be posted electronically on EOH CES's website.

7.6.5. Public Review of the Draft Environmental Impact Assessment Report

Any comments, issues and concerns raised by I&APs and the authorities during the review period of the Scoping Phase will be included in the Final Scoping Report in the form of a Issues and Response Trail.

The Final Scoping Report will be submitted to DEA, who will decide whether the main phase of the EIA can be initiated. DEA will also approve, with or without amendments, the Terms of Reference for the proposed specialist studies, and the Plan of Study for the EIA phase of the assessment.

7.6.6. Public Meetings

The purpose of public meetings is to provide an appropriate format to enable I&APs to raise concerns related to the proposed project. The intention is that I&APs are afforded the opportunity of interacting on a one-on-one basis with the technical and planning representatives of the developer as well as the environmental team. I&APs will be encouraged to complete an attendance register and a comment and registration form to assist I&APs in raising concerns and general views on the project.

An open house will be held at the conference facilities at Coega Village in the IDZ during the release of the Draft Scoping Report. Should there be significant involvement from stakeholders in the general Port Elizabeth area, an additional meeting will be held in Port Elizabeth.

7.6.7. Issues & Response Trail

All issues, comments and concerns raised during the public participation process of the EIA process will be compiled into an Issues & Response Trail and incorporated and submitted as part of the Final EIAR.

7.6.8. Notification of Environmental Authorisation (EA)

Advertisements announcing the Environmental Authorisation will be placed in the same regional and local newspapers used to announce the project and the EIAR - The Herald and Die Burger. The adverts will inform I&APs of the decision and where the Environmental Authorisation can be accessed. It will also draw their attention to their right to appeal the decision and set out the appeal procedures.

7.7. ENVIRONMENTAL IMPACT ASSESSMENT

7.7.1. Proposed structure of EIAR

To avoid the EIAR being excessively long and cumbersome, whilst meeting the content requirements specified in the EIA Regulations, the final report will be divided into a number of volumes indicated in Table 7-5.

Table 7-5: Volumes that will be generated in the EIA phase for the proposed project

Volume Number	Report	Contents
1	**Scoping Report**	As per the Final ESR (this report)
2	**Environmental Impact Assessment Report (EIAR)**	This volume will include - **1. Introduction** • Detail of the environmental assessment practitioner who compiled the report • Expertise of the EAP to carry out an environmental impact assessment **2. Description of the Project** • A description of the property on which the activity is to be undertaken • The location of the activity on the property • A description of the types of activities that are proposed for the development. **3. Description of the Affected Environment** • The natural environment • The socio-economic environment • The legal, policy and planning setting **4. The Public Participation Process** • Steps undertaken in order to notify and involve I&APs • Advertisements and media • Meetings held in the PPP • Issues and Comment Trail management **5. Summary of Comments and Response Trail** • Summary of comments and issues raised by I&APs and responses to the issues **6. Summary of Specialist Reports** • Summary of the findings and recommendations of all specialist studies **7. Alternatives Considered**

		• Description of all alternatives considered in the EIA • Initial screening of alternatives • Description and comparative assessment of all alternatives identified during the EIA **8. The Significance of Potential Environmental Impacts** • The methodology used to determine the significance of environmental impacts • Impacts on the natural environment • Impacts on the socio-economic environment • Impacts on the legal, policy and planning setting **9. Environmental Impact Statement** • A summary of the key findings of the EIA • Comparative assessment of the positive and negative implications of the proposed activity and identified alternatives **10. Conclusions** • Opinion as to whether the activity should or should not be authorised. • Any conditions that should be made in respect to any form of authorisation. *It should be noted that the above is not the exact Table of Contents for the EIA, but is intended to indicate the major topics that will be covered in the report.*
3	**Specialist Studies**	This volume will be a compilation of all the specialist studies undertaken in the EIA, and will include assessments of - • Cultural, Heritage & Palaeontology Assessment • Air Quality Assessment • Terrestrial Ecological Assessment (Transmission Line) • Noise Assessment • Plume Modelling report • Marine Ecological Assessment • Marine Traffic Risk Assessment
4	**Issues and Response Trail**	This volume will include - 1. Lists of persons, organisations and organs of state that were registered as I&APs 2. Comments and Response trail for the Scoping and EIA phases 3. Copies of any representations, objections and comments received from I&APs
5	**Environmental Management Programme Report (EMPr)**	Environmental management programmes for key activities of the proposed project, which will contain the following - **1. Introduction** • The details of the EAP who prepared the EMPr • The expertise of the EAP to prepare an EMPr **2. Detailed description of the aspects of the activity covered by the EMPr's** **3. Mitigation Measures and Actions** • Planning and Design • Pre-construction and construction activities • Operational phase **4. Responsibilities** • Persons responsible • Time periods for implementation 5. **Monitoring Programme**

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APPENDIX 1: PUBLIC PARTICIPATION PROCESS

APPENDIX 1-1: BACKGROUND INFORMATION DOCUMENT

energy
Department:
Energy
REPUBLIC OF SOUTH AFRICA

TRANSNET

EOH

Background Information Document

Independent Power Producers Programme: EIA for a Floating Power Plant and EIA for LNG Import Facilities, Port of Ngqura

Purpose of this Background Information Document and EOH CES' Role

The Department of Energy (DoE) plans to procure power from a Floating Power Plant to be located within the Port of Ngqura to help meet South Africa's electricity requirements. Transnet will need to grant the rights in the port for this project and also plans to enable the development of Liquefied Natural Gas (LNG) import facilities within the Port of Ngqura to support the DoE's gas-to-power programme. The DoE and Transnet are considering similar projects in the Ports of Richards Bay and Saldanha.

The Floating Power Plant and LNG Import Facilities each require Environmental Authorisation through Environmental Impact Assessments (EIAs) from the National Department of Environmental Affairs (DEA) in terms of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998), as amended. This document provides background information on both EIA processes. It provides information on both projects and EIA processes. It aims to assist interested and affected parties to understand the background to the projects, and to provide guidance on getting involved.

Interested and affected parties can play a very important role in the EIA process, and therefore we encourage you to register as an interested and affected party. This will help us to keep you informed throughout the EIA processes. You will have opportunities to engage in discussions on issues, provide comment on the draft Scoping Reports, various specialist study findings as well as the draft EIA Reports that will be produced through the EIA processes. Your input will inform the report's content, and will also be included in the final submissions to the DEA, the body that will take the environmental decision on the proposed developments.

Background Information Document

EOH CES' Role in the FPP and LNG Facilities

DoE has appointed EOH Coastal and Environmental Services (EOH CES) as the independent Environmental Assessment Practitioner for the EIAs for both the Floating Power Plant and the LNG Import facilities in the Port of Ngqura. The EIA will be undertaken in several steps, scoping issues and alternatives, coordinating specialist studies and compiling Environmental Impact Reports that set out the anticipated impacts and how these might be mitigated. The EIA reports are prepared to inform an environmental authorisation decision to be taken by the DEA, the competent authority. A further crucial part of EOH CES' role is to facilitate the active involvement of interested and affected parties in the process. All of this activity must be conducted to the highest standards of independence and professionalism.

Get involved. Register as an interested and affected party.

Please complete the enclosed registration/comment sheet or contact EOH CESto register as an I&AP

Mrs Kim Brent

Tel: 041 585 1715 • Fax: 046 622 2364 • Email: k.brent@cesnet.co.za

Postal Address: 13 Stanley Street, Richmond Hill, Port Elizabeth, 6001

The Gas-to-Power Programme

The National Development Plan (NDP) identifies the need for South Africa to invest in a strong network of economic infrastructure designed to support the country's medium- and long-term economic and social objectives. This requires the development of 10,000 MWs of additional electricity capacity to be established by 2025. To achieve this, the Department of Energy (DoE) has developed a 20-year energy plan for South Africa, the Integrated Resources Plan 2010-2030 (IRP 2010), which encourages the participation of independent power producers (IPPs) in electricity generation in South Africa.

The Independent Power Producers (IPP) Office was established by the DoE, the National Treasury and the Development Bank of Southern Africa (DBSA) to facilitate the involvement of IPPs in the generation of electricity. The IPP Office has to date successfully procured 6 327 megawatts (MW) under the Renewable Energy IPP Procurement Programme. It is currently intended that a further 3126 MW of new generation capacity will be generated from natural gas.

For the Gas IPP Procurement Programme, the DoE through the IPP Office has, in collaboration with Transnet, developed a two-phased approach. The first phase is to introduce Floating Power Plants in three of South Africa's commercial ports – Saldanha Bay, Ngqura and Richards Bay. The second phase is to facilitate the import of Liquefied Natural Gas (LNG) in the same three ports, to allow for the development of medium- to long-term gas power plants outside of the port boundaries.

Separate applications and studies are being undertaken by private parties for gas power plants and related infrastructure near the Port. Following a competitive bidding process to be conducted by the DoE through the Independent Power Producers (IPP) Office, the DoE plans to select only one of these parties to develop a gas power plant outside the Port boundary. The competing bidders need to conduct EIAs for their respective project proposals.

Project Description

Floating Power Plants are special purpose marine vessels which incorporate power generation equipment and only require a land-based switchyard to distribute power. The proposed Floating Power Plant Project has both land-based (terrestrial) and marine-based components, including the following:

- Floating Power Plant which may be a power barge or a self-propelled powership (marine);
- Mooring infrastructure in the form of anchors, dolphin structures and a piled temporary access jetty;
- Floating fuel storage facilities (marine);
- Connection of the fuel storage facility to the Floating Power Plant for the transfer of liquid fuel/gas on board (marine);
- Underground or aboveground power lines connecting the Floating Power Plant to a terrestrial switchyard for the conversion of the power to a higher voltage (marine and terrestrial);
- Transmission line to Dedisa substation for distribution into the national power grid (terrestrial).

Several Floating Power Plants could be moored within each port depending on the power generation capacity, the capacity of the relevant substation to distribute this power and space within the Port. There is currently 600 MW capacity available at the Dedisa substation.

The Floating Power Plant will be powered by liquid fuel and may be converted to a gas powered facility at a later date. Fuel is typically supplied from a bunker barge or tanker vessel moored close to the Floating Power Plant. Refuelling the fuel storage vessel typically takes place once a week via a fuel supply vessel. The Floating Power Plant will operate 24 hours per day for 365 days per year. The Floating Power Plant would be moored within the Port of Ngqura along the eastern breakwater (see Figure 8). Power would be evacuated via a switchyard and a 132 kV transmission line (approximately 7 km) to the Dedisa substation, which is managed by Eskom.

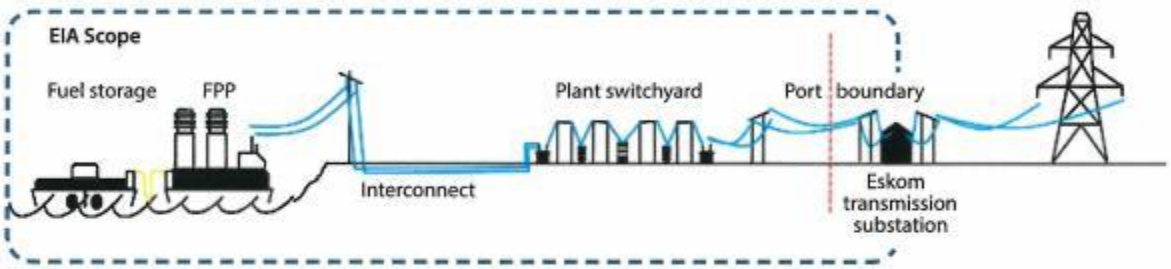

Figure 1: An illustration of the proposed Floating Power Plant and the associated infrastructure required to supply power into the national grid

LNG Import Facilities

The proposed LNG Import Facilities aim to secure gas supplies to feed to land-based gas power plants, other industrial users and FPPs. The facilities will provide for the importation, storage, regasification and the transmission of natural gas to a distribution hub, and will include both land-based (terrestrial) and marine-based components. There are currently two (2) infrastructure technologies under consideration for this, including the following:

Floating Regasification

This option would consist of the following components:

- A marine import facility consisting of a loading quay, berthing and mooring dolphins, access and services trestle and pipeline;
- A permanently moored Floating Storage and Regasification Unit (FSRU) (marine); and
- A gas pipeline connecting the fuel storage and regasification facility to a common gas distribution hub from which the gas will be distributed to the power plant and domestic users via pipeline.

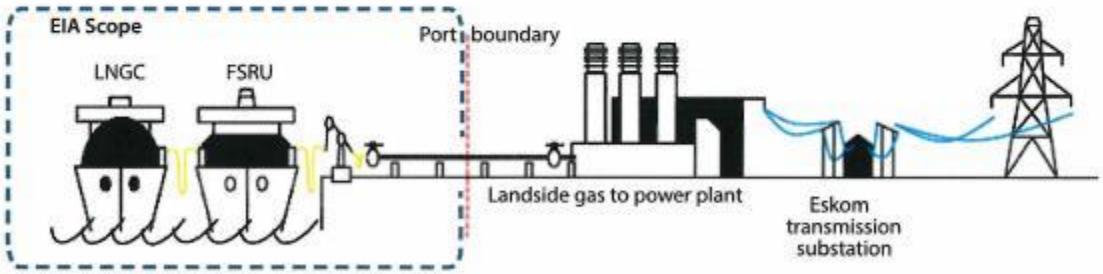

Figure 2: An illustration of the floating regasification technology and how this would link to a landside gas to power plant

Land-based Regasification

This option would consist of the following components:

- A marine import facility consisting of a loading quay, berthing and mooring dolphins, access and services trestle and pipeline;
- A dock at an existing facility in the port or a special purpose docking facility to be constructed for an LNG transport ship;
- A cryogenic gas pipeline connecting the LNG carrier to storage and regasification facilities on land;
- A gas pipeline from the regasification facility to a gas distribution hub which will then distribute the gas further to a power plant and other gas users. Electricity is connected from the power plant to the national grid.

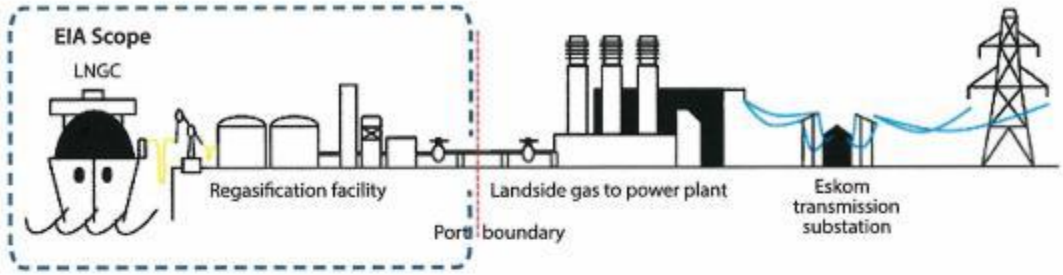

Figure 3 : An illustration of the land-based regasification technology and how this would link to a landside gas to power plant

Once operational, LNG carriers will supply the LNG Import Facility which will discharge the LNG load to the FSRU /FSO over a period of approximately 24 hours. It is envisaged that the LNG Import Facility will operate for 24 hours per day for 365 days per year. The location of the LNG import facility would be within the Port of Ngqura.

Project Inputs, Outputs and Potential Concerns

There are a number of activities associated with the construction and operation of a Floating Power Plant and an LNG Import Facility that may result in environmental and social impacts. At this stage the issues of concern shown below will be addresse as part of the EIA process. Additional issues and concerns will be identified during the public participation process.

- The potential impact of noise and air emissions associated with each Project, and what this means for people and the broader environment in the area.
- The potential impact of the Projects on terrestrial animals and plants.
- The potential impact of the Projects on marine life.
- The management of waste during the Project lifespan.
- The benefits associated with the Projects, such as increased energy production for the country, and employment creation.

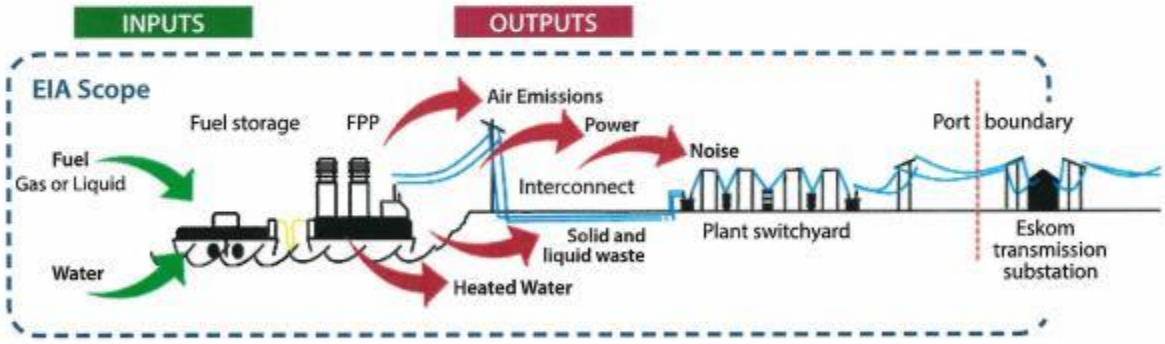

Figure 4: Project Inputs and Outputs for the FPP

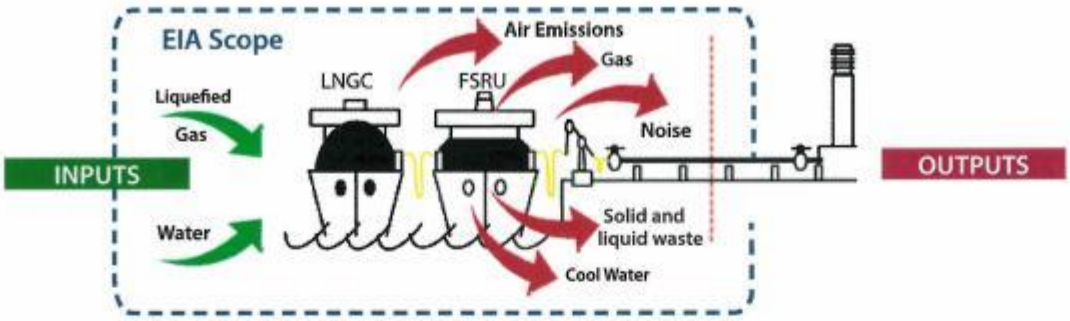

Figure 5: Project inputs and outputs for the LNG Facilities using a Floating Storage and Regasification Unit

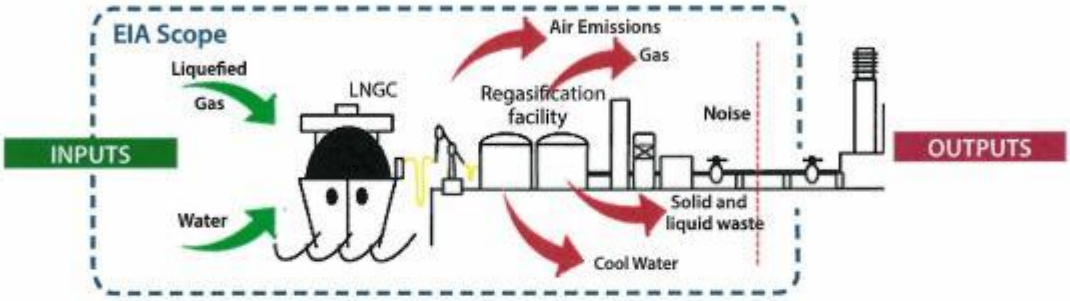

Figure 6: Project inputs and outputs for the LNG Facilities using land-based regasification

The EIA Processes

The two (2) Environmental Impact Assessments (EIAs) for the proposed Floating Power Plant and LNG Import Facility are being conducted in terms of the National Environmental Management Act, 1998, (Act No. 107 of 1998), as amended (NEMA). The proposed Projects trigger listed activities in EIA Regulations Listing Notice 1 (GNR R983), Notice 2 (GNR 984) and Notice 3 (GNR 985), as well as activities listed in the National Environmental Management: Waste Act, 2008. Therefore, these Projects will require full Scoping and EIA processes to support an environmental authorisation decision. A typical full Scoping/EIA Process is explained below.

Scoping Phase – The purpose of the scoping phase is to communicate the proposed project to interested and affected parties, to identify possible positive and negative impacts, alternatives, as well as to determine the terms of reference for specialist studies to be conducted in the EIA phase. This will be set out in the Scoping Report. **The Draft Scoping Reports for the projects will be made available for a thirty (30) day public comment period.**

EIA Phase – The possible positive and negative impacts identified in the scoping reports will be assessed in the EIA Reports. The significance of the impacts will be rated using a prescribed methodology. As the preferred design and technology has not been selected for the projects, an envelope of project description options and impacts will be assessed. The Environmental Impact Reports arising from this phase will include Environmental Management Programmes (EMPrs), which will detail proposed management measures to minimise negative impacts and enhance positive impacts. **The draft EIAs will be made available for a (30) day public comment period.**

In addition to environmental authorisation being applied for through NEMA, the following permits may be required:

- Water Use Licences in terms of the National Water Act 1998, (Act No. 36 of 1998);
- Air Emissions Licences in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004); and
- Coastal Water Discharge Permits in terms of the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008).
- The National Department of Environmental Affairs (DEA) is the competent authority for both EIAs. The Final Scoping Reports and EIA Reports, along with all stakeholder comments, will be submitted to the DEA for decision making.

PRE-ASSESSMENT PPP PHASE

Identifcation of key stakeholders and I&APs
Distribution of PPP documents (BID, Notification letters, emails etc)

SCOPING PHASE (44 DAYS)

ACTIVITY	TIMEFRAME
Submission of Application	Authority Acknowledgement = 10 days
Public & Authority review of the Draft Scoping Report	30 days
Submission of Final Scoping report	44 Days from receipt of Acknowledgement of Application
Consideration by Authorities	43 days from receipt of Scoping report

SPECIALIST PHASE

EIA PHASE (106 DAYS)

ACTIVITY	TIMEFRAME
Public Participation on DEIR	30 days
Submission of FEIR to Authorities	106 days from Acceptance of Scoping Report
Notice of extension	Must be lodged within 106 days from Acceptance of Scoping Report. Extension period allows for a further 50 days to submit the EIR, i.e. within 156 days
Environmental Authorisation	107 Days from receipt of FEIAR
EA notification	Authority to notify Applicant within 5 Days 14 Days to notify I&APs

Figure 7: Scoping and EIA Process

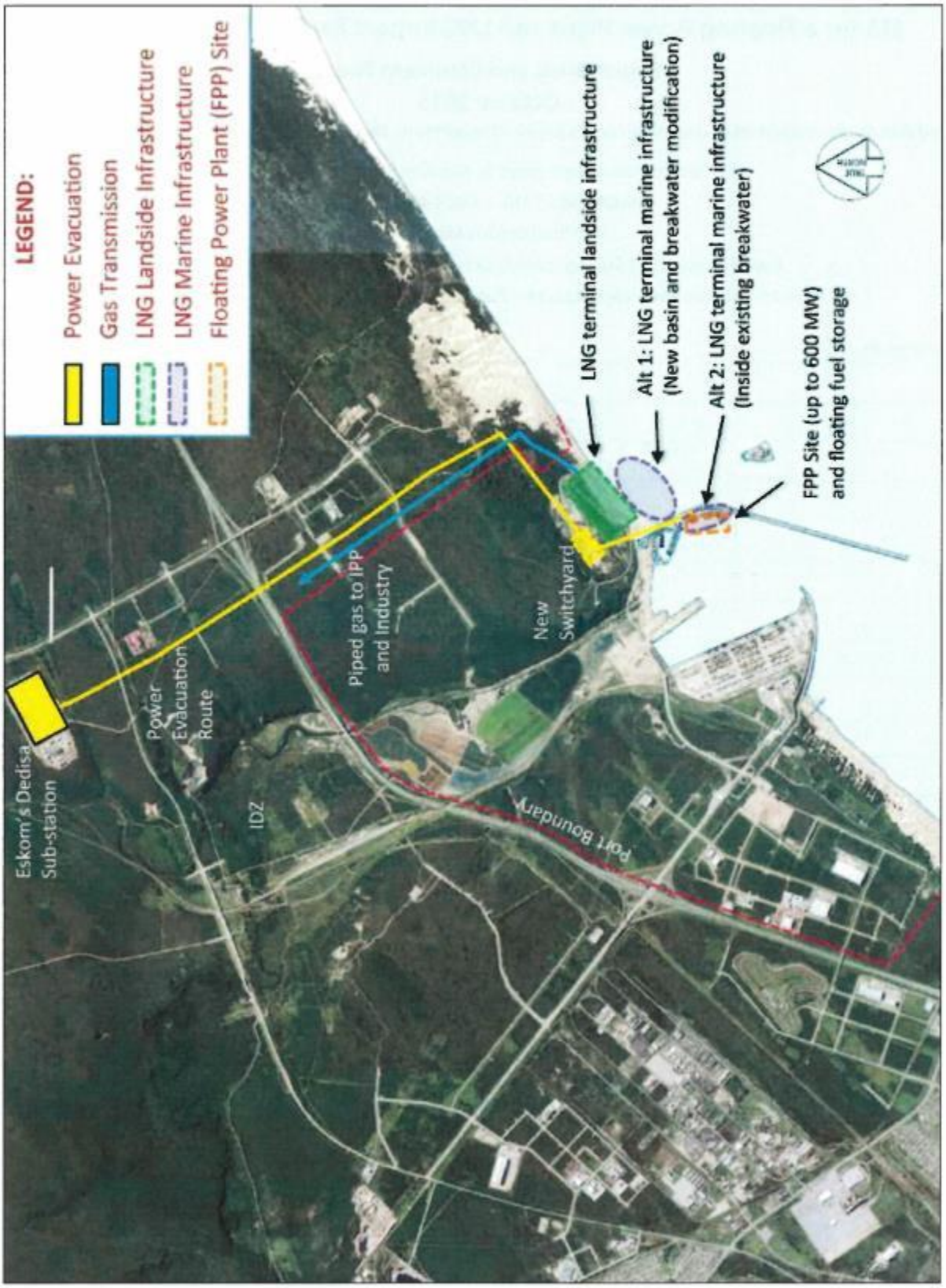

Figure 8: Proposed location for the LNG Import Facility in the Port of Ngqura

7

Background Information Document

EIA for a Floating Power Plant and LNG Import Facility, Port of Ngqura

Registration and Comment Sheet

October 2015

Send your queries, comments or suggestions on the proposed project to us. You can email, fax, post or hand them to us.

Return this comment sheet to Mrs Kim Brent of EOH CES:

Tel: 041 585 1715 • Fax: 046 622 2364

Email: k.brent@cesnet.co.za

Postal address: 13 Stanley Street, Richmond Hill, Port Elizabeth, 6001

Project Website: www.cesnet.co.za – Public Documents – Gas to Power Project

Comments

Please fill-in your contact details below for the stakeholder database.

Title and Name:			
Organisation:			
Telephone:		Position:	
Cellphone:		Email:	
Postal Address:			

energy
Department:
Energy
REPUBLIC OF SOUTH AFRICA

TRANSNET

EOH

8

Annexure A

Examples of Floating Power Plants

Example of a Liquid Natural Gas Import facility

APPENDIX 1-2: LETTER OF NOTIFICATION OF ALL INTERESTED & AFFECTED PARTIES (I&AP)

EOH

Coastal & Environmental Services

30 October 2015

Dear Interested and Affected Party

INDEPENDENT POWER PRODUCER PROGRAMME: EIA FOR A FLOATING POWER PLANT AND EIA FOR LNG IMPORT FACILITIES, PORT OF NGQURA

The Department of Energy (DoE) plans to procure power from a Floating Power Plant to be located within the Port of Ngqura to help meet South Africa's electricity requirements. Transnet SOC Ltd (Transnet) will need to grant the rights in the Port for this project and, in collaboration with the DoE, also plans to enable the development of Liquefied Natural Gas (LNG) import facilities within the Port of Ngqura to support the DoE's gas-to- power programme.

The Floating Power Plant and LNG Import Facilities each require Environmental Authorisation through an Environmental Impact Assessment (EIA) in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended. This notification serves to announce the commencement of the separate EIA processes for each Project. For further information about the EIAs, the associated public participation process and how you can register as an Interested and Affected Party (I&AP), please refer to the attached Background Information Document.

To register as an I&AP, submit comments, or for more information contact Kim Brent of EOH CES:
Tel: 041 585 1715 | Fax: 046 622 6564
Email: k.brent@cesnet.co.za
Postal address: 13 Stanley Street, Richmond Hill, Port Elizabeth, Tel: 041 5851715
Visit the EOH CES website: www.cesnet.co.za – Public Documents

Yours sincerely,

Kim Brent
Environmental Consultant

Coastal and Environmental Services (Pty) Ltd
T: (041) 585 1715
13 Stanley Street, Richmond Hill, Port Elizabeth 6001
Reg no: 2012/151672/07
www.eoh.co.za | www.cesnet.co.za

Directors: AM Avis, A Bohbot, JW King

APPENDIX 1-3: PROOF OF NOTIFICATION OF ALL INTERESTED & AFFECTED PARTIES (I&AP) – REGISTERED MAIL

REGISTERED LETTER
GEREGISTREERDE BRIEF
(with an insurance option/met 'n versekeringsopsie)

Post Office

030742

Addressed to/Geadresseer aan

13 STANLEY STREET
RICHMOND HILL
PE, 6001

TELLER

Please collect at
Kom asseblief af by

Post Office counter No.
Poskantoor, toonbank No.

No.		No.	
1	RC 069 723 082 ZA	26	RC 069 723 312 ZA
2	RC 069 723 096 ZA	27	RC 069 723 296 ZA
3	RC 069 723 462 ZA	28	RC 069 723 290 ZA
4	RC 069 723 445 ZA	29	RC 069 723 269 ZA
5	RC 069 723 431 ZA	30	RC 069 723 272 ZA
6	RC 069 723 428 ZA	31	RC 069 723 241 ZA
7	RC 069 723 405 ZA	32	RC 069 723 255 ZA
8	RC 069 723 [illegible] ZA	33	RC 069 723 224 ZA
9	RC 069 723 [illegible] ZA	34	RC 069 723 238 ZA
10	RC 069 723 391 ZA	35	RC 069 723 207 ZA
11	RC 069 723 [illegible] ZA	36	RC 069 723 194 ZA
12	RC 069 723 374 ZA	37	RC 069 723 215 ZA
13	RC 069 723 343 ZA	38	
14	RC 069 723 357 ZA	39	
15	RC 069 723 105 ZA	40	
16	RC 069 723 119 ZA	41	
17	RC 069 723 122 ZA	42	
18	RC 069 723 136 ZA	43	
19	RC 069 723 140 ZA	44	
20	RC 069 723 153 ZA	45	
21	RC 069 723 167 ZA	46	
22	RC 069 723 175 ZA	47	
23	RC 069 723 326 ZA	48	
24	RC 069 723 330 ZA	49	
25	RC 069 723 309 ZA	50	

Total
Totaal 37

Signature of recipient
Handtekening van ontvanger

ID Number
ID Nommer

Date stamp delivered
Datumstempel afgelewer

APPENDIX 1-3: PROOF OF PLACEMENT OF ADVERTISEMENT IN THE HERALD & DIE BURGER

THE HERALD

b. Detailed design drawings and tender documentation can be requested from fWARS on 084 602 1278 or 046 624 4911 or pdywood@telkomsa.net

c. Deadline for tender submission will be 12.00 on 10 November 2015

For Quality Service Friendly and Efficient Attention Try the

CLASSIFIEDS

LEGAL NOTICES

Environmental Impact Assessment for a Floating Power Plant and LNG Import Facilities in the Port of Ngqura

EOH

INVITATION TO REGISTER AND COMMENT

The Department of Energy (DoE) plans to procure power from a Floating Power Plant to be located within the Port of Ngqura to help meet South Africa's electricity requirements. In addition, Transnet SOC Ltd (Transnet) plans to enable the development of Liquefied Natural Gas (LNG) import facilities within the Port of Ngqura to support the DoE's gas-to-power programme.

Notice is hereby given of the public participation process required as part of the Environmental Impact Assessment processes (EIA) in terms of the National Environment Management Act, 1998 (Act No. 107 of 1998) (NEMA). Two (2) separate environmental authorisation applications are being undertaken for these respective projects. The Floating Power Plant Project Project may trigger the following Listed Activities in terms of the EIA Regulations of 2014 under NEMA:

- EIA Regulations Listing Notice 1 (GNR 983 of 2014) Activities 1(b), 19(i), 27, 30.
- EIA Regulations Listing Notice 2 (GNR 984 of 2014) Activities 2, 4, 14(i), 28.
- EIA Regulations Listing Notice 3 (GNR 985 of 2014) Activity 12 (i)(ff), 14.

The LNG Import Facilities will have marine and terrestrial infrastructure and may trigger the following Listed Activities in terms of the EIA Regulations of 2014 under NEMA:

- Listing Notice 2 (GNR 984 of 2014) Activity 4, 7(i)(ii), 14, 26.

The following additional permits may be required: a Water Use Licence in terms of the National Water Act, 1998 (Act No. 36 of 1998); an Air Emissions License in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004); a permit in terms of the National Forest Act, 1998 (Act No. 84 of 1998); and/ or the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), for the removal of protected species; and a Coastal Water Discharge Permit in terms of the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008).

The competent authority for the two (2) EIAs is the National Department of Environmental Affairs (DEA). EOH Coastal & Environmental Services (EOH CES) has been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the EIAs and associated Public Participation Process.

Stakeholders are invited to register as Interested and Affected Parties (I&APs) and to participate in the EIA processes by identifying issues of concern and providing suggestions to enhance benefits. A draft Scoping Report and draft Environmental Impact Assessment Report will be made available for comment during each EIA process. Registered I&APs will be kept informed about the Projects and will be notified when these reports are available for comment.

For more information the Background Information Document can be downloaded: www.eohnet.co.za - Public Documents.

To register as an I&AP, submit comments, and to obtain more information, please contact EOH CES:

Kim Grant
12 Stanley Street, Richmond Hill, Port Elizabeth,
Tel: 041 5851715, Fax: 086 633 6364
Email: kgrant@eohnet.co.za
30 October 2015

TRANSNET

REQUEST FOR PROPOSALS
NON-PROFIT ORGANISATIONS (NPOs) TO DELIVER HOUSEHOLD FOOD AND NUTRITION SECURITY SERVICES FOR THE 2015/16 FINANCIAL YEAR

The National Department of Social Development is calling for interested Non-Profit Organisations (NPOs) from within the Northern Cape Province and the Eastern Cape to deliver Household Food and Nutrition Security Services over a period of 12 months. The services expected to be delivered include the establishment of a Provincial Food Distribution Centres (PFDCs) and supply of food to Community Nutrition and Development Centres (CNDCs) across each of the provinces.

Eligibility criteria

- The NPO must be operating in the food security and food distribution or related field.
- The NPO must promote equitable distribution of services, taking into account levels of malnutrition, historical imbalances, including race, gender, and the urban/rural divide.
- The NPOs must demonstrate knowledge to develop feeding and food distribution programmes and support provincial affiliated organisations to deliver on related programmes.
- The NPO must facilitate and ensure establishment if institutional mechanisms for constituent organisations, the monitoring and evaluation of work delivered by such organisations.

DIE BURGER

EOH

Omgewings-Impakstudie vir die drywende kragstasie (kragskip) en Vloeibare Aardgas (VA) invoer-fasiliteit in die Ngqura Hawe

UITNODIGING TOT KOMMENTAAR EN REGISTRASIE

Die Departement van Energie (DvE) beplan om krag te werf vanaf 'n drywende kragstasie (kragskip) wat binne die Ngqura Hawe gelee sal wees, om by te dra tot Suid-Afrika se elektrisiteits vereistes. Daarbenewens beoog Transnet SOC Ltd (Transnet) om die ontwikkeling van 'n Vloeibare Aardgas (VA) invoer-fasiliteit binne die hawe van Ngqura te ontwikkel, om hul in staat te stel om die DvE se gas-tot-kragprogram te ondersteun.

Kennisgewing aangaande die proses van openbare deelname, soos vereis word as deel van die Omgewingsimpakstudie prosesse (OIE), kragtens die Wet op Nasionale Omgewingsbestuur, 1998 (Wet No. 107 van 1998) (NEMA), word hier gelewer. Twee (2) afsonderlike omgewing-magtigingsaansoeke word voorberei vir hierdie twee projekte. Die drywende kragstasie-projek mag die volgende gelyste aktiwiteite kragtens die OIE-regulasies van 2014 onder NEMA, aktiveer:

- OIE Regulasies Lyskennisgewing 1 (GNR 983 van 2014) Aktiwiteite 18(i), 19(i)(iii), 27, 30.
- OIE Regulasies Lyskennisgewing 2 (GNR 984 van 2014) Aktiwiteite 2, 4, 14(ii), 28.
- OIE Regulasies Lyskennisgewing 3 (GNR 985 van 2014) Aktiwiteite 12 (ii)(iii), 14.

Die vloeibare aardgas invoer-fasiliteite sal bestaan van see en land-gebaseerde infrastruktuur, en mag dus die volgende aktiwiteite kragtens die OIE-regulasies van 2014, onder NEMA, aktiveer:

- OIE Regulasies Lyskennisgewing 2 (GNR 984 van 2014) Aktiwiteite 4, 7(i)(ii), 14, 26.

Die volgende addisionele permitte mag nodig wees: 'n Waterverbruikerslisensie kragtens die Nasionale Waterwet, 1998 (Wet No. 36 van 1998); 'n Atmosferiese vrystellingslisensie kragtens die Wet op Nasionale Omgewingsbestuur: Luggehalte, 2004 (Wet No. 39 van 2004); 'n Permit kragtens die Nasionale Bosbouwet, 1998 (Wet No. 84 van 1998), en/of die Nasionale Omgewingsbestuur: Wet op Biodiversiteit, 2004 (Wet No. 10 van 2004), vir die verwydering van beskermde spesies; en 'n kuswater-verwyderingspermit kragtens die Wet op Nasionale Omgewingsbestuur: Geïntegreerde Kusbestuur, 2008 (Wet No. 24 van 2008).

Die bevoegde owerheid vir die twee (2) OIB's is die Nasionale Departement van Omgewingsake (DEA), EOH Coastal & Environmental Services (EOH CES), is aangestel as die onafhanklike Omgewingsbeoordelingspraktisyn (OBP) om die OIE en gepaardgaande Openbare Deelnameproses te onderneem.

Belanghebbendes word dus genooi om te registreer as 'n Belanghebbende en Geaffekteerde Party (B&GP) en om deel te neem in die OIE prosesse deur die identifisering van kwessies en voorstelle te lig, om die projekvoordele te verbeter. 'n Konsep Omvangbepalingsverslag en die Konsep Omgewings invloedbepalingsverslag sal vir kommentaar beskikbaar gestel word tydens elke OIB-proses. Geregistreerde belanghebbendes sal op hoogte gehou word, en sal in kennis gestel word wanneer hierdie verslae beskikbaar gemaak word vir kommentaar.

Vir meer inligting kan die Agtergrondinligtingdokument afgetaan word by: www.cesnet.co.za - Public Documents

Om te registreer as 'n B&GP, kommentaar te lewer, of meer inligting te kry, kontak gerus:

Kim Brent
Stanleystraat 13, Richmond Hill, Port Elizabeth, Tel: 041 5851715,
Faks: 046 622 6564
Email: k.brent@cesnet.co.za

30 Oktober 2015

TRANSNET

SAGTEWARE ONTWIKKEL
Word benodig

Automatiserings vervaardiger van masjie
benodig die dienste van 'n BSc Reke
Wetenskap progammeerder met relev
ondervinding.

Vereistes:
- Die hantering van kompleet projekte
- Toegepaste wiskunde 3de jaars vlak
- Kennis van objekgeoriënteerde programme, gevorderde data strukt algoritmes en die deeglike kennis va programmering stapel
- Kennis van Linux-bediener

Die volgende sal voordelig wees:
Delphi, Phyton, C++Programmering, Grafie 3D, Masjien outomatisering, Git/Svn, Agile Kode toetsing
Stuur CV na: Tracy@woodtech.biz
Sluitingsdatum: 6 November 2015

SLEGS R22

DIE BURGER = -koerant en tydskrif nou R22,00 elke Maandag en Dinsdag.

DIE BURGER

APPENDIX 1-4: THE SITE NOTICE

NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
PRE-ASSESSMENT NOTIFICATION
Environmental Impact Assessment for a Floating Power Plant and LNG Import Facilities in the Port of Ngqura

The Department of Energy (DoE) plans to procure power from a Floating Power Plant to be located within the Port of Ngqura to help meet South Africa's electricity requirements. In addition, Transnet SOC Ltd (Transnet) plans to enable the development of Liquefied Natural Gas (LNG) import facilities within the Port of Ngqura to support the DoE's gas-to- power programme.

Notice is given in terms of regulation 19 as published in the Government Gazette No 982 Environmental Impact Assessment (EIA) regulations of the National Environmental Management Act (Act No 107 of 1998, second amended Act of 2013) for intent to undertake **two** full Scoping and Environmental Impact Assessment processes. The competent authority for the two (2) EIAs is the National Department of Environmental Affairs (DEA).

Stakeholders are invited to register as Interested and Affected Parties (I&APs) and to participate in the EIA processes by identifying issues of concern and providing suggestions to enhance benefits. A draft Scoping Report and draft Environmental Impact Assessment Report will be made available for comment. Registered I&APs will be kept informed about the projects and EIA processes.

Consultant: EOH Coastal & Environmental Services

You are invited to register as an Interested and Affected Party (I&AP). Should you have any comments or queries, please contact: Mrs K Brent

Contact details:

13 Stanley Street
Richmond Hill
Port Elizabeth, 6001

Tel: 041-585 1715
Fax: 086-604 8781
Email: kim.brent@eoh.co.za

APPENDIX 1-5: INTERESTED AND AFFECTED PARTIES LIST

COMPANY/ DEPARTMENT	CONTACT PERSON	CONTACT DETAILS
Landowners		
Ngqura Deepwater Port Transnet National Ports Authority (TNPA)	Port Managers Thulani Dubeko (Harbour Master)	041 507 1900 Thulani.Dubeko@transnet.net Mpumi.Dweba@transnet.net
TNPA	Gerrit du Plessis Port Engineer	Gerrit.duplessis2@transnet.net
TNPA	Mandilakhe Mdodana Environmental Officer	Mandilakhe.Mdodana@transnet.net
TNPA	Mpatisi Pantsi Acting SHERQ Manager	Mpatisi.Pantsi@transnet.net
Coega Development Corporation (CDC)	Operations project manager Andrea Shirley	Coega IDZ Business Centre, Corner Alcyon Road & Zibuko Street, Port Elizabeth, 6100 041 403 0664 082 657 4648 andrea.shirley@coega.co.za
Coega Development Corporation (CDC)	Zanele Hartmann – SHEQ Project Manager	Coega Business Centre, Corner Alcyon Road & Zibuko Street, Coega IDZ, Port Elizabeth, 6100 041-403 0843 084 4232 291 zanele.hartmann@coega.co.za
IDZ tenants and surrounding Landowners		
DYNAMIC COMMODITIES	General Manager Riaan Olivier	041 405 9888 082 850 1838 riaan@dynamicfood.com
CAPE CONCENTRATE	Manager Leon Wait	041 405 0700 082 453 0079 leon.wait@capeconcentrate.co.za
UTI	Manager Danie Gerber	041 405 0400 060 521 8670 dgerber2@za.go2uti.com
CEREBOS	Managing Director John Drinkwater	041-403 6700 082 654 9507 johnd@cerebos.co.za
DIGISTICS	Manager Brett Williams	041- 405 0300 078 893 9690 brettw@digistics.co.za
BOSUN BRICK	General Manager Wayne Poulton Manager Ashwin Langeveldt	041-405 0100 waynep@bosun.co.za ashwinl@bosun.co.za
PE COLD STORAGE	General Manger Craig Vaughan	041-4050800 082 800 8878 craig@pecoldstorage.co.za
GMSA	Managers Beth Hurr Kobus Bernardo	beth.hurr@gm.com kobusb@redefine.co.za
DISCOVERY HEALTH	Operations Llewellyn Driver Tamlynn Anne Ferreira	041 409 7143 082 553 5558 llewellynd@discovery.co.za tamlynf@discovery.co.za
COEGA DIARY	Operations manager Johann Schlebusch	041 405 0000 072 114 3713 johann@coegadairy.com
NTIP	Managers Browyn Daniels Joachim Hagelmann	072 353 3361 tdmcoega@gmail.com j.hagelmann@gmail.com

COMPANY/ DEPARTMENT	CONTACT PERSON	CONTACT DETAILS
AGNI STEELS SA	Directors Hassan Khan Sharaz Khan Dhiroshan Moodley	041 450 1331 hassan@agnisteelssa.com info@agnisteelssa.com michelle@agnisteelssa.com
APM TERMINALS	Operations Manager Joseph Keller	041 816 3604 083 799 6699 joseph.keller@apmterminals.com
FAW	Project manager Dan Zhao Jordan	041 405 0651 072 169 5601 zhaodan@faw.co.za
FAMOUS BRANDS	General Manager Tommy Campbell	041 461 1366 083 259 0432 tommy.campbell@famousbrands.co.za
AIR PRODUCTS SA	Senior engineer Robert Dupisani	016 986 8531 082 774 6874 dupisanr@apsap.co.za
DCD WIND TOWERS	Mr Gerry Klos	041 405 0201 082 451 1672 gerryk@dcd.co.za
BIZWORKS	CEO Mfanu Mfayela	031 328 1185 084 722 2266 mfanu@bizworks.co.za
POWERWAY	CEO Benson Wu	+86 757 8766 2939 083 845 5656 bensonwu@pvpowerway.com
GDF SUEZ	Caroline Sepeng	caroline.sepeng@iprplc-gdfsuez.Meta.com
AFROX	Regional Manager Kronee Coetzee Project manager Satish Bhugwathypersad	071 334 6398 082 573-1492 satish.bhugwathypersad@afrox.linde.com
DEDISA	Manager Mert Aytug	071 405 4093 mert.aytug@peakers.com
SUNSHINE COAST QUARRIES	General manager Gavin Eales	041 366 1917 082 373 6960 gavin@glendoresand.co.za
PPC	Hugo Badenhorst Kobus Victor	Private Bag X2016, North End, Port Elizabeth, 6056 041 486 2272 Hugo.Badenhorst@ppc.co.za kobus.victor@ppc.co.za Genene.killian@ppc.co.za
GOVERNMENT DEPARTMENTS & NGOS		
National Departments		
Department of Environmental Affairs (DEA) **Acting Deputy Director-General Biodiversity and Conservation:** **Ms Skumsa Mancotywa** **Deputy Director-General Legal Authorisations and Compliance Inspectorate:** **Mr Ishaam Abader**	Conservation: Ms Skumsa Mancotywa Deputy Director-General Legal Authorisations and Compliance Inspectorate: Mr Ishaam Abader	smancotywa@environment.gov.za iabader@environment.gov.za Environment House, 473 Steve Biko, Arcadia, Pretoria, 0083 South Africa
South African Heritage Resource Agency (SAHRA)	The Chief Executive Officer Veliswa Baduza	P.O. Box 4637 Cape Town 8000 021 462 4502 vbaduza@sahra.org.za
South African National	SANRAL Corporate Office	PO Box 415, Pretoria, 0001

COMPANY/ DEPARTMENT	CONTACT PERSON	CONTACT DETAILS
Roads Agency (SANRAL)		012 426 6000 info@nra.co.za
Department of Agriculture, Forestry and Fisheries	Forestry and Natural Resources Management: Dr M.E. Tau (Acting) Policy, Planning and Monitoring and Evaluation: Mr R.D. Dredge	Private Bag x9087, Cape Town, 8000 Telephone no: (012) 309 5714 MmaphakaT@daff.gov.za Tel: (012) 319-6047 Email: RodneyD@daff.gov.za COSMIN@daff.gov.za
Department Of Water and Sanitation (DWS)	Head office Media Liaison Officer: Mr Sputnik Ratau	Private Bag X313, Pretoria,0001 076 219 5380 012 336 6592 RatauS@dwa.gov.za
DEA: Oceans and Coasts	Deputy Director-General Oceans and Coasts: Dr Monde Mayekiso	021 819 2444 021 819 8410 mmayekiso@environment.gov.za
ESKOM	Itumeleng Moeng Mfundo Maphanga	Megawatt Park – D1 Y39, PO Box 1091, Johannesburg, 2000 011 800 4114 MoengI@eskom.co.za SmithTV@eskom.co.za MaphanAM@eskom.co.za
Provincial and Local Departments		
Department of Development, Environmental Affairs and Tourism (DEDEAT)	Regional Manager Jeff Govender Assistant Director: IEM Andries Struwig	Private Bag X5001, Greenacres, Port Elizabeth , 6057 041 508 5815 dayalan.govender@deaet.ecape.gov.za Andries.Struwig@dedea.gov.za
Provincial department: Oceans and Coasts	Sibulele Nondoda Coastal Zone Management (Cacadu Region) or Nitasha Baijnath-Pillay	Private Bag X5001 Greenacres Port Elizabeth 6057 sibulele.nondoda@dedea.gov.za NBPillay@environment.gov.za
Eastern Cape Provincial Heritage Resource Agency (ECPHRA)	Mr Sello Mokhanya	74 Alexander Road King Williams Town 5600 smokhanya@ecphra.org.za
Department Of Water And Sanitation (DWS)	Mrs Marisa Bloem	P/Bag X6041; P.E., 6000 0415864884 BloemM@dws.gov.za
WESSA	Morgan Griffiths	morgan@wessaep.co.za
Department Of Agriculture, Forestry and Fisheries	Thabo Nokoyo	Dukumbana Building, 10th Floor, Independence Avenue, BISHO, 5605 NokoyoT@dws.gov.za
Department Of Roads And Public Works	Provincial and Local Roads Engineer Marius Keyser	PO Box 11100, Algoa Park, Port Elizabeth, 6005 marius.keyser@dpw.ecape.gov.za
Nelson Mandela Bay Municipality (NMBM)	Municipal Manager Joram Mkosana	PO Box 11, Port Elizabeth, 6000 jmkosana@mandelametro.gov.za
Ward Councillor (53 AND 60)	Ward 53 is vacant Ward 60: Ms N.E. Gana	8 Kustar Street, Wells Estate, PORT ELIZABETH, 6211 0848743858 0414612749
NMBM – Electricity and Energy Department	Mr Silby Mathew	P.O. Box 116 Port Elizabeth 6000
SKA Project Office	Dr Adrian Tiplady	atiplady@ska.co.za
SANPARKS	Dr Ane Oosthuizen (Marine Officer) Anban Padayachee	PO Box 76693, NMMU, 6031 Ane.Oosthuizen@nmmu.ac.za Anban.Padayachee@sanparks.org

COMPANY/ DEPARTMENT	CONTACT PERSON	CONTACT DETAILS
Zwartkops Trust	Mrs Jenny Rump	17 Nautilus Str, Bluewater Bay, 6212 041 466 1815 082 853 0700 zwartkops.trust@iafrica.com
Environmental Liaison Committee (ELC)		
DEDEAT	Mr Jeff Govender Regional Manager	Pvt Bag X5001, Greenacres, 6057 041-5085811 071-6749710 dayalan.govender@dedea.gov.za
DEDEAT	Mr Andries Struwig Asst. Director: IEM	Pvt Bag X5001, Greenacres, 6057 041-5085840 079-5031762 andries.struwig@dedea.gov.za
DEDEAT	Mr Lyndon Mardon	043-6057128 lyndonmardon@dedea.gov.za
DEA: Ocean & Coast	Mrs Nitasha Baijnath-Pillay Coastal Pollution Management Division	PO Box 52126, Cape Town, 8002 021-8192409 082-2110544 nbpillay@environment.gov.za
DEA: Ocean & Coast	Mr Reuben Molale Coastal Pollution Management Division	PO Box 52126, Cape Town, 8002 021-8192493 rmolale@environment.gov.za
DEA	Mr Wayne Hector Deputy Director: Strategic Infrastructure Development	Pvt Bag X447, Pretoria, 0001 086-1112468 whector@environment.gov.za
DEA	Mrs Masina Litsoane Environmental Impact Management	Pvt Bag X447, Pretoria, 0001 012-3951778 mlitsoane@environment.gov.za
CDC	Mrs Andrea Shirley Environmental Project Manager	Pvt Bag X6009, Port Elizabeth, 6000 041-4030400 082-6574648 andrea.vonHoldt@coega.co.za
CDC	Mrs Zanele Hartmann Environmental Project Manager	Pvt Bag X6009, Port Elizabeth, 6000 041-4030400 zanele.hartmann@coega.co.za
CDC	Mr Graham Taylor Spatial Development Manager	Pvt Bag X6009, Port Elizabeth, 6000 041-4030400 083-2283055 graham.taylor@coega.co.za
TCP	Ms Renee de Klerk Environmental Manager	PO Box 612054, Bluewater Bay, 6212 041-5078238 082-0737934 renee.deklerk@transnet.net
TNPA	Mrs Nomkhitha Kwinana Environmental Manager	PO Box 612054, Bluewater Bay, 6212 041-5078450 083-7002738 nomkhitha.kwinana@transnet.net
NMBM	Mr Joram Mkosana Environmental Manager	PO Box 11, Port Elizabeth, 6000 041 506 5464 082-7821014 jmkosana@mandelametro.gov.za; phowes@mandelametro.gov.za
NMBM: Air Pollution & Noise Control	Mrs Joannie Black Air Pollution & Noise Control	PO Box 11, Port Elizabeth, 6000 041-506 5207 jblack@mandelametro.gov.za; kslabbert@mandelametro.gov.za; pnodwele@mandelametro.gov.za
DWS	Mr David Bligh Water Quality Management	Pvt Bag X6041, Port Elizabeth, 6000 041-5010737 082-6592052 BlighD@dwa.gov.za
DMR	Mr Vusi Kubheka ASD: Mineral Regulation	041-3963959 vusi.kubheka@dmr.gov.za

COMPANY/ DEPARTMENT	CONTACT PERSON	CONTACT DETAILS
OTHER STAKEHOLDERS		
Environmental Control Officer Coega IDZ / Port of Ngqura	Dr Paul Martin	PO Box 61029, Bluewater Bay 6212 041 4665698 Cell: 0732524111 pmartin@axxess.co.za
Wilderness Foundation	Angus Tanner (Senior Conservation Manager)	PO Box 12509, Centrahil, Port Elizabeth 6006 041 373 0293 info@sa.wild.org
SAMREC		PO Box 20101, Humewood , 6013 041 583 1830 info@samrec.org.za
NMB Business Chamber	Sandiswa Hewana (Communications Coordinator)	PO Box 63866, Greenacres, 6057 041 373 1122 communication@nmbbusinesschamber.co.za
Black Management Forum Eastern Cape	Khulukazi Mtebele	PO Box 781220, Sandton, 2146 043 722 3107 bmfec@bmfonline.co.za
CESA	Jane Murcott (Port Elizabeth liaison)	PO Box 68482, Bryanston, Johannesburg, 2021 041 368 6367 eastcaoe@safcec.org.za
OTHER CONSULTANTS UNDERTAKING EIAs IN THE COEGA IDZ		
CDC EIA`s		
SSI (Bohlweki); CEN; EOH Coastal & environmental Services **(H:H waste facility)**	Mr Tebogo Sekoko (SSI) Ms Belinda Clark (CEN) Mr Eric Igbinigie (EOH)	tebogos@bohlweki.co.za bclark@telkomsa.net e.igbinigie@cesnet.co.za
CSIR (scoping); CEN (EIA) **(Marine pipeline servitude)**	Mr Paul Lochner (CSIR) Ms Belinda Clark (CEN)	plochner@csir.co.za bclark@telkomsa.net
Ethical XCHANGE Sustainability Services **(Aquaculture Development Zone)**	Ms Mari Wolmarans	info@ethicx.co.za
Port of Ngqura EIAs		
CSIR **(Demolition of unused structures at Coega Saltworks Facility & associated structures in the PoN)**	Mr Paul Lochner (CSIR)	plochner@csir.co.za
Investor EIAs		
Aurecon **(Waste Water Treatment Works)**	Mr Michael Vorster (Aurecon)	portelizabeth@aurecongroup.com
WSP **(Biodiesel and Animal Feed processing)**	Mr Mike Huisenga	Mike.huisenga@wspgroup.com
CEN **(Cement grinding and manufacturing)**	Ms Belinda Clark (CEN)	bclark@telkomsa.net
EOH Coastal & environmental Services **(Mining of Hougham Park dune, Zone 10)**	Ms Kim Brent (EOH)	k.brent@cesnet.co.za
Algoa Consulting Mining Engineers (ACME) **(Mine permit application to mine sand, building**	Mr Rudi Gerber	rudi@algoacme.co.za

COMPANY/ DEPARTMENT	CONTACT PERSON	CONTACT DETAILS
sand, aggregate & gravel)		
Algoa Consulting Mining Engineers (ACME) **(Mine permit application to mine sand, building sand, aggregate & gravel)**	Mr Rudi Gerber	rudi@algoacme.co.za
CEN **(Tantalum Production Plant)**	Belinda Clark	bclark@telkomsa.net
EIAs in the Pipeline		
RHDHV **(Medical Waste Incinerator)**	Mr Greg Pryce-Lewis	greg.pryce-lewis@rhdhv.com

The table included below presents a list of all parties registered to date.

COMPANY/ DEPARTMENT	CONTACT PERSON	CONTACT DETAILS
Shell South Africa (Upstream International Integrated Gas)	Nigel Rossouw	Telephone: +27 21 408 4091 Mobile: + 27 83 642 3040 Email: nigel.rossouw@shell.com
CEN IEM unit	Ms Belinda Clark Dr Mike Cohen	Telephone:041 367 4748 Mobile: 072 725 6400 Email: bclark@telkomsa.net Telephone:041 581 2983 Mobile: 082 320 3111 Email: steenbok@aerosat.co.za
South Africa Gas Development Corporation (SOC) Ltd	Neville Ephraim	Telephone:021 524 2713 Mobile: 079 890 8272 Email: NevilleE@cefgroup.co.za
Transnet	Gerrit du Plessis - Port Engineer Mandilakhe Mdodana – Environmental Officer Mpatisi Pantsi – Acting SHERQ Manager	Telephone: 041 507 8450 Email: Gerrit.duplessis2@transnet.net Mandilakhe.Mdodana@transnet.net Mpatisi.Pantsi@transnet.net
Energy Solutions Wärtsilä South Africa (Pty) Ltd.	Wayne Glossop - Business Development Manager	Telephone: 011 317 3640 Mobile: +27 (0) 82 040 4778 E-mail: wayne.glossop@wartsila.com www.wartsila.com Address: Block A, Wedgefield Office Park, 17 Muswell Rd, Bryanston

APPENDIX 2: CURRICULUM VITAE - EAP

ANTHONY MARK AVIS (DR)

PERSONAL INFORMATION

Name of Staff: Dr Anthony Mark (Ted) Avis
Date of Birth: 26 September 1960
Profession: Environmental Consultant and Managing Director of Coastal & Environmental Services
Name of Firm: Coastal & Environmental Services
Years with Firm/Entity: 24 years Nationality: South African
Married since 1986: Wife Cheryl. Two Children. Jonathan - Born 1996; Luke - born 2002

QUALIFICATIONS

1983: BSc
1984: BSc (Honours)
1992: PhD (Rhodes)

DISSERTATION

Coastal Dune Ecology and Management in the Eastern Cape

ASSOCIATIONS

- Royal Society of South Africa
- Visiting Fellow; Department of Environmental Science; Rhodes University
- Certified Environmental Assessment Practitioner (since 2002)
- South African Association of Botanists (SAAB)
- South African Council for Natural Scientific Professionals
- South African Institute of Ecologists and Environmental Scientists
- International Association of Impact Assessment

COMMUNITY INVOLVEMENT

- MEC Representative on the Board of the Albany Museum of Natural History (2001 – 2009).
- Member of Grahamstown Round Table service club (1994 -2001)
- Chairman, Grahamstown Trust (1989 – 1997)
- Member of the St Andrews Preparatory School Board of Governors (2009 - present)
- Chairman, St Andrews Preparatory School Board of Governors (2013)

NOTED ACHIEVEMENTS

- Publication of three manuscripts in refereed journals from research undertaken whilst an undergraduate student.
- Involvement as a principal consultant and coordinator of all specialist studies undertaken as part of the St Lucia EIA, being the youngest member of a team of 30 scientists involved in this project.
- Awarded the South African Association of Botanists Junior Medal. This is awarded to the candidate with the best PhD thesis in Botany for the particular year under review (1993).
- Instrumental in establishing the Environmental Science Programme at Rhodes University (in 1996), which later became the Environmental Science Department (2000)

PROFESSIONAL EXPERIENCE

- 1998 – present: Full-time Managing Director of Coastal & Environmental Services.
- 1989 – 1997:Lecturer and Senior Lecturer in Botany at Rhodes University.
- Private environmental consultant and partner of Coastal & Environmental Services (CES, established January 1990).

1987 – 1988: Ecological Consultant with Loxton Venn and Associates, responsible for vegetation, soils and land surveys; veld conditions assessments and EIAs.

1983 – 1987: Full time research in ecology, including coastal management studies and Environmental Impact Assessments (EIAs).

CONSULTING EXPERIENCE

I have consulted in Botswana, Egypt, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mozambique, Mauritius, Namibia, Sierra Leone, South Africa and Zambia. Environmental consulting experience, in no particular order, includes:

SELECTED LARGE ENVIRONMENTAL IMPACT ASSESSMENTS

1. Principal consultant for the specialist studies for the Environmental Impact Assessments of proposed dune mining on the Eastern Shores of Lake St Lucia.
2. Overall responsibility as EIA project manager for all environmental aspects of Billiton's TiGen mineral sand mining operations in Mozambique, to produce an EIA that meets international standards.
3. EIA project manager for the Corridor Sands mineral sand mining project in southern Mozambique, to produce four EIAs to World Bank standards for the project's bankable feasibility study. EIAs produced for the mine site and smelter, the 400Kv power line, the 87km rail route and a bulk cargo facility at Matola Port. All these EIAs included the preparation of Environmental Management Plans.
4. EIA project manager for Tiomin Resources Inc (Toronto, Canada) for their Kwale mineral sands project in southern Kenya. Responsible for producing all six volumes of the EIA, regarded as the most comprehensive in Kenya to date.
5. EIA project manager for the EIA to support the rezoning of land to special purposes for the establishment of the Coega Industrial Development Zone (IDZ).
6. EIA project manager for the EIA to support the rezoning of land to special purposes for the establishment of the East London IDZ.
7. Numerous small-scale Scoping Reports as part of the Environmental Impact Assessment Process and in accordance with the requirements of the Environmental Conservation Act.
8. Pre-feasibility Environmental Impact Assessments, including one for BHP's mineral sand mining project in northern Mozambique, and similar projects in south-west Madagascar and Mozambique.
9. Study leader for a comprehensive EIA for the World Bank funded 400Kv Mozambique Malawi Interconnector project power line, Malawi sector.
10. EIA for a dedicated haul road, material handling facility and jetty near Praia de Xai Xai, Mozambique for WMC Resources, Australia.
11. EIA Project Manager for the Nuclear Materials Authority of Egypt, to prepare the EIA as part of the Downer EDI Feasibility Study Team. (2007).
12. EIA for a large scale resort development, including two golf courses and three hotels in the Eastern Cape, South Africa. (Ongoing).
13. EIA for the Madiba Bay resort development, incorporating the development of various portions of land within a 5000 hectare site for a range of resort type facilities. (2005 – 2008).
14. Study Leader for an EIA for a large heavy mineral mining project in South West Madagascar for Exxaro (2006 – 2008).

15. Study Leader for an EIA for a proposed heavy mineral mine on the shores of Lake Malawi near Chipoka. (2005 – 2006).
16. Study Leader for an ESIA for a proposed large scale integrated tourism resort development in the Eastern Cape (2007 – 2008).
17. Environmental and Social consultants to the International Finance Corporation for the Kafue Gorge Lower Hydropower project, Zambia.
18. Study Leader for an Environmental, Social and Health Impact Assessment for a proposed large sugar cane to ethanol biofuel project in Sierra Leone for Addax Bioenergy, Geneva (2009 - 2010).
19. Study Leader for an ESHIA for a proposed large scale Jatropha biofuels project in Mozambique (2009 - 2010).
20. Study leader for Environmental Impact Assessment for a proposed large scale copper and nickel mine in the North West Province of Zambia (2010).
21. Lead consultant for an addendum Environmental Impact Assessment for the proposed expansion of a heavy mineral mining project in Nampula Province, Mozambique (2010).
22. Quality control reviewer for approximately 8 EIA's for various Windfarm Projects in South Africa (2009 – 2010).
23. Study leader for an ESHIA for a proposed large scale palm oil plantation in Sierra Leone (2010).
24. Study leader for ESIA for a rare earths mine in Kangankula, Malawi for the Lynas Corporation.
25. Study leader for ESIA for a large scale copper mine in the North West Province of Zambia for First Quantum Minerals (2011).
26. Study leader for an ESIA for a proposed Cement Plant and for a proposed Limestone quarry in southern Mozambique (2012).
27. Study Leader for an Environmental Impact Assessment of the Mooi-Mgeni Transfer Scheme – Phase 2, KwaZulu-Natal Province, South Africa for TCTA (2012).
28. Study leader for an ESHIA for a proposed large scale palm oil plantation and estate in Liberia, compliant with international sector specific guidelines. For EP Oil (2012).
29. Study leader for an ESHIA for a proposed large scale forestry plantation in Niassa Province, Mozambique for Niassa Green Resources and to be compliant with international sector specific guidelines (2010).
30. Study leader for an EIA for a proposed golf course in Makana District, South Africa (2012)
31. Study leader for an EIA for a proposed housing and residential estate in Makana District, South Africa (2012).
32. Study Leader for an ESHIA for a heavy mineral mining project in South West Madagascar for World Titanium Resources (2013).
33. Study Leader for an ESHIA for a heavy mineral mining project on the West Coast of South Africa for Zirco Resources (2013).

POLICY AND STRATEGIC ASSESSMENTS

1. The development of the Eastern Cape Coastal Management Plan, to be adopted as policy by the Eastern Cape Government
2. Study leader for the preparation of a State of Environment Report, and Environmental Implementation Plan for the Amatole District Municipality, covering an area of approximately 25 000 km^2.
3. Reports on ecological assessments of the damage caused to the environment by alleged illegal developments along the former Transkei coastline.
4. Study leader and project manager for the preparation of a World Bank/Global Environmental Facility funded geographic Strategic Environmental Assessment of the proposed greater Addo Elephant National Park, Eastern Cape, South Africa.
5. A Strategic Environmental Assessment of four land use options in the Centane district of the Wild Coast.
6. SEA covering an area half the size of the Eastern Cape (former Transkei) to identify where afforestation projects could be implemented on a sustainable basis for poverty alleviation. Prepared for the Department of Water Affairs and Forestry (2006 – 2007).

7. Integrated Coastal Zone Management Plan for the Buffalo City Municipality, Eastern Cape South Africa, including numerous Management Plans for estuaries, beaches etc. (2006 – 2007).
8. A Sustainability Analysis of various land use alternatives to determine optimum land use for the future rehabilitation of lease areas at Richards Bay Minerals. (2006).
9. State of Environmental Report and Environmental Management System for the Ukhulambe District Municipality. (2005).
10. Strategic Environmental Overview for two integrated tourism anchor projects in Mozambique for the International Finance Corporation (2010).

ECOLOGICAL

1. Ecological impact assessment for a proposed Zinc and Phosphoric Acid plant in the Eastern Cape.
2. Ecological specialist reports for the Coega Industrial Development Zone Strategic Environmental Assessment
3. Ecological impact assessment of proposed 800km Wild Coast N2 Toll Road, Eastern Cape.
4. Study leader for the ecological impact assessment of the Wild Coast Toll Road EIA, Eastern Cape and Kwazulu/Natal, South Africa (2004).
5. Study Leader for Baseline Ecological Surveys of coastal lease areas in southern Mozambique for Rio Tinto exploration (2008).
6. Pre-feasibility Ecological Survey of the Skeleton Coast to identify critical impacts linked to Diamond and Mineral Mining exploration (2008).
7. Coordinator for ecological investigations to establish a sound baseline prior to implementing an EIA, North West Province, Zambia (2011).
8. Assessment of the extent and conservation value of forested areas along the Wild Coast within the former Transkei, on behalf of the Eastern Cape Parks Board (2011)

ENVIRONMENTAL MANAGEMENT

1. Project manager for a five-year rehabilitation programme of Samancor's Chemfos mine on the West Coast.
2. Development of an Open Space Management Plan for the Coega Industrial Development Zone (IDZ), including the demarcation of open spaces, formulation of uses within the open space, integration with MOSS principles and developing guidelines and a business plan for the management of the open space system.
3. Preparation of numerous Environmental Management Programme Reports, in terms of the Minerals Act, for quarry operations in the Eastern Cape, including EMPRs for both the Eastern and Western Coega Kops.
4. Study Leader for the development of two detailed and definitive Environmental Management Plans for the construction of two large bridges across rivers in the Wild Coast, as part of the Wild Coast N2 Toll Road Project, for South African National Roads Agency Limited. (2006).
5. Joint Study Leader for the development of numerous Construction and Operational Phase Environmental and Social Management Plans for Tiomin's proposed Kwale mineral mine in Kenya.

OTHER

1. A position paper on the current ecological knowledge of the Eastern Cape Provincial Coastline: implications for planning and research.
2. Environmental training and teaching for a number of professional short courses, and at undergraduate and postgraduate level at Rhodes University.
3. Presented 29 conference papers and published 19 scientific articles in peer reviewed scientific journals.
4. Presented various courses on aspects of Environmental Impact Assessment, most notably as a key presenter on the EIA Short Course offered by CES since 2000.

5. Short course on Strategic Environmental Assessment offered to Rhodes Investec Business School MBA students.

ANTHONY MARK AVIS

APPENDIX 3: EAP DECLARATION

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF EAP AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014

PROJECT TITLE

INDEPENDENT POWER PRODUCERS PROGRAMME: EIA FOR A FLOATING POWER PLANT, PORT OF NGQURA

Environmental Assessment Practitioner (EAP):[1]	EOH Coastal & Environmental Services (EOH CES)		
Contact person:	Anthony Mark (Ted) Avis		
Postal address:	The Point, Suite 408, 4th Floor, 76 Regent Road, Sea Point, Cape Town.		
Postal code:	8005	Cell:	/
Telephone:	021 045 0900	Fax:	0466226564
E-mail:	T.Avis@cesnet.co.za		
Professional affiliation(s) (if any)	Certified Environmental Assessment Practitioner (since 2002) South African Association of Botanists (SAAB) South African Council for Natural Scientific Professionals South African Institute of Ecologists and Environmental Scientists International Association of Impact Assessment		

Project Consultant:	EOH Coastal & Environmental Services (EOH CES)		
Contact person:	Kim Brent		
Postal address:	13 Stanley Street, Richmond Hill, Port Elizabeth.		
Postal code:	6001	Cell:	/
Telephone:	0415851715	Fax:	0466226564
E-mail:	K.Brent@cesnet.co.za		

4.2 The Environmental Assessment Practitioner

I, Anthony Mark (Ted) Avis, declare that –

General declaration:

I act as the independent environmental practitioner in this application
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, regulations and all other applicable legislation;
I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
I will keep a register of all interested and affected parties that participated in a public participation process; and
I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not all the particulars furnished by me in this form are true and correct;
I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;

I have a vested interest in the proposed activity proceeding, such vested interest being:

N/A

Signature of the environmental assessment practitioner:

Name of company:

EOH Coastal & Environmental Services (EOH CES)

Date:
16/11/2015