

450MW EMERGENCY RISK MITIGATION POWER PLANT (RMPP) AND ASSOCIATED INFRASTRUCTURE NEAR RICHARDS BAY

KwaZulu-Natal Province

Final Scoping Report

November 2020

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PROJECT DETAILS

Title	:	Environmental Impact Assessment Process: <u>Final</u> Scoping Report for the 450MW Emergency Risk Mitigation Power Plant (RMPP) and Associated Infrastructure near Richards Bay.
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Client	:	Phinda Power Producers (Pty) Ltd
Report Revision	:	<u>Final for authority review and acceptance</u>
Date	:	<u>November</u> 2020

When used as a reference this report should be cited as: Savannah Environmental (2020) Final Scoping Report for the 450MW Emergency Risk Mitigation Power Plant (RMPP) and Associated Infrastructure near Richards Bay, KwaZulu-Natal Province.

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PURPOSE OF THE SCOPING REPORT AND INVITATION TO COMMENT

Phinda Power Producers (Pty) Ltd proposes to develop an Emergency Risk Mitigation Power Plant (RMPP) and associated infrastructures, with a generating capacity of up to 450MW. The proposed project is to be known as the 450MW Emergency Risk Mitigation Power Plant (RMPP). The Project site is to be located in Alton, near the Richards Bay Industrial Development Zone (IDZ), approximately 8km south west of Richards Bay which falls within the jurisdiction of the City of uMhlatuze Local Municipality and the King Cetshwayo District Municipality, KwaZulu-Natal Province. The facility will have an installed generating capacity of 450MW, to operate with liquified petroleum gas (LPG) or naphtha as an initial source and will convert to utilising natural gas once this is available in Richards Bay.

Phinda Power Producer (Pty) Ltd appointed Savannah Environmental as the independent environmental consultant to undertake the Environmental Impact Assessment (EIA) for the proposed project. The EIA process is being undertaken in accordance with the requirements of the 2014 EIA Regulations, as amended, promulgated in terms of the National Environmental Management Act (NEMA; Act No. 107 of 1998).

This Scoping Report represents the findings of the Scoping Phase of the EIA process and contains the following chapters:

- » **Chapter 1** provides background to the proposed project and the environmental impact assessment process.
- » **Chapter 2** outlines the strategic legal context for energy planning in South Africa and the proposed project.
- » **Chapter 3** provides a description of the gas to power technology.
- » **Chapter 4** provides a description of the proposed project, including feasible alternatives identified and considered.
- » **Chapter 5** outlines the need and desirability of the proposed project.
- » **Chapter 6** describes the existing biophysical and socio-economic environment affected by the proposed project.
- » **Chapter 7** outlines the process which was followed during the Scoping Phase of the EIA Process.
- » **Chapter 8** provides a description and evaluation of the potential issues and impacts associated with the proposed project.
- » **Chapter 9** provides the conclusions of the Scoping report.
- » **Chapter 10** presents the Plan of Study for the EIA Phase.
- » **Chapter 11** provides a list of all references used in the compilation of the Scoping Report.

The Draft Scoping Report was made available for review from **02 October 2020 – 02 November 2020** at www.savannahSA.com. All comments received and recorded during the 30-day review period have been included, considered and addressed within this final Scoping report (**Appendix C8**) for the consideration of the National Department of Environment, Forestry and Fisheries (DEFF). Changes made in this Final Scoping Report have been underlined for ease of reference.

EXECUTIVE SUMMARY

Phinda Power Producers (Pty) Ltd proposes to develop an Emergency Risk Mitigation Power Plant (RMPP) and associated infrastructures, with a generating capacity of up to 450MW. The proposed project is to be known as the 450MW Emergency Risk Mitigation Power Plant (RMPP). The Project site is to be located in Alton, near the Richards Bay Industrial Development Zone (IDZ), approximately 8km south west of Richards Bay which falls within the jurisdiction of the City of uMhlatuze Local Municipality and the King Cetshwayo District Municipality, KwaZulu-Natal Province. The facility will have an installed generating capacity of 450MW, to operate with liquified petroleum gas (LPG) or naphtha as an initial source and will convert to utilising natural gas or naphtha once this is available in Richards Bay.

The power plant and associated infrastructure have been initiated by Phinda Power Producers (Pty) Ltd (Phinda) in response to the procurement process initiated by the Independent Power Producer Office ("IPP Office") in July 2020 for the procurement of up to 2000MW of dispatchable generation capacity from a range of technologies. This allocation is in accordance with the new generation capacity required as specified in the Integrated Resource Plan 2019 and accompanying ministerial determination from the Minister for the Department of Mineral Resources and Energy (DMRE) to which the National Energy Regulator of South Africa (NERSA) has concurred. The 450MW RMPP is proposed to be located on Remainder of Erf 1854 and Portion 2 of Erf 1854, an area of 49,42ha with a footprint of 8,29ha for the 450MW facility and 3,2 ha for the LPG storage. The proposed LPG storage infrastructure is proposed to be located on Remainder of Erf 1795 and Portion 1 of Erf 1795, located directly across the road from the proposed power plant site. All of the affected properties of the 450MW RMPP and LPG site are privately owned by the project proponent. The main infrastructure associated with the facility includes the following:

- » Main Power Island consisting of either gas turbines comprising of air intake, air filter structures and exhaust stack for the generation of electricity through the use of natural gas, naphtha or LPG; or Gas engines comprising of reciprocating internal combustion engines and exhaust stack utilising LPG or natural gas.
- » Generator and Auxiliary transformers.
- » Balance of Plant systems.
- » Dry Cooling systems.
- » Auxiliaries.
- » 132kV interconnecting substation and power lines connecting to the grid transmission infrastructure (The power lines to the grid transmission structure will be applied for under a separate environmental approvals process).
- » LPG fuel pipe routing between the LPG storage site and the power plant site **or** Naphtha import pipeline from the port of Richards Bay to the onsite storage of Naphtha (the Naphtha pipeline will be applied for under a separate environmental approval process).
- » Stormwater management ponds.
- » LPG storage comprising of up to 15 000m³ of storage in total, comprising of a number of either bullets or spheres storage tanks in design **or**;
- » Naphtha storage on the power plant site of up to 90,000m³ in total, comprising of a number of tanks,
- » Once imported LNG is available in Richards Bay, the 450MP RMPP will be converted from utilising LPG / Naphtha to the use of regassified LNG by means of a new dedicated natural gas pipeline which will

- replace or supplement the LPG / Naphtha supply to the power plant (The approval for the pipeline will be conducted under a separate process);
- » 3 effluent reticulation systems - i.e. 1) sanitary wastewater system; 2) oily water collection system and 3) storm water and rainwater collection system.
 - » Diesel generator to provide start-up power to the first gas engine / turbine.

The 450MW RMPP will be capable of operating in multiple regimes: peaking, mid-merit¹ and baseload.

Potential impacts associated with the development of the 450MW RMPP are expected to occur during both the construction and operation phases. The conclusion of the findings of the Scoping Study is that the potential impacts identified to be associated with the construction and operation of the 450MW RMPP are anticipated to be at a site or localised level, with few impacts extending from a local to national extent which includes both positive and negative impacts. The following provides a summary of the findings of the specialist studies undertaken:

- » **Ecology:** The construction of the 450MW RMPP and associated infrastructure will impact on ecological features located within the project site. The main potential impacts expected during the construction phase include the loss of vegetation, loss of faunal species, possible loss of species of special concern (although none at this stage have been identified on site) potential habitat fragmentation and potential infestation of alien species. Potential impacts associated with the operation of the 450MW RMPP include habitat fragmentation and infestation of alien species. As a result of the largely disturbed nature of the site and the avoidance of sensitive features such as the identified wetlands, it is expected that the development would not result in any irreplaceable loss of ecological features and the consequences of the impacts are expected to be limited. Impacts can be minimised through the implementation of appropriate mitigation measures. The power plant site zoned for industrial activities and is ear-marked for development in the City of uMhlathuze's Environmental Services Management Plan and SDF. A detailed assessment of impacts on ecology is recommended to be undertaken as part of the EIA Phase of the process.
- » **Wetland and Aquatic Features:** Wetland features are located outside the footprint of the 450MW RMPP project site. However, the development of the 450MW RMPP could potentially result in indirect impacts such as altered hydrology, impaired water quality and impeded ecological services. Wetlands identified are channelled valley bottom wetlands. Sections of the wetland located on the boundary of the site have undergone changes due to encroachment of the Eucalyptus Plantations developed on the site historically, infestation of alien and invasive species and subsistence farming within the active channels and along the banks, and industrial activities. The project footprint is located outside of the recommended 29m buffer of this wetland and thus the loss of this system has been avoided. However, any changes to the status and functioning of this system resulting from indirect impacts are considered to be negative impacts as a result of the project. The significance is expected to be medium. Impacts can be minimised through the implementation of appropriate mitigation measures. The wetlands identified and their associated 29m buffer are considered to be no-go areas for development. A detailed assessment of impacts on aquatic ecology is recommended to be undertaken as part of the EIA Phase of the process.

¹ Mid-merit electricity generation capacity refers to the generation of electricity which is adjusted according to the fluctuations in demand in the national grid. Baseload electricity generating capacity refers to the generation of electricity continuously for all hours of the day and night in order to satisfy the minimum demand required in the national grid.

- » **Geo-hydrological features and surface waterbodies:** During the construction phase groundwater and surface water waterbodies can be affected as a result of on-site accidental spills and leaks due to the presence of construction vehicles and/or fuel storage areas, and migration of the spilled liquids to the surrounding surface water bodies. During the operation phase groundwater and surface water waterbodies), could be impacted due to possible leakage of diesel and/or chemicals from fuel storage facilities and/or pipelines and from emergency backup generators leaks (sources). The significance of the construction and operation impacts is expected to be low, subject to the implementation of appropriate mitigation measures. No no-go areas for development were identified. As no detailed Geohydrological and Surface Water Assessments have been carried out at the site of the proposed LPG Storage Tanks on Lot 1795, Richards Bay, additional investigations to fulfil the EIA submission requirements will be required. Monitoring programmes for inclusion into the EMPr for the will be undertaken as part of EIA phase of the project.
- » **Geotechnical:** The project site for the 450MW RMPP is generally gently sloping, however earthworks will be required to achieve level building platforms. Control of roof stormwater discharge and stormwater runoff are also essential as surface soils are sandy and highly erodible.
- » **Soils and Agricultural Potential:** The development of the 450MW RMPP and associated infrastructure will not impact on the soils and agricultural potential of the project site. Of the 6 soil profiles that were examined, all consisted of non-arable land (LCCVI and LCCVIII) / DEA Agricultural Sensitivity Theme 1 to 3, probably 1 to 2). The proposed development will have no effect on the physical or chemical properties of the soils. Although the proposed development will permanently transform the site, the significance is minimal as it is currently vacant and unused land with a severely limited crop potential. No no-go areas for development were identified. As a result of the low impact expected, no further assessment if required.
- » **Palaeontological and Archaeological Resources:** The construction phase of the 450MW RMPP may impact on potential subsurface human graves as human settlements occur in the general area and have been noted on historical maps although no settlements were identified within the project footprint. The impacts identified on palaeontological and archaeological resources were due to the construction activities which include excavation. The impacts of the construction activities on the archaeological resources include potential damage to and destruction of archaeological sites is expected to be of a low significance. No no-go areas for development were identified. No impacts on archaeological and palaeontological resources is expected in this project study area. The findings of the detailed site survey and recommendations during the operational phase will be discussed within the EIA Phase of the project.
- » **Air Quality and climate change:** The construction of the 450MW RMPP has the potential to impact on the ambient air quality of the area through elevated daily PM10 concentrations due to background PM10 and the proximity of the project site to other particulate emission sources. During the operation phase, the 450MW RMPP is likely to contribute NOX, CO, SOX and VOCs to the existing baseline concentrations (including greenhouse gasses). The impact is expected to be of a medium-low significance. A detailed Air Quality Impact Assessment is recommended to assess the potential impacts on air quality as a result of the project. Climate change impacts associated with the development of the 450MW RMPP relate to the combustion of fuel (naphtha or LPG initially and natural gas once available) at the 450MW RMPP plant which will produce greenhouse gas emissions that will

contribute to the global phenomenon of anthropogenic climate change. Climate change is projected to effect many environmental changes across the globe. It is expected that the 450MW RMPP will contribute to South Africa's national emissions inventory. The significance of this impact must be quantified in the impact assessment phase of the project.

- » **Noise:** The construction and operation of the 450MW RMPP will increase the noise levels in the vicinity of the plant. The site visit identified potential noise-sensitive receptors within 2000m to the project site. It is therefore determined that the significant impacts on noise sensitive receptors could be of medium-low significance. No no-go areas for development were identified. It is recommended that the noise impact be investigated in more detail during the EIA phase, including further ambient sound measurements.
- » **Visual:** Impacts from a visual perspective are expected to occur during the construction and operation phases of the 450MW RMPP on observers in close proximity to the proposed infrastructure and activities. The project site is located adjacent to existing heavy industrial development and the Richards Bay IDZ. It is therefore possible that the development could intensify existing industrial impacts. It is however highly unlikely to significantly add to the current area of industrial influence within the surrounding landscape. It is also likely to be possible to partly mitigate any additional influence by ensuring that the development occurs in as close a proximity to existing heavy industry as possible. Analysis has also indicated that affected surrounding landscapes are not likely to be highly sensitive to possible change associated with the proposed development. The significance of the development of the 450MW RMPP on the visual aspects is expected to be moderate. No no-go areas for development were identified. Potential visual impacts must be assessed in detail within the EIA Phase of the process.
- » **Socio-economic aspects:** The construction of the 450MW RMPP will result in both positive and negative impacts on the social environment. During the construction phase the positive impacts will include an increase in the production and GDP-R of the national and local economies, temporary employment opportunities, skills development and household income leading to improved standard of living. These impacts are expected to be of medium significance. Negative impacts expected during the construction phase include a change in the demographics of the area due to an influx of jobseekers, increased pressure on basic services and social and economic infrastructure, an increased demand in housing within the broader area, and impacts on daily living and movement patterns as a result of increases in traffic. These impacts are expected to be of low significance. Positive and negative impacts are expected to occur with the operation of the 450MW RMPP. Positive impacts include a sustainable increase in the production and GDP-R of the national and local economies, long-term employment opportunities, skills development, household income that will improve the standard of living within the area, increased government revenue streams and improved electricity security. These impacts are expected to be of medium-high significance. The negative impact expected during operation is the potential impacts on air quality from the operating RMPP, traffic and visual impacts. The expected significance of the negative impact is medium. From the above identified potential impacts it is concluded that the positive impacts outweigh the negative impacts from a social perspective. The significance of socio-economic impacts must be quantified through a detailed assessment in the EIA Phase of the process.
- » **Cumulative Impacts:** The project site is located within an existing industrial area and adjacent to the Richards Bay IDZ, an area where further heavy industry is planned. Due to the development plans for

the site and its location within the Alton Industrial area and its unsuitable soil conditions it is considered unlikely that it would be used for agricultural purposes. Other similar facilities within the area include the Mondi Richards Bay Facility located directly west of the project site. Other authorised gas to power projects have been permitted within the Richards Bay area, although none have yet commenced construction. As a result, there is the potential for cumulative impacts to occur. The significance of these impacts must be assessed within the impact assessment phase of the EIA process.

No environmental fatal flaws or impacts of very high significance were identified to be associated with the development of the 450MW RMPP and associated infrastructure on the identified project site at this stage in the process. This conclusion must however be confirmed through a detailed investigation of the development footprint within the EIA Phase of the process. **Figure 1** provides an environmental sensitivity map of the scoping phase. This conclusion must, however, still be confirmed through a detailed investigation of the development footprint within the EIA Phase of the process.

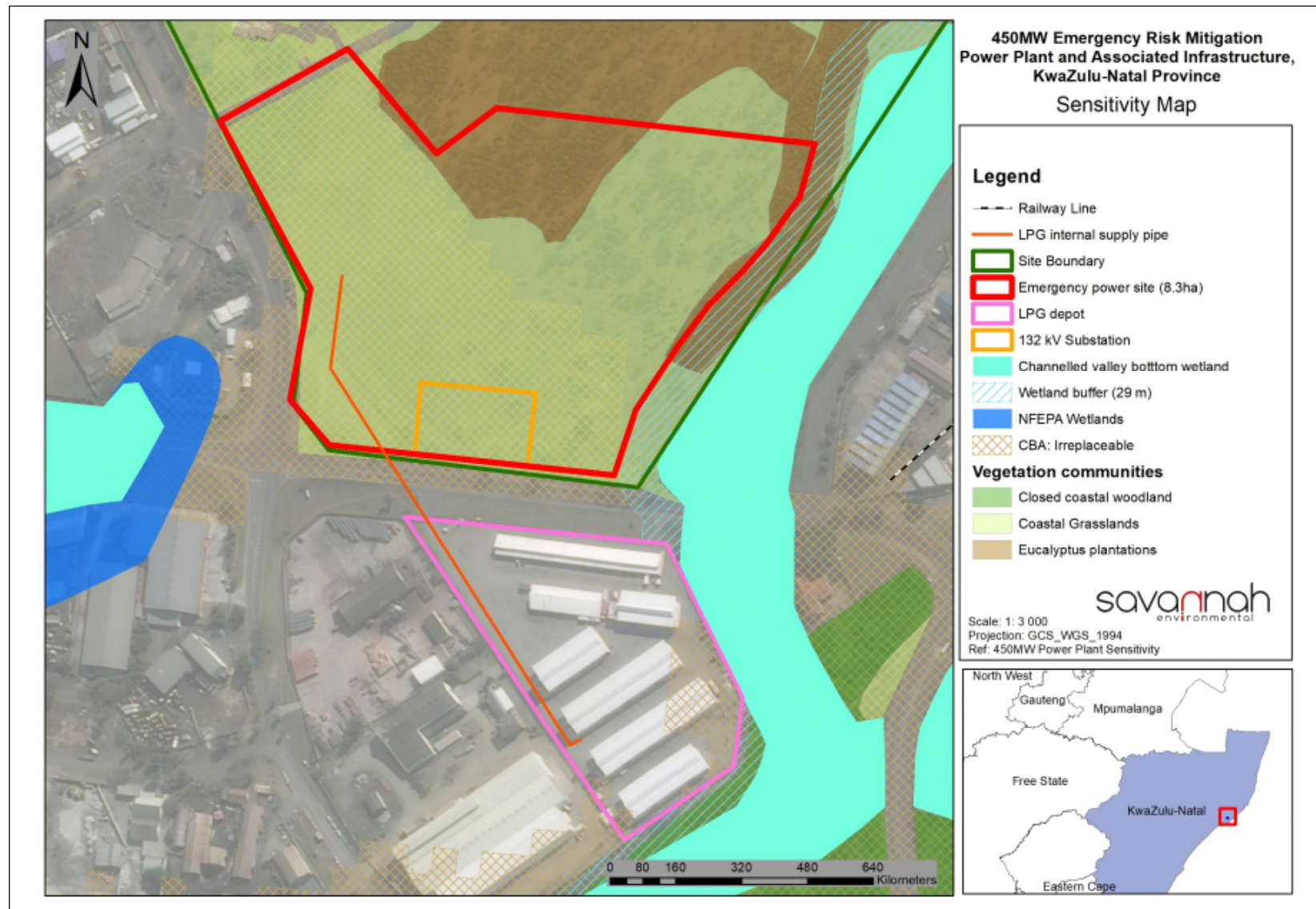


Figure 1: 450MW RMPP Scoping Phase Environmental Sensitivity Map

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CHAPTER 1: INTRODUCTION

Phinda Power Producers (Pty) Ltd (Phinda) proposes to develop an Emergency Risk Mitigation Power Plant (RMPP) and associated infrastructures, with a generating capacity of up to 450MW. The proposed project is to be known as the 450MW RMPP. The Project site is located in Alton core industrial area adjacent to Richards Bay Industrial Development Zone (IDZ), and approximately 8km south west of Richards Bay centre which falls within the jurisdiction of the City of uMhlathuze Local Municipality and the King Cetshwayo District Municipality, KwaZulu-Natal Province. The facility will have an installed generating capacity of up to 450MW, to operate with liquified petroleum gas (LPG) or naphtha as an initial source and will convert to utilising natural gas once this is available in Richards Bay.

The power plant and associated infrastructure have been initiated by Phinda in response to the procurement process initiated by the Independent Power Producer Office (IPP Office) in August 2020 for the procurement of up to 2000MW of dispatchable generation capacity from a range of technologies. This allocation is in accordance with the new generation capacity required as specified in the Integrated Resource Plan 2019 and accompanying ministerial determination from the Minister for the Department of Mineral Resources and Energy (DMRE) to which the National Energy Regulator of South Africa (NERSA) has concurred.

As the project has the potential to impact on the environment, an Environmental Impact Assessment process is required to be completed in support of an application for Environmental Authorisation prior to the commencement of construction and operation of the project. The nature and extent of the 450MW RMPP and associated infrastructure, as well as potential environmental impacts associated with the construction, operation and decommissioning phases are explored in more detail in this Scoping Report.

This Scoping Report consists of the following chapters:

- » **Chapter 1** provides background to the proposed project and the environmental impact assessment process.
- » **Chapter 2** outlines the strategic legal context for energy planning in South Africa and the proposed project.
- » **Chapter 3** provides a description of the gas to power technology.
- » **Chapter 4** provides a description of the proposed project, including feasible alternatives identified and considered.
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1.1. Legal Requirements as per the EIA Regulations for the undertaking of a Scoping Report, 2014 (as amended)

The Scoping Report has been prepared in accordance with the requirements of the EIA Regulations published on 08 December 2014 (and amended on 07 April 2017) promulgated in terms of Chapter 5 of the National Environmental Management Act (Act No 107 of 1998). This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
(a)(i) the details of the EAP who prepared the report and (ii) the expertise of the EAP to carry out scoping procedures; including a curriculum vitae	The details of the EAP and the expertise of the EAP have been included in section 1.4 and Appendix A .
(b) the location of the activity, including (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties	The location of the project site proposed for the development of the 450MW RMPP is included as Figure 1.1 and Figure 1.2 and in Appendix B . The details of the affected properties including the property names and numbers, as well as the SG-codes are included in Table 1.1.
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken	The locality of the project site is illustrated on a locality map included as Figure 1.1 and Figure 1.2 and in Appendix B . The corner point co-ordinates of the project site are included in Appendix B .

1.2. Project Overview

As a fast-emerging economy, South Africa needs to balance the competing need for continued economic growth with its social needs and the protection of the natural environment. South Africa needs to grow its energy supply to support economic expansion and in so doing, alleviate supply bottlenecks and supply-demand deficits. In addition, it is essential that all citizens are provided with clean and modern forms of energy at an affordable price. Approximately 91,2% of South African electricity comes from coal-fired power stations, with Eskom being the main electricity producing company (<https://www.usaid.gov/powerafrica/south-africa>).

The Integrated Resource Plan (IRP) 2019, developed by the Department of Energy, states a need for a diversified energy mix to meet the requirements of the country's need for economic and social growth. The IRP (2019) considers natural gas to have significant potential to add to the energy mix. In order to achieve this diversified mix and harvest the benefits of gas to energy, the IRP includes the allocation of 3000MW of new capacity using this technology. In addition, the IRP includes provision for a power purchase programme to assist with the acquisition of capacity needed to supplement Eskom's declining plant performance and to reduce the extensive utilisation of diesel peaking generators in the immediate to medium term and indicated a requirement for additional generation capacity of between 2000MW and 3000MW from technologies to be determined. Ministerial determinations in this regard were gazetted on 7 July 2020. The Minister of Mineral Resources and Energy (DMRE) in consultation With the National Energy Regulator of South Africa (NERSA) has determined that the department is to procure 2000 MW of new generation capacity from a range of energy source technologies. The Risk Mitigation IPP Procurement Programme has been designed by the department in order to fulfil the Minister's directive.

Phinda is proposing the development of the proposed 450MW RMPP as part of this programme.

The 450MW RMPP is proposed to be located on Remainder of Erf 1854 and Portion 2 of Erf 1854, an area of 49,42ha with a footprint of 8,29ha for the 450MW facility and 3,2 ha for the LPG storage site. The proposed LPG storage infrastructure associated with the power station is proposed to be located on Remainder of Erf 1795 and Portion 1 of Erf 1795, located directly across the road from the proposed power plant site (refer to Figure 1.1 and 1.2). All of the affected properties of the 450MW RMPP and LPG site are privately owned by associated group companies of the project proponent.

The main infrastructure associated with the facility includes the following:

- » Main Power Island consisting of either gas turbines comprising of air intake, air filter structures and exhaust stack for the generation of electricity through the use of natural gas, naphtha² or LPG; or Gas engines comprising of reciprocating internal combustion engines and exhaust stack utilising LPG or natural gas.
- » Generator and Auxiliary transformers.
- » Balance of Plant systems.
- » Dry Cooling systems.
- » Auxiliaries.
- » 132kV interconnecting substation and power lines connecting to the grid transmission infrastructure (The power lines to the grid transmission structure will be applied for under a separate environmental approvals process).
- » LPG fuel pipe routing between the LPG storage site and the power plant site **or** Naphtha import pipeline from the port of Richards Bay to the onsite storage of Naphtha (the Naphtha pipeline will be applied for under a separate environmental approval process).
- » Stormwater management ponds.
- » LPG storage comprising of up to 15 000m³ of storage in total, comprising of a number of either bullets or spheres storage tanks in design **or**;
- » Naphtha storage on the power plant site of up to 90,000m³ in total, comprising of a number of tanks,
- » Once imported LNG is available in Richards Bay, the 450MP RMPP will be converted from utilising LPG / Naphtha to the use of regassified LNG by means of a new dedicated natural gas pipeline which will replace or supplement the LPG / Naphtha supply to the power plant (The approval for the pipeline will be conducted under a separate process);
- » 3 effluent reticulation systems - i.e. 1) sanitary wastewater system; 2) oily water collection system and 3) storm water and rainwater collection system.
- » Diesel generator to provide start-up power to the first gas engine / turbine.

Table 1.1 provides a summary of proposed properties associated with proposed 450MW RMPP and LPG Storage sites. A comprehensive description of the key infrastructure components associated with the development of the 450MW RMPP is provided in **Chapter 4** of this final Scoping Report.

² Naphtha refers to " a hydrocarbon liquid stream derived from the refining of crude oil"

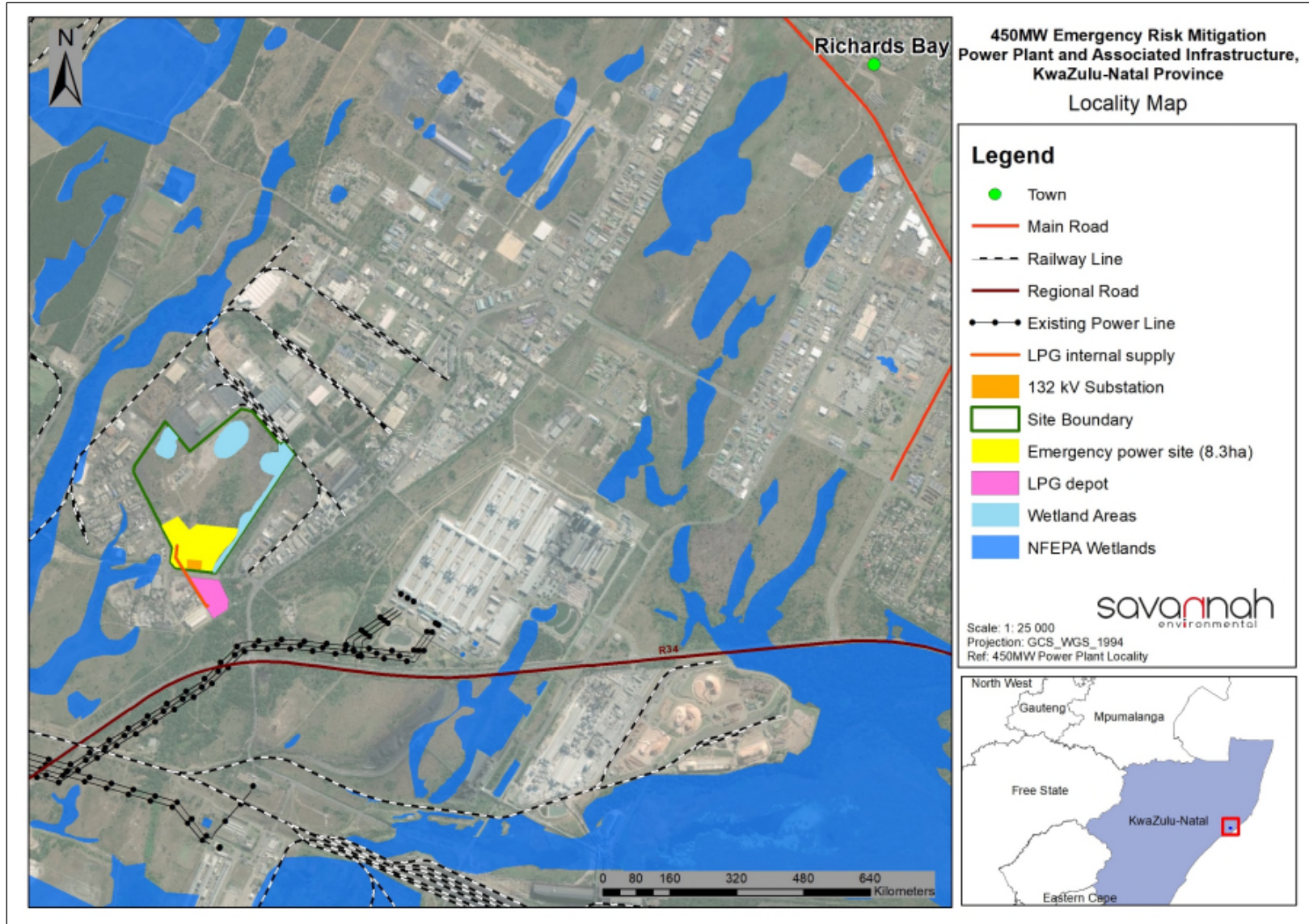


Figure 1.1: Locality map showing the area proposed for the establishment of the 450MW RMPP within the Richards Bay area (**Appendix B1**)

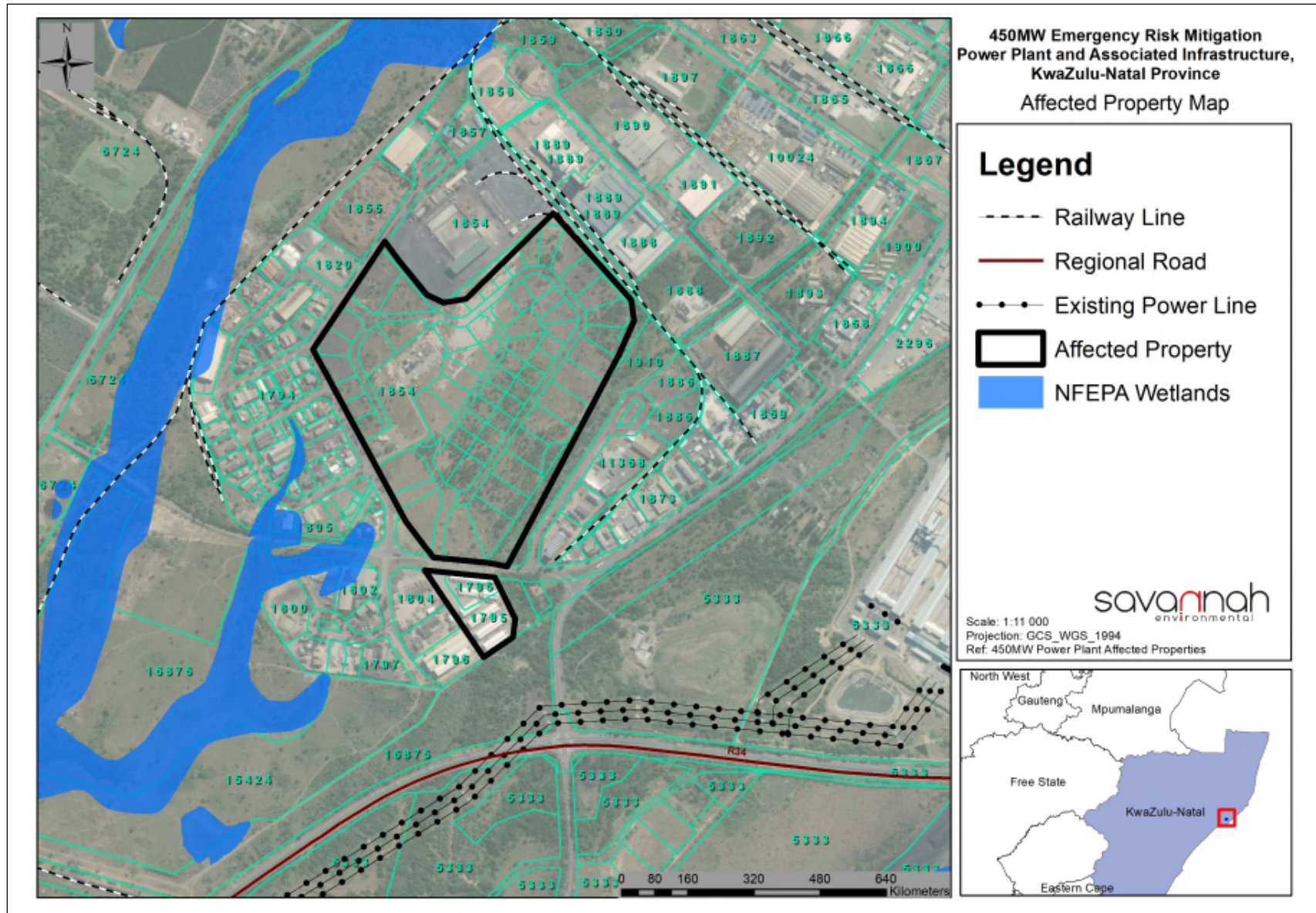


Figure 1.2: Locality map showing the affected properties within the preferred project site

Table 1.1: Summary of the preferred project site identified for the development of the 450MW RMPP

Province	KwaZulu-Natal
District Municipality	King Cetshwayo District Municipality
Local Municipality	City of uMhlathuze Local Municipality
Ward number(s)	26
Nearest town(s)	Alton, Richards Bay, Arboretum, Empangeni, Ichubo
Farm name(s) and number(s)	450MW RMPP » Remainder of Erf 1854 » Portion 4 of Erf 1854 LPFG Storage » Remainder of Erf 1795 » Portion 1 of Erf 1795
SG 21 Digit Code (s)	» N0GV04210001137600002 » N0GV04210001137600004
Current zoning	450MW RMPP » Industrial Use LPG Storage Site » Undetermined
Current land use	General Industrial ³

1.3. Requirement for an Environmental Impact Assessment Process

The construction and operation of the proposed 450MW RMPP is subject to the requirements of the 2014 EIA Regulations, as amended in April 2017, published in terms of Section 24(5) of the National Environmental Management Act (NEMA) 107 of 1998. This section provides a brief overview of the EIA Regulations and their application to this project.

NEMA is the national legislation that provides for the authorisation of 'listed activities'. In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these activities must be considered, investigated, assessed and reported on to the competent authority that has been charged by NEMA with the responsibility of deciding on environmental authorisations. In terms of GN R779 of 1 July 2016, the Minister of the Department of Environment, Forestry and Fisheries is the Competent Authority for all activities relating to the Integrated Resources Plan (IRP) of 2010 – 2030 (and any updates thereto) that require environmental authorisation. The DEFF is therefore the Competent Authority for this project, and the KwaZulu-Natal Department of Agriculture, Environmental Affairs and Rural Development (EDTEA) will act as a commenting authority.

The need to comply with the requirements of the EIA Regulations published under the NEMA ensures that proponents are provided the opportunity to consider the potential environmental impacts of their activities early in the project development process, and also allows for an assessment to be made as to whether environmental impacts can be avoided, minimised or mitigated to acceptable levels. Comprehensive, independent environmental specialist studies are required in accordance with the EIA Regulations to provide the competent authority with sufficient information in order to make an informed decision. Phinda Power (Pty) Ltd appointed Savannah Environmental as the independent environmental consulting

³ In terms of City of uMhlathuze 2019 Land Use Scheme Viewer

company to conduct an EIA process for the proposed project and Application for Environmental Authorisation.

An EIA is an effective planning and decision-making tool for the project developer as it allows for the identification and management of potential environmental impacts. It provides the opportunity for the developer to be fore-warned of potential environmental issues, and allows for the resolution of issues reported on in the Scoping and EIA Reports as well as a dialogue with interested and affected parties (I&APs).

The EIA process being undertaken for the proposed 450MW RMPP comprises two phases – i.e. Scoping and Impact Assessment - and involves the identification and assessment of environmental impacts through specialist studies, as well as public participation. The process followed in these two phases is as follows:

- » The **Scoping Phase** includes the identification and description of potential impacts associated with the proposed project through a desktop study and consultation with affected parties and key stakeholders. This phase considers the broader site in order to identify and delineate any environmental fatal flaws, no-go or sensitive areas, as well as project alternatives in order to determine which should be assessed in more detail in the EIA Phase. Following the public review period of the Scoping report, this phase culminates in the submission of this final Scoping Report and Plan of Study for EIA to the competent authority for acceptance and approval to continue with the EIA phase of the process.
- » The **EIA Phase** involves a detailed assessment of potentially significant positive and negative impacts (direct, indirect, and cumulative) identified in the Scoping Phase. This phase considers a proposed development footprint and includes detailed specialist investigations (including field surveys), consideration of feasible alternatives and public consultation. Recommendations of practical and achievable mitigation and management measures are included in an Environmental Management Programme (EMPr) considering all phases of the project. Following a review of the EIA report and EMPr by stakeholders, this phase culminates in the submission of a Final EIA Report and EMPr to the competent authority for review and decision-making.

1.4. Details of the Environmental Assessment Practitioner and Expertise to conduct the Scoping and EIA

In accordance with Regulation 12 of the 2014 EIA Regulations (GN R326), Phinda has appointed Savannah Environmental (Pty) Ltd (Savannah Environmental) as the independent environmental consultant to undertake the Scoping and EIA process for the 450MW RMPP and its associated infrastructure. Neither Savannah Environmental nor any of its specialists are subsidiaries of/or are affiliated to Phinda. Furthermore, Savannah Environmental does not have any interests in secondary developments that may arise out of the authorisation of the proposed 450MW RMPP project.

Savannah Environmental is a leading provider of integrated environmental and social consulting, advisory and management services with considerable experience in the fields of environmental assessment and management. The company is wholly woman-owned (51% black woman-owned) and is rated as a Level 2 Broad-Based Black Economic Empowerment (B-BBEE) Contributor. The company was established in 2006 with a clear objective to provide services to the infrastructure development sector. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team that has been actively involved in undertaking environmental studies for a wide variety of projects throughout South Africa and neighbouring countries. Strong competencies have been developed in project management of environmental processes, as well as strategic environmental

assessment and compliance advice, and the assessment of environmental impacts, the identification of environmental management solutions and mitigation/risk minimising measures.

The Savannah Environmental team has considerable experience in environmental impact assessments and environmental management and has been actively involved in undertaking environmental studies for a wide variety of projects throughout South Africa, including those associated with electricity generation and transmission.

The Savannah Environmental team comprises:

- » **Arlene Singh.** She holds a Bachelor degree in Environmental Science and an Honours degree in Environmental Management and has seven years of experience in the environmental management field. Her key focus is on undertaking environmental impact assessments, public participation, environmental management plans and programmes. She is registered as an Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPASA) (2019/898) and registered as a Candidate Natural Scientist with the South African Council for Natural Scientific Professions (SACNASP).

- » **Jo-Anne Thomas.** She holds a Master of Science Degree in Botany (M.S.c Botany) from the University of the Witwatersrand and is registered as a Professional Natural Scientist (400024/2000) with SACNASP and a registered Environmental Assessment Practitioner (EAP) with EAPASA (2019/726). She has over 20 years of experience in the field of environmental assessment and management, and the management of large environmental assessment and management projects. During this time, she has managed and coordinated a multitude of large-scale infrastructure EIAs and is also well versed in the management and leadership of teams of specialist consultants, and dynamic stakeholders. She has been responsible for providing technical input for projects in the environmental management field, specialising in Strategic Environmental Advice, EIA studies, environmental permitting, public participation, EMPs and EMPs, environmental policy, strategy and guideline formulation, and integrated environmental management (IEM). Her responsibilities for environmental studies include project management, review and integration of specialist studies, identification and assessment of potential negative environmental impacts and benefits, and the identification of mitigation measures, and compilation of reports in accordance with applicable environmental legislation.

- » **Nicolene Venter.** She is a Board Member of IAPSA (International Association for Public Participation South Africa). She holds a Higher Secretarial Diploma and has over 21 years of experience in public participation, stakeholder engagement, awareness creation processes and facilitation of various meetings (focus group, public meetings, workshops, etc.). She is responsible for project management of public participation processes for a wide range of environmental projects across South Africa and neighbouring countries.

Curricula Vitae (CVs) detailing Savannah Environmental team's expertise and relevant experience are provided in **Appendix A**.

CHAPTER 2: STRATEGIC CONTEXT FOR ENERGY PLANNING

2.1 Legal Requirements as per the EIA Regulations for the undertaking of a Scoping Report, 2014 (as amended)

This chapter of the final Scoping Report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
<p>(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 considered in the assessment process;</p> <p>(i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report.</p> <p>(ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments.</p>	<p>The policy and legislative context for the development of the 450MW RMPP has been considered throughout this chapter on a national, provincial and local level. The specific environmental legislation and policies applicable to the development are considered in Table 2.1.</p>

2.2 Energy Policy and Planning

The need to expand electricity generation capacity in South Africa is based on national policy and informed by on-going strategic planning undertaken by the DMRE. The hierarchy of policy and planning documentation that supports the development of a diversified mix of energy projects, such as gas to power plants and requirement for emergency generation capacity as specified within the IRP. These policies are discussed in more detail in the following sections, along with the provincial and local policies and plans that have relevance to the development of the 450MW RMPP and associated infrastructure. The hierarchy of policy and planning documentation that support the development of energy projects such as electricity generation facilities is illustrated in Figure 2.1.

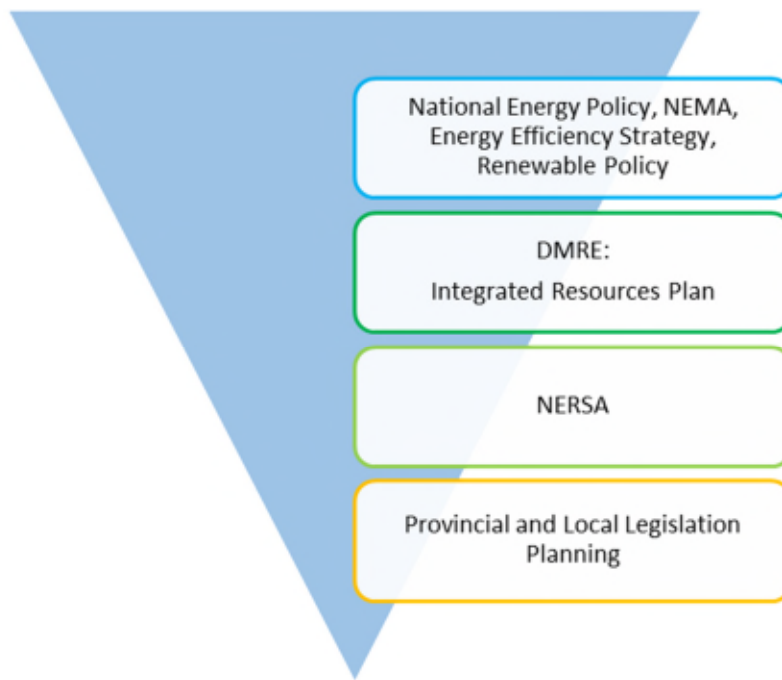


Figure 2.1: Hierarchy of electricity policy and planning documents

The South African energy industry is evolving rapidly, with regular changes to legislation and industry role-players. The regulatory hierarchy for an energy generation project such as that being considered in this Scoping Report consists of three tiers of authority who exercise control through both statutory and non-statutory instruments – that is National, Provincial and Local levels. As gas to energy developments are multi-sectoral (encompassing economic, spatial, biophysical, and cultural dimensions) various statutory bodies are likely to be involved in the approval process of a gas to power project and the related statutory environmental assessment process. These policies are discussed in more detail in the following sections, along with the provincial and local policies and plans that have relevance to the proposed development.

At **National Level**, the main regulatory agencies are:

- » **Department of Mineral Resources and Energy (DMRE):** This Department is responsible for policy relating to all energy forms and for compiling and approving the Integrated Resource Plan (IRP) for electricity and, since merging with the Department of Mineral Resources (DMR), is also responsible for granting approvals for the use of land which is contrary to the objects of the Mineral and Petroleum Resource Development Act (No. 28 of 2002) (MPRDA) in terms of Section 53 of the MPRDA. Therefore, in terms of the Act, approval from the Minister is required to ensure that the proposed activities do not sterilise mineral resource that may occur within the broader study area and development area.
- » **National Energy Regulator of South Africa (NERSA):** NERSA is responsible for regulating all aspects of the electricity sector and will ultimately issue licenses for IPP projects to generate electricity and for the construction and operation of fuel storage facilities linked to these IPP projects.
- » **Department of Environment, Forestry and Fisheries (DEFF):** This Department is responsible for environmental policy and is the controlling authority in terms of NEMA and the 2014 EIA Regulations (GN R326) as amended. DEFF is the competent authority for this project (as per GNR 779 of 01 July 2016), and is charged with granting the EA for the project under consideration. Furthermore, the Department is also responsible for issuing permits for the disturbance or destruction of protected tree species listed under Section 15 (1) of the National Forest Act (No. 84 of 1998) (NFA).

- » **The South African Heritage Resources Agency (SAHRA):** SAHRA is a statutory organisation established under the National Heritage Resources Act (No. 25 of 1999) (NHRA), as the national administrative body responsible for the protection of South Africa's cultural heritage.
- » **South African National Roads Agency Limited (SANRAL):** This Agency is responsible for the regulation and maintenance of all national road routes.
- » **Department of Human Settlements, Water and Sanitation (DHSWS):** This Department is responsible for effective and efficient water resources management to ensure sustainable economic and social development. This Department is also responsible for evaluating and issuing licenses pertaining to water use (i.e. Water Use Licenses (WUL) and General Authorisation).
- » **The Department of Agriculture, Rural Development and Land Reform (DARDLD):** This Department is the custodian of South Africa's agricultural resources and is responsible for the formulation and implementation of policies governing the agriculture sector and the initiation, facilitation, coordination and implementation of integrated rural development programmes.

At **Provincial Level**, the main regulatory agencies are:

- » **KwaZulu Natal Department of Economic Development, Tourism and Environmental Affairs (EDEAT):** This Department is the commenting authority for the Scoping and EIA process for the project.
- » **Ezemvelo KZN Wildlife (EKZN):** is responsible for the management of nature conservation and protected areas in KwaZulu-Natal and issuing of other biodiversity and conservation-related permits.
- » **AMAFA (KZN Heritage Authority):** This Department identifies, conserves and manage heritage resources throughout the KwaZulu-Natal Province.

At the **Local Level**, the local and district municipal authorities are the principal regulatory authorities responsible for planning, land use and the environment. In the KwaZulu Natal Province, both the local and district municipalities play a role. The local municipality includes the **uMhlatuze Local Municipality** which forms part of the **King Cetshwayo District Municipality**. In terms of the Municipal Systems Act (No. 32 of 2000), it is compulsory for all municipalities to go through an Integrated Development Planning (IDP) process to prepare a five-year strategic development plan for the area under their control.

2.3 National Policy and Planning Context

2.3.1 The National Energy Act (No. 34 of 2008)

The purpose of the National Energy Act (No. 34 of 2008) is to ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, while taking into account environmental management requirements and interactions amongst economic sectors, as well as matters relating to energy. The National Energy Act also provides for energy planning, increased generation and consumption of renewable energies, contingency energy supply, holding of strategic energy feedstocks and carriers, , appropriate upkeep and access to energy infrastructure. The Act provides measures for the furnishing of certain data and information regarding energy demand, supply and generation, and for establishing an institution to be responsible for promotion of efficient generation and consumption of energy and energy research.

The Act provides the legal framework which supports the development of power generation facilities, such as the 450MW RMPP and associated infrastructure.

2.3.2 White Paper on the Energy Policy of South Africa, 1998

The White Paper on the Energy Policy, published by the then Department of Minerals and Energy (DME) in December 1998 was developed so as to clarify government policy regarding the supply and consumption of energy for the next decade. It was intended to address all elements of the energy sector as practically as it could. The main objectives of the White Paper are the following:

- » Increasing access to affordable energy services.
- » Improving energy sector governance.
- » Stimulating economic development.
- » Managing energy-related environmental impacts.
- » Securing supply through diversity.

In order to meet these objectives and the developmental and socio-economic objectives of South Africa, the country needs to optimally use available energy resources. The South African Government is required to address what can be done to meet these electricity needs both in the short and long-term. The White Paper identifies key objectives for energy supply, such as increasing access to affordable energy services, managing energy-related environmental impacts and securing energy supply through diversifying South Africa's electricity mix.

The White Paper on Energy Policy (1998) promotes diversification of generation technologies in the South African energy mix, and recognises natural gas as an attractive option for South Africa. It also provides the basis for the development of the Integrated Energy Plan (IEP).

2.3.3. The Electricity Regulation Act (No. 04 of 2006) (ERA)

The Electricity Regulation Act (No. 04 of 2006) as amended by the Electricity Regulation Act (No. 28 of 2007), replaced the Electricity Act (No. 41 of 1987), as amended, with the exception of Section 5B, which provides funds for the energy regulator for the purpose of regulating the electricity industry.

The ERA establishes a national regulatory framework for the electricity supply industry and made NERSA custodian and enforcer of the National Electricity Regulatory Framework. The ERA also provides for licences and registration as the manner in which the generation, transmission, distribution, reticulation, trading, and import and export of electricity is regulated.

2.3.4. The National Development Plan (NDP) 2030

The National Development Plan (NDP) 2030 offers a long-term plan for the country. It defines desired destinations where inequality and unemployment are reduced and poverty is eliminated so that all South Africans can attain a decent standard of living. Electricity is one of the core elements of a decent standard of living.

While the achievement of the objectives of the NDP requires progress on a broad front, three priorities stand out, namely:

- » Raising employment through faster economic growth
- » Improving the quality of education, skills development and innovation

- » Building the capability of the state to play a developmental, transformative role

In terms of the Energy Sector's role in empowering South Africa, the NDP envisages that, by 2030, South Africa will have an energy sector that promotes:

- » Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation.
- » Social equity through expanded access to energy at affordable tariffs and through targeted, sustainable subsidies for needy households.
- » Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change.

In formulating its vision for the energy sector, the NDP took the IRP 2010 as its point of departure. Therefore, although electricity generation from coal is still seen as part of the energy mix within the NDP, the plan sets out steps that aim to ensure that, by 2030, South Africa's energy system looks very different to the current situation: coal will contribute proportionately less to primary-energy needs, while gas and renewable energy resources – especially wind, solar, and imported hydroelectricity – will play a much larger role.

2.3.5. Integrated Energy Plan (IEP), November 2016

The purpose and objectives of the Integrated Energy Plan (IEP) are derived from the National Energy Act (No. 34 of 2008). The IEP takes into consideration the crucial role that energy plays in the entire economy of the country and is informed by the output of analyses founded on a solid fact base. It is a multi-faceted, long-term energy framework which has multiple aims, some of which include:

- » To guide the development of energy policies and, where relevant, set the framework for regulations in the energy sector.
- » To guide the selection of appropriate technologies to meet energy demand (i.e. the types and sizes of new power plants and refineries to be built and the prices that should be charged for fuels).
- » To guide investment in and the development of energy infrastructure in South Africa.
- » To propose alternative energy strategies which are informed by testing the potential impacts of various factors such as proposed policies, introduction of new technologies, and effects of exogenous macro-economic factors.

A draft version of the IEP was released for comment on 25 November 2016. The purpose of the IEP is to provide a roadmap of the future energy landscape for South Africa which guides future energy infrastructure investments and policy development. The development of the IEP is an ongoing continuous process. It is reviewed periodically to take into account changes in the macroeconomic environment, developments in new technologies and changes in national priorities and imperatives, amongst others.

The 8 key objectives of the integrated energy planning process are as follows:

- » Objective 1: Ensure security of supply.
- » Objective 2: Minimise the cost of energy.
- » Objective 3: Promote the creation of jobs and localisation.
- » Objective 4: Minimise negative environmental impacts from the energy sector.

- » Objective 5: Promote the conservation of water.
- » Objective 6: Diversify supply sources and primary sources of energy.
- » Objective 7: Promote energy efficiency in the economy.
- » Objective 8: Increase access to modern energy.

2.3.6. Integrated Resource Plan (IRP) for Electricity 2010 - 2030

The Integrated Resource Plan (IRP) for Electricity is a subset of the IEP and constitutes South Africa's National electricity plan. The IRP is an electricity infrastructure development plan based on least-cost electricity supply and demand balance, taking into account security of supply and the environment. The primary objective of the IRP is to determine the long term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing and cost. The IRP also serves as input to other planning functions, including amongst others, economic development and funding, and environmental and social policy formulation.

The promulgated IRP 2010–2030 identified the preferred generation technology required to meet expected demand growth up to 2030. It incorporated government objectives such as affordable electricity, reduced greenhouse gas (GHG) emissions, reduced water consumption, diversified electricity generation sources, localisation and regional development.

Following the promulgation of the IRP 2010–2030, implementation followed in line with Ministerial Determinations issued under Section 34 of the Electricity Regulation (Act No. 4) of 2006. The Ministerial Determinations give effect to planned infrastructure by facilitating the procurement of the required electricity capacity.

Since the promulgated IRP 2010–2030, the following capacity developments have taken place:

- » A total 6 422 MW under the Renewable Energy Independent Power Producers Programme (REIPPP) has been procured, with 3 876 MW operational and made available to the grid.
- » IPPs have commissioned 1 005 MW from two Open Cycle Gas Turbine (OCGT) peaking plants.
- » Under the Eskom build programme, the following capacity has been commissioned:
 - * 1 332 MW of Ingula pumped storage, 1 588 MW of Medupi, 800 MW of Kusile and
 - * 100 MW of Sere Wind Farm.
- » 18 000MW of new generation capacity has been committed to.

Besides capacity additions, a number of assumptions have changed since the promulgation of IRP 2010–2030. Key assumptions that changed include the electricity demand projection, Eskom's existing plant performance, as well as new technology costs. In addition, environmental considerations such as South Africa's contribution to Greenhouse gases which contribute to climate change, local air quality and water availability have come to the fore.

These considerations necessitated the review and update of the IRP and ultimately the promulgation of a revised plan in October 2019. In terms of the IRP 2019, South Africa continues to pursue a diversified energy mix that reduces reliance on a single or a few primary energy sources. In the period prior to 2030, the system requirements are largely for incremental capacity addition (modular) and flexible technology, to complement the existing installed inflexible capacity. South Africa is a signatory to the Paris Agreement on

Climate Change and has ratified the agreement. In line with INDCs (submitted to the UNFCCC in November 2016), South Africa's emissions are expected to peak, plateau and from year 2025 decline.

Following consideration of all these factors, the following Plan was promulgated.

	Coal	Coal (Decommissioning)	Nuclear	Hydro	Storage	PV	Wind	CSP	Gas & Diesel	Other (Distributed Generation, CoGen, Biomass, Landfill)
Current Base	37,149		1 860	2,100	2 912	1 474	1 980	300	3 830	499
2019	2,155	-2,373					244	300		Allocation to the extent of the short term capacity and energy gap.
2020	1,433	-557				114	300			
2021	1,433	-1403				300	818			
2022	711	-844			513	400	1,000	1,600		
2023	750	-555				1000	1,600			
2024			1,860				1,600		1000	
2025						1000	1,600			
2026		-1,219					1,600			
2027	750	-847					1,600		2000	
2028		-475				1000	1,600			
2029		-1,694			1575	1000	1,600			
2030		-1,050		2,500		1000	1,600			
TOTAL INSTALLED CAPACITY by 2030 (MW)	33,364		1,860	4,600	5,000	8,288	17,742	600	6,380	
% Total Installed Capacity (% of MW)	43		2.36	5.84	6.35	10.52	22.53	0.76	8.1	
% Annual Energy Contribution (% of MWh)	58.8		4.5	8.4	12*	6.3	17.8	0.6	1.3	

- Installed Capacity
- Committed/Already Contracted Capacity
- Capacity Decommissioned
- New Additional Capacity
- Extension of Koeberg Plant Design Life
- Includes Distributed Generation Capacity for own use

- 2030 Coal Installed Capacity is less capacity decommissioned between years 2020 and 2030.
- Koeberg power station rated/installed capacity will revert to 1,926MW (original design capacity) following design life extension work.
- Other/ Distributed generation includes all generation facilities in circumstances in which the facility is operated solely to supply electricity to an end-use customer within the same property with the facility.
- Short term capacity gap is estimated at 2,000MW.

Figure 2.2: IRP 2019 as promulgated in October 2019⁴

This plan provides for the development of 3000MW of new capacity from gas to power projects and made provision an "Allocation to the extent of the short term capacity and energy gap", which was estimated in the IRP 2019 as being between 2000MW to 3000MW. The 450MW RMPP project would contribute towards the alleviating the short term capacity and energy gap.

2.3.7. The Risk Mitigation Power Procurement Programme

The IPP Office initiated the procurement of up to 2000MW of dispatchable generation capacity from a range of technologies in accordance with the IRP 2019 in August 2020. The procurement programme titled the Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP) is intended to fill the current short term supply requirements for electricity, alleviate the current electricity supply constraints and reduce extensive utilisation of diesel peaking generators. The programme is intended to procure generation capacity from power generation facilities with short lead times and to produce first

⁴ source: <https://www.cliffedekkerhofmeyr.com/en/news/publications/2019/Corporate/energy-alert-22-october-The-Integrated-Resource-Plan-2019-A-promising-future-roadmap-for-generation-capacity-in-South-Africa.html>

power by no later than June 2022. The 450MW Emergency Risk Mitigation Power Plant is intended to be bid into the procurement programme and if selected as a preferred bidder can be brought online and connected to the grid prior to June 2022 by initially using LPG or naphtha as a fuel source until natural gas is available in Richards Bay.

2.3.8. New Growth Path (NGP) Framework, 23 November 2010

The purpose of the New Growth Path (NGP) Framework is to provide effective strategies towards accelerated job-creation through the development of an equitable economy and sustained growth. The target of the NGP is to create 5 million jobs by 2020. With economic growth and employment creation as the key indicators identified in the NGP. Central to the New Growth Path is a massive investment in infrastructure as a critical driver of jobs across the economy. The framework identifies investments in five key areas namely: energy, transport, communication, water and housing. Sustaining high levels of public investment in these areas will create jobs in construction, operation and maintenance of infrastructure. . The framework states that public investment can create 250 000 jobs per annum in energy, transport, water, communications infrastructure and housing. These jobs are said to be in four activities, the construction of new infrastructure; the operation of new facilities; expanded maintenance; and the manufacture of components for the infrastructure programme.

2.3.9. National Climate Change Bill, 2018

On 08 June 2018 the Minister of Environmental Affairs published the National Climate Change Bill ("the Bill") for public comment. The purpose of the Bill is to build an effective climate change response and ensure the long-term, just transition to a climate resilient and lower carbon economy and society. This will be done within the context of sustainable development for South Africa, and will provide for all matters related to climate change.

The National Climate Change Bill addresses issues related institutional and coordination arrangement across the three spheres of government namely national, provincial and local. It further highlights the need the spheres of government and entities, sectors as well business to respond to challenges of climate change. The bill further address the matters relating to, the national adaptation to impacts of climate change, greenhouse gas emissions and removals, and policy alignment and institutional arrangements. The Bill provides a procedural outline that will be developed through the creation of frameworks and plans. The following objectives are set within the Bill:

- a) Provide for the coordinated and integrated response to climate change and its impacts by all spheres of government in accordance with the principles of cooperative governance;
- b) Provide for the effective management of inevitable climate change impacts through enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to building social, economic, and environmental resilience and an adequate national adaptation response in the context of the global climate change response;
- c) Make a fair contribution to the global effort to stabilise greenhouse gas concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe and in a manner that enables economic, employment, social and environmental development to proceed in a sustainable manner.

2.3.10. National Climate Change Response Policy, 2011

South Africa's National Climate Change Response Policy (NCCRP) establishes South Africa's approach to addressing climate change, including adaptation and mitigation responses. The NCCRP formalises Government's vision for a transition to a low carbon economy, through the adoption of the 'Peak, Plateau and Decline' (PPD) GHG emissions trajectory whereby South Africa's emissions should peak between 2020 and 2025, plateau for approximately a decade, and then decline in absolute terms thereafter, and based on this the country has pledged to reduce emissions by 34% and 42% below Business As Usual (BAU) emissions in 2020 and 2025, respectively.

2.3.11. National Climate Change Adaptation Strategy (South Africa), 2020

South Africa's National Climate Change Adaptation Strategy (NCCAS) supports the country's ability to meeting its obligations in terms of the Paris Agreement on Climate Change. It gives effect to the National Development Plan's vision of creating a low-carbon, climate resilient economy and a just society. The commitment to the Paris Agreement and its implementation is in line with the principles and provisions of the UNFCCC will ensure the balance between adaptation and mitigation, and adequate financial, technological and skills support for South Africa to enhance their efforts against climate change.

2.3.12. Strategic Integrated Projects (SIPs)

The Presidential Infrastructure Coordinating Committee (PICC) is integrating and phasing investment plans across 36 Strategic Infrastructure Projects (SIPs) which have five core functions: to unlock opportunity, transform the economic landscape, create new jobs, strengthen the delivery of basic services and support the integration of African economies. A balanced approach is being fostered through greening of the economy, boosting energy security, promoting integrated municipal infrastructure investment, facilitating integrated urban development, accelerating skills development, investing in rural development and enabling regional integration. SIP 9 and SIP 20 (a) (In terms of Section 8(1)(a) read with Section 7(1) of the Infrastructure Development Act, as amended, 2014 (Act no. 23 of 2014)) of the energy SIPs support the development of the gas proposed power plant and specifically such development under the RMPPP:

- » SIP 9: Electricity generation to support socio-economic development: The proposed 450MW RMPP is a potential SIP 9 Project as electricity will be generated and social and economic upliftment, development and growth will take place within the surrounding communities. SIP 9 supports the acceleration of the construction of new electricity generation capacity in accordance with the IRP 2019 to meet the needs of the economy and address historical imbalances.
- » SIP 20 (a): Emergency /Risk Mitigation Power Purchase Procurement Programme (2000MW): The proposed 450MW RMPP is intended to be bid into the RMPPP in order to alleviate the frequent load shedding being experienced in South Africa at present and can be brought onto the grid as quickly as possible (by 30 June 2022) if selected as a preferred bidder.

The 450MW RMPP qualifies as a SIP 20 project under the legislation and will qualify to be registered as a SIP project once it has been selected as preferred bidder by the DMRE. The project would then contribute to the above-mentioned SIPs.

2.3.13. Industrial Policy Action Plan (IPAP), 2018 / 2019 – 2020 / 2021

The Industrial Policy Action Plan (IPAP) 2018/2019 – 2020/2021 represents a significant step forward in scaling up the country's efforts to promote long-term industrialisation and industrial diversification. It is recognised that Southern Africa is fast transforming into an oil and gas jurisdiction due to significant gas discoveries and developments in progress that create the potential for the expansion of imports of natural gas resources from Mozambique in particular, that will build on the volumes already being imported by via the ROMPCO pipeline from the Pande and Temane fields operated by Sasol. From a South African perspective, the scale of the gas reserves in Mozambique is of particular significance. Accordingly, the plan states that a key industrial growth path is gas-based industrialisation (Department of Trade and Industry, 2018).

The expansion of gas supply into the South African market - via the development of domestic resources and the expansion of volumes from Mozambique - should produce affordable gas prices capable of underpinning a significant natural gas-based reindustrialisation of the South African economy. In the longer term (15 years +) the main objective is a vibrant gas industry delivering affordable and secure gas supply to the heavy industry, manufacturing and transport sectors (Department of Trade and Industry, 2018).

2.3.14. Gas Utilisation Master Plan (GUMP)

The Gas Utilisation Master Plan (GUMP) was created to assist in achieving the objectives of the IRP by driving the development of the gas-to-power industry in South Africa. According to the GUMP, the social economic advantages of establishing a large gas-to-power industry include job creation (during construction and operation), industrial development, the potential to use imported liquified natural gas (LNG) instead of diesel, and a source of cheaper energy. South Africa's gas-to-energy development plan spans 30 years, in which gas supply is envisaged to include local indigenous supply as well as imports through pipelines and by ship.

The GUMP identifies challenges facing the development of the gas industry in South Africa. These are: limited domestic supply; no immediate gas demand as yet; lack of gas infrastructure (no LNG import terminal yet); no gas master plan. It is envisaged that by the time construction of the proposed development is complete, more gas infrastructure will be available, such as the LNG import terminal at the Richards Bay port. GUMP identifies that there are potential gas reserves in the Karoo basin, deep offshore, and at the Ibhubesi basin. Through the local pipeline infrastructure, the gas-fired power station in Richards Bay could acquire local gas cheaply if the infrastructure to obtain it is developed. However, as identified, the lack of said infrastructure is currently a constraint. The timing of the development will likely fall in-line with the development of other gas-related infrastructure such as the LNG port in Richards Bay and the extension of gas pipelines from Mozambique. Therefore, the proposed project supports the implementation of GUMP as the facility intends to ultimately transition from the utilisation of LPG or naphtha as the primary fuel source, to natural gas.

2.4. Provincial Policy and Planning Context

2.4.1. KwaZulu-Natal Provincial Growth and Development Plan (PGDP) (2019)

The KwaZulu-Natal Provincial Growth and Development Plan (PGDP) aims to curb poverty, inequality and achieve shared growth. The PGDP has identified spatial marginalisation as one of the key issues to be

addressed through ensuring economic opportunities that will meet the majority of the population's needs. The plan states that alternative sources of energy are a priority and must become a reality. This energy is anticipated through gas and diesel turbines which were anticipated to be on-line in 2016 (Provincial Planning Commission, 2016).

2.4.2. KwaZulu-Natal Provincial Growth and Development Strategy (PGDS) (2016)

The Provincial Growth and Development Strategy (PGDS) for KZN addresses the triple challenge of poverty, inequality and unemployment. The KZN provincial government's vision is for the province to maximize its position as a gateway to South and Southern Africa, as well as its human and natural resources to create a safe, healthy and sustainable environment by 2035; eliminating poverty, inequality, unemployment and the current disease burden in the province. Through the seven strategic goals the KZN PGDS aims to achieve its vision by 2035, including:

- 1) Inclusive economic growth (expanded and sustained economic output is the fundamental driver for job creation)
- 2) Human resource development (the human resource capacity of KZN is relevant and responsive to the growth and development needs of the province)
- 3) Human and community development (reduce poverty and inequality in KZN)
- 4) Strategic infrastructure (strategic infrastructure provides for social and economic growth and development needs of KZN)
- 5) Environmental sustainability (reduce global greenhouse gas emissions and create social-ecological capacity to adapt to climate change)
- 6) Governance and policy (effective and efficient government systems)
- 7) Spatial equity (increased spatial access to goods and services)

The proposed 450MW RMPP will result in the creation of job opportunities, human resource development, and strategic infrastructure for social and economic growth which will contribute towards reducing poverty and inequality in KZN. This development will therefore assist the province in achieving the aims of the PGDS to some extent.

2.4.3. KwaZulu-Natal Provincial Spatial Economic Development Strategy (2016)

The Provincial Spatial Economic Development Strategy (PSEDS) serves as a framework for the prioritisation of spatial economic development initiatives in the province. It is meant to capitalise on complementarities and facilitate consistent and focused decision making. In addition, the purpose of the strategy is to ensure that investment occurs in the sectors that provide the greatest socio-economic return to investment (Department of Economic Development, 2016).

Figure 2.3 demonstrates that the preferred project site within the Richards Bay area is located in an area demarcated as having economies of scale. Economies of scale are achieved when the number of units produced or the volume of services sold are at such a large scale that it allows for the reduced production costs, ultimately increasing the competitiveness of the product or service. High demand for the product or a service is a prerequisite for economies of scale; this implies that the area where the 450MW RMPP is to be built has a high demand for selected goods and services, including electricity. The area is already highly industrialised and hosts an IDZ nearby, which continuously seeks new investments in ICT, agro-businesses,

and metals beneficiation. Therefore, the project is to be located in a potentially high economic growth region.

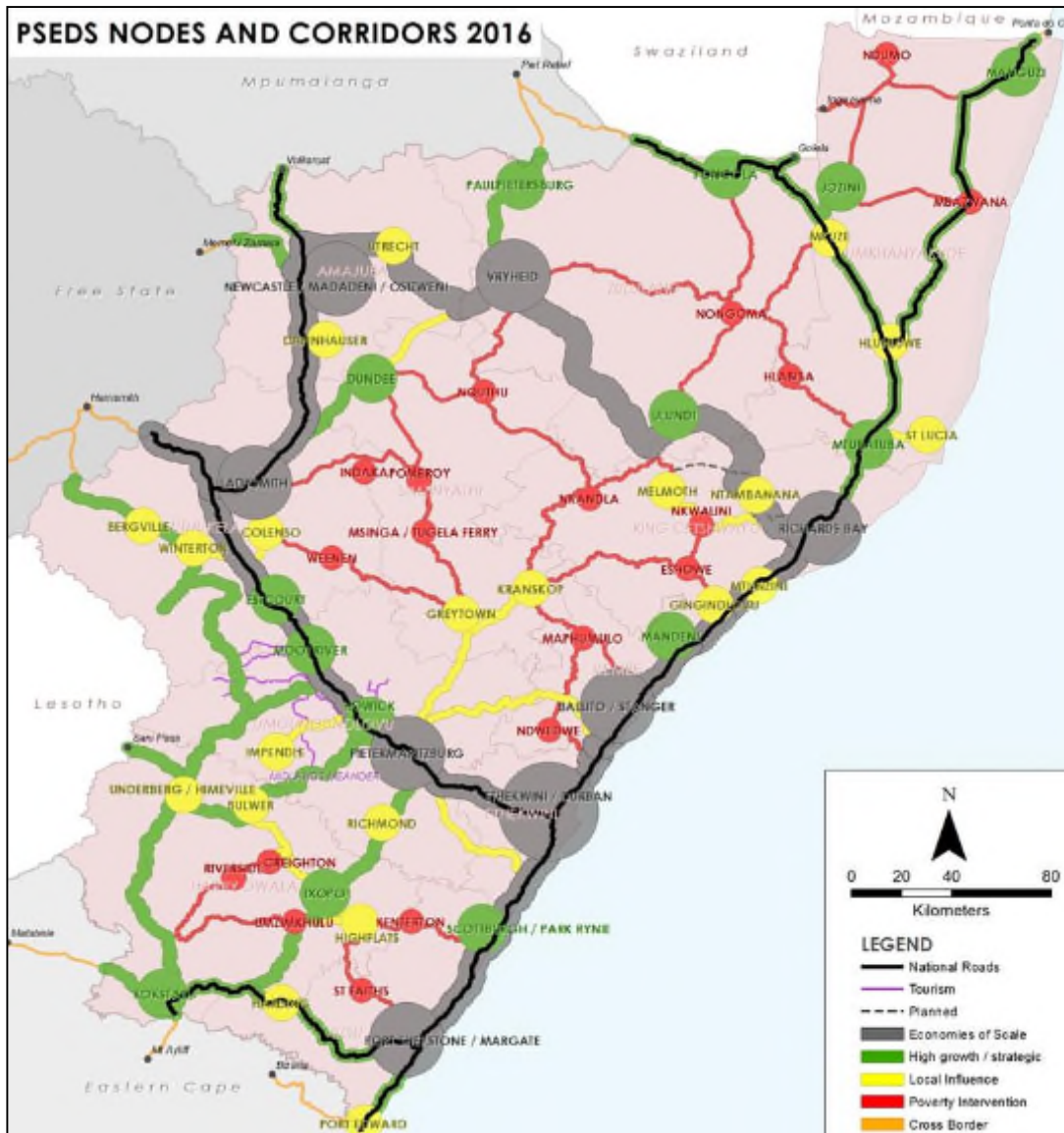


Figure 2.3: KZN Spatial Economic and Development Strategy nodes and corridors

The development of the 450MW RMPP will drive economic growth, infrastructural transformation and development. The area for development is seen as a favourable area for investment and development.

2.4.4. KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs Revised Strategic Plan 2015 - 2020

The strategic focus for the KZN EDTEA during the 2020 planning period will be building a resilient KZN provincial economy that can respond to global factors, stimulating provincial economic development, alignment of functions and purpose of all economic development entities as well as building a vibrant organisation. The vision of the strategic plan is ‘leading the attainment of inclusive growth for job creation and economic sustenance.’ The mission of the strategic plan is to 1) develop and implement strategies that drive economic growth; 2) be a catalyst for economic transformation and development; 3) provide

leadership and facilitate integrated economic planning and development; and 4) create a favourable environment for investment. The main objectives of the strategy that relate to the proposed project are as follows:

- » To facilitate the creation of new markets;
- » To drive growth of the KZN provincial economy;
- » To enhance sector and industrial development through Trade, Investment and Exports Logistics, ICT, Manufacturing, Green economy, agri-business, Tourism, Creative Industries, Maritime, Aerropolis, Aviation;
- » To investigate and develop viable alternative energy generation options.

2.4.5. KwaZulu-Natal Provincial Spatial Development Framework (PSDF)

The KZN Provincial Spatial Development Strategy has been developed in order to achieve the goals and objectives of the PGDS in a targeted and spatial co-ordinated manner. Spatially, it is vital to consider general accessibility as a cross-cutting variable which impacts all three pillars of sustainable development and as a result the four main spatial variables informing the provincial spatial development framework include:

- » Environmental Sensitivity;
- » Economic Potential;
- » Social Needs; and
- » Urban Accessibility.

The PSDF spatial variables were considered collectively and a ranking order to key elements used to formulate a composite Provincial Spatial Development Framework which identifies Broad Provincial Spatial Planning Categories such as:

- » Conservation Corridors;
- » Biodiversity Priority Areas;
- » Areas of Economic Value adding;
- » Areas of Economic support;
- » Areas of Agricultural Development;
- » Areas of High Social Need; and
- » Mandated Service Delivery Areas.

Areas of Economic Support resemble a region of good economic potential in more than just one of the key provincial economic sectors. Typical interventions in these areas would include economic prioritisation of development, labour force interventions (e.g. skills development), key economic infrastructure investment and area promotion. The development of the 450MW RMPP will contribute towards economic value, economic support and economic growth in the area.

2.4.6. KwaZulu-Natal Climate Change Response and Sustainable Development Plan

In September 2012, the KwaZulu-Natal Provincial Government became the first provincial government to establish a Climate Change and Sustainable Development Council, which boosts multi-stakeholder membership (<http://www.theclimategroup.org/who-we-are/our-members/the-province-of-kwazulu-natal>).

The Council has set up three Working Groups, namely Policy and Regulatory Alignment Working Group; Adaptation and Mitigation Working Group and Renewable Energy Working Group.

The province is in the early stages of developing the Climate Change Response and Sustainable Development Plan which is guided by, among others, the national strategy and the KwaZulu-Natal Growth and Development Strategy which has among its goals environmental sustainability as well as:

- » Provision of 100% energy access in KZN Province by 2030, i.e. an additional 600 000 households or some 3 million people.
- » Implementation of a number of significant renewable energy and energy efficiency projects.

The development of the 450MW RMPP will promote access to energy through the use of a fuel resource other than coal. The use of LPG or Naphtha initially and ultimately natural gas once available, in the development of the 450MW RMPP offers reduced emissions when compared to the use of coal or diesel for electricity generation. The implementation of the 450MW RMPP open cycle or engine technology will also ensure efficiency in terms of the use of natural gas as a fuel resource in the long-term once available.

2.5. Local Policy and Planning Context

The strategic policies at the district and local level have similar objectives for the respective areas, namely to accelerate economic growth, create jobs, uplift communities and alleviate poverty. The proposed development is considered to align with the aims of these policies, even if contributions to achieving the goals therein are only minor.

2.5.1. King Cetshwayo District Municipality Draft Integrated Development Plan (2020/21 – 2021/22)

The vision for the King Cetshwayo District Municipality Integrated Development Plan IDP 20/21 – 21/22 is to create a 'safe and healthy environment which promotes sustainable, radical, and inclusive economic and social development reinforced by service excellence' (KCDM, 2020: 34). As indicated in the vision, one of the goals is infrastructure development and service delivery. The Richards Bay Industrial Development Zone (RBIDZ) is identified as a catalytic project (KCDM, 2020: 69). The objective is to promote economic growth in the District and improve the socio-economic conditions of residents.

A catalytic project is defined as a project of significant scale and scope that will make a substantial impact and contribution to the achievement of the vision and goals of the Province. The Richards Bay Industrial Development Zone (IDZ) is defined as a game changer in the context of catalytic projects. The proposed 450 MW RMPP will be located adjacent to the IDZ on a property zoned for industrial use, thereby contributing to and providing an extension of catalytic projects to the IDZ.

2.5.2. King Cetshwayo District Growth and Development Plan, 2015

The King Cetshwayo District Growth and Development Plan (DGDP) has an integral role in the integration and alignment of the goals of the NDP at national level and PGDP at provincial level. Therefore, the purpose of the DGDP is to translate the Provincial Growth and Development Plan into a detailed implementation plan at a district level (Uthungulu DM, 2015). One strategic intervention identified by the plan is the implementation of the roll-out programme for alternative sources of energy supply in the district

where the gas-fixed electricity generation is classified as alternative energy supply. The proposed project will therefore assist with this programme.

2.5.3. uMhlathuze Municipality Integrated Development Plan (IDP), 2019/2020

The objective of the IDP is to promote economic growth in the District and improve the socio-economic conditions of residents (uMhlathuze LM, 2019). The unsustainable use of resources, including energy, will ultimately compromise the Municipality's energy security. Challenges similar to these prompted the IDP to focus on sustainable solutions to the energy crisis. Therefore, the aim is to reduce the demand for energy and simultaneously investigate alternative energy sources.

An intervention proposed by the City of uMhlathuze to meet the sustainable development goal of ensuring access to affordable, reliable and modern energy for all, is the generation of 2000MW Gas to Power (uMhlathuze LM, 2019:34). The development of the 450MW RMPP will assist with this goal of enhancing energy security within the area. The development will also create employment opportunities which will strengthen the current socio-economic conditions of the area, as well as improve the standard of living.

2.6. Legislation and Guidelines that have informed the preparation of this Scoping Report

The following legislation and guidelines have informed the scope and content of this Scoping Report:

- » National Environmental Management Act (Act No. 107 of 1998)
- » EIA Regulations of December 2014, published under Chapter 5 of NEMA (as amended in GNR R326 in Government Gazette No 40772 of April 2017)
- » International guidelines – the Equator Principles and the International Finance Corporation and World Bank Guidelines.

Several other Acts, standards or guidelines have also informed the project process and the scope of issues evaluated in the scoping report, and are to be addressed in the EIA. A listing of relevant legislation is provided in **Table 2.1**. A more detailed review of legislative requirements applicable to the 450MW RMPP will be included in the EIA phase.

Table 2.1: Initial review of the relevant environmental policies, legislation, guidelines and standards applicable to the 450MW RMPP EIA

Legislation	Applicable Sections
National Legislation	
Constitution of the Republic of South Africa (Act No 108 of 1996)	<ul style="list-style-type: none"> » Bill of Rights (S2) » Environmental Rights (S24) – i.e. the right to an environment which is not harmful to health and well-being » Rights to freedom of movement and residence (S22) » Property rights (S25) » Access to information (S32) » Right to just administrative action (S33) » Recognition of international agreements (S231)
National Environmental Management Act (Act No 107 of 1998)	<ul style="list-style-type: none"> » National environmental principles (S2), providing strategic environmental management goals and objectives of the government applicable throughout the Republic to the actions of all organs of state that may significantly affect the environment » NEMA EIA Regulations (GN 324 – 327 of December 2014, as amended in April 2017) » The requirement for potential impact on the environment of listed activities must be considered, investigated, assessed and reported on to the competent authority (S24 – Environmental Authorisations) » Duty of Care (S28) requiring that reasonable measures are taken to prevent pollution or degradation from occurring, continuing or recurring, or, where this is not possible, to minimise & rectify pollution or degradation of the environment » Procedures to be followed in the event of an emergency incident which may impact on the environment (S30) » Appeals against decisions made by authorities (S43)
Environment Conservation Act (Act No 73 of 1989)	<ul style="list-style-type: none"> » National Noise Control Regulations (GN R154 dated 10 January 1992)
National Noise Control Regulations (of 10 January 1992)	<ul style="list-style-type: none"> » In terms of Section 25 of the ECA, the national noise-control regulations (GN R154 in Government Gazette No. 13717 dated 10 January 1992) were promulgated. The NCRs were revised under Government Notice Number R. 55 of 14 January 1994 to make it obligatory for all authorities to apply the regulations. » Subsequently, in terms of Schedule 5 of the Constitution of South Africa of 1996, legislative responsibility for administering the noise control regulations was devolved to provincial and local authorities. Provincial Noise Control Regulations exist in the Free State, Western Cape and Gauteng provinces.
National Heritage Resources Act (Act No 25 of 1999)	<ul style="list-style-type: none"> » Stipulates assessment criteria and categories of heritage resources according to their significance (S7) » Provides for the protection of all archaeological and palaeontological sites, and meteorites (S35) » Provides for the conservation and care of cemeteries and graves by SAHRA where this is not the responsibility of any other authority (S36) » Lists activities which require developers any person who intends to undertake to notify the responsible heritage

Legislation	Applicable Sections
	<p>resources authority and furnish it with details regarding the location, nature and extent of the proposed development (S38)</p> <ul style="list-style-type: none"> » Requires the compilation of a Conservation Management Plan as well as a permit from SAHRA for the presentation of archaeological sites as part of tourism attraction (S44)
<p>National Environmental Management: Biodiversity Act (Act No 10 of 2004)</p>	<ul style="list-style-type: none"> » Provides for the MEC/Minister to identify any process or activity in such a listed ecosystem as a threatening process (S53) » A list of threatened and protected species has been published in terms of S 56(1) - Government Gazette 29657. » Three government notices have been published, i.e. GN R 150 (Commencement of Threatened and Protected Species Regulations, 2007), GN R 151 (Lists of critically endangered, vulnerable and protected species) and GN R 152 (Threatened or Protected Species Regulations). » Provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (G 34809, GN 1002), 9 December 2011). » This Act also regulates alien and invader species (GN 37886 of August 2014).
<p>National Environmental Management: Air Quality Act (Act No 39 of 2004)</p>	<ul style="list-style-type: none"> » S18, S19 and S20 of the Act allow certain areas to be declared and managed as "priority areas". » Declaration of controlled emitters (Part 3 of Act) and controlled fuels (Part 4 of Act) with relevant emission standards. » The Act provides that an air quality officer may require any person to submit an atmospheric impact report if there is reasonable suspicion that the person has failed to comply with the Act. » Dust control regulations promulgated in November 2013 may require the implementation of a dust management plan. » Government Gazette 37054 of 22 November 2013 provides a list of activities which require an Air Emissions License and provides the emission thresholds that need to be complied with.
<p>Conservation of Agricultural Resources Act (Act No 43 of 1983)</p>	<ul style="list-style-type: none"> » Prohibition of the spreading of weeds (S5). » Classification of categories of weeds & invader plants (Regulation 15 of GN R1048) & restrictions in terms of where these species may occur. » Requirement & methods to implement control measures for alien and invasive plant species (Regulation 15E of GN R1048).
<p>National Water Act (Act No 36 of 1998)</p>	<ul style="list-style-type: none"> » Under S21 of the Act, water uses must be licensed unless such water use falls into one of the categories listed in S22 of the Act or falls under the general authorisation. » In terms of S19, the project proponent must ensure that reasonable measures are taken throughout the life cycle of

Legislation	Applicable Sections
	<p>the project to prevent and remedy the effects of pollution to water resources from occurring, continuing, or recurring.</p> <ul style="list-style-type: none"> » National Government is the public trustee of the Nation's water resources (S3) » Entitlement to use water (S4) – entitles a person to use water in or from a water resource for purposes such as reasonable domestic use, domestic gardening, animal watering, fire-fighting and recreational use, as set out in Schedule 1 » Duty of Care to prevent and remedy the effects of pollution to water resources (S19) » Procedures to be followed in the event of an emergency incident which may impact on a water resource (S20) » Definition of water use (S21) » Requirements for registration of water use (S26 and S34) » Definition of offences in terms of the Act (S151) » GNR 509 of 2016 provides the requirements for General Authorisation relating to impeding or diverting the flow of water in a watercourse (section 21(c)) or altering the bed, banks, course or characteristics of a watercourse (section 21(i)) » GNR 267 of 2017 provides Regulations regarding the Procedural Requirements for Water Use Licence Applications and Appeals' including Section 21(b) for the storage of water in dams or reservoirs, section 21(f) for the discharge of water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit, Section 21(g) for the disposal of waste in a manner which may detrimentally impact of a water resource and Section 21 (h) for the disposal in any manner of water which contains waste from or which has been heated in any industrial or power generation process.
National Environmental Management: Waste Act (Act No 59 of 2008)	<ul style="list-style-type: none"> » The Minister may by notice in the Gazette publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. » In terms of the regulations published in terms of this Act (GN 921 of November 2013), a Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities in support of an application for Waste Management Licenses. » The storage of waste must be undertaken in terms of the relevant norms and standards.
National Forests Act (Act No 84 of 1998)	<ul style="list-style-type: none"> » According to this Act, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. The prohibitions provide that 'no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister'. » GN 908 of 21 November 2014 provides a list of protected tree species.
The Hazardous Substances Act No. 15 of 1973	<ul style="list-style-type: none"> » This Act was promulgated to provide for the control of substances which may cause injury or ill-health to, or death of, humans by reason of their toxic, corrosive, irritant, strongly sensitising or flammable nature. » The Hazardous Substances Act also provides for matters concerning the division of such substances or products into

Legislation	Applicable Sections
Major Hazardous Installation Regulations	<p>groups in relation to the degree of danger, the prohibition and control of the importation, manufacture, sale, use, operation, application and disposal of such substances and products.</p> <p>» The regulations make the employer responsible for the health and safety of his employees as well as the public in or in the vicinity of the workspace where the installation has taken place.</p>
Provincial Legislation	
KwaZulu-Natal Systematic Conservation Plan (KZNSCP, 2012)	<p>» The process of conservation planning involves extensive mapping of vegetation types, transformation, species data, ecological processes and threats.</p>
King Cetshwayo District Municipality: Biodiversity Sector Plan (2014)	<p>» The IDP identifies key issues which have to be focused on by the municipality and the public.</p> <p>» Development strategies need to be established for addressing the key issues</p>
uMhlathuze Local Municipality Land Use Scheme Regulations (2019)	<p>» A "Scheme" is a statutory document which divides the municipality into zones on order to guide and manage development.</p> <p>» The objectives of a scheme can be summarized as follows:</p> <ul style="list-style-type: none"> * To enable the comprehensive management of all erven (both private and public sector) within the Municipality; * To promote and implement the applicable planning and development legislation and principles as adopted by the relevant National, Provincial and Municipal spheres of government from time to time; * To promote and implement the Vision and Strategies of the Integrated Development Plan in the realization of quality environments * To manage land-use rights, to provide facilitation over use rights, to manage urban growth and development and to manage conservation of the natural environment in order to: <p>» Achieve co-ordinated and harmonious development in a way that will efficiently promote public safety, health, order, convenience and to protect the general welfare of the inhabitants of the Municipality;</p> <p>» Promote integrated and sustainable development through-out the area of jurisdiction;</p> <p>» Promote sustainable environmental management, conserve and protect environmentally sensitive areas.</p> <p>» Promote all forms of development and growth through sound planning principles that would support a mix of land-uses managed in an appropriate manner</p>
Guideline Documents / Standards / Plans	
South African National Standard (SANS) 10328, Methods for environmental noise impact assessments in terms of NEMA No. 107 of 1998	<p>» Prediction of impact that noise emanating from a proposed development would have on occupants of surrounding land by determining the rating level.</p> <p>» Noise limits are based on the acceptable rating levels of ambient noise contained in SANS 10103.</p>
South African Bureau of Standards (SABS)	<p>» Four South African Bureau of Standards (SABS) scientific standards are considered relevant to noise from a Power</p>

Legislation	Applicable Sections
	<p>Station. They are:</p> <ul style="list-style-type: none"> * SANS 10103:2008. 'The measurement and rating of environmental noise with respect to annoyance and to speech communication'. * SANS 10210:2004. 'Calculating and predicting road traffic noise'. * SANS 10328:2008. 'Methods for environmental noise impact assessments'. * SANS 10357:2004. 'The calculation of sound propagation by the Concave method'. <p>» The relevant standards use the equivalent continuous rating level as a basis for determining what is acceptable. The levels may take single event noise into account, but single event noise by itself does not determine whether noise levels are acceptable for land use purposes. The recommendations that the standards make are likely to inform decisions by authorities, but non-compliance with the standards will not necessarily render an activity unlawful per se.</p>
<p>SANS 69 - South African National Standard - Framework for setting & implementing national ambient air quality standards, SANS 1929 - South African National Standard - Ambient Air Quality - Limits for common pollutants.</p>	<p>» The South African Bureau of Standards (SABS), through a technical committee, developed ambient air quality limits based on international best practice for particulate matter less than 10 µm in aerodynamic diameter (PM10), dust fallout, sulphur dioxide, nitrogen dioxide, ozone, carbon monoxide, lead and benzene.</p> <p>» These ambient limits were derived from international best practice and what was regarded to be achievable in the South African context, taking both the natural environment and socio-economic status into account. The SANS limits informed the newly promulgated SA Standards</p>
<p>IFC Air Emissions and Ambient Air Quality, Environmental, Health and Safety Guidelines. Washington DC, International Finance Corporation</p>	<p>» The World Bank group through the IFC has emission guidelines for power plants. These guidelines are applicable to new facilities. Please note that the emission values are normalised to 6% excess oxygen, while the South African standards are normalised to 10% excess oxygen.</p>
<p>IFC EHS Guideline on Thermal Power Plants</p>	<p>» The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). When one or more members of the World Bank Group are involved in a project, these EHS Guidelines are applied as required by their respective policies and standards.</p> <p>» The guideline includes information relevant to combustion, gasification or pyrolysis processes fueled by gaseous, liquid and solid fossil fuels and biomass and designed to deliver electrical or mechanical power, steam, heat, or any combination of these, regardless of the fuel type (except for solid waste which is covered under a separate Guideline for Waste Management Facilities), with a total rated heat input capacity equal to or above 50 Megawatt thermal input (MWth). It applies to boilers, reciprocating engines, and combustion turbines in new and existing facilities.</p> <p>» As described in the introduction to the General EHS Guidelines, the general approach to the management of EHS</p>

Legislation	Applicable Sections
International Finance Corporation (IFC) Performance Standards and Environmental and Social Sustainability (January 2012)	<p>issues in industrial development activities, including power plants, should consider potential impacts as early as possible in the project cycle, including the incorporation of EHS considerations into the site selection and plant design processes in order to maximize the range of options available to prevent and control potential negative impacts.</p> <ul style="list-style-type: none"> » The International Finance Corporation's (IFC) Performance Standards (PSs) on Environmental and Social Sustainability were developed by the IFC and were last updated on 1 January 2012. » Performance Standard 1 requires that a process of environmental and social assessment be conducted, and an ESMS appropriate to the nature and scale of the project, and commensurate with the level of its environmental and social risks and impacts, be established and maintained. The above-mentioned standard is the overarching standard to which all the other standards relate. Performance Standard 2 through to 8 establish specific requirements to avoid, reduce, mitigate or compensate for impacts on people and the environment, and to improve conditions where appropriate. While all relevant social and environmental risks and potential impacts should be considered as part of the assessment, the standards 2 and 8 describe potential social and environmental impacts that require particular attention specifically within emerging markets. Where social or environmental impacts are anticipated, the developer is required to manage them through its ESMS consistent with Performance Standard 1. » Given the nature of the 450MW RMPP and associated infrastructure, it is anticipated (at this stage of the process) that Performance Standards 1, 2, 3, 4, 6, and 8 may be applicable to the project.
The Equator Principles (June 2003)	<ul style="list-style-type: none"> » The Equator Principles (EPs) are a voluntary set of standards for determining, assessing and managing social and environmental risk in project financing. Equator Principles Financial Institutions (EPFIs) commit to not providing loans to projects where the borrower will not or is unable to comply with their respective social and environmental policies and procedures that implement the EPs. » The Equator Principles were developed by private sector banks. The banks choose to model the Equator Principles on the environmental standards of the World Bank and the social policies of the International Finance Corporation (IFC).

2.7. Conclusion

The findings of the review of the relevant policies, programmes and documents pertaining to the energy sector indicate that the 450MW RMPP is supported at a national, provincial, and local level, and that the development will contribute towards the various targets and policy aims.

CHAPTER 3: DESCRIPTION OF GAS TO POWER TECHNOLOGY

This chapter provides an overview of the different types of gas to power technology, the varying components associated with each technology and differences between the technology. The technology alternatives for the 450MW RMPP will further detailed in Chapter 4 of this Scoping report.

3.1. Gas to Power Technology

Emergency and grid balancing power plants are designed and developed as power balance systems to manage electricity demand during peak periods to stabilize the grid, through the supply of capacity, energy and ancillary services. The characteristics of emergency and grid balancing power plants are as follows:

- » Operates in multiple start/stops per day;
- » Be synchronised to the grid in as little as 5mins and enable 100% of the power plants output to be available on the grid with 15mins of start-up;
- » Be very flexible allowing for rapid ramp rate and turn down of output;
- » Provide instantaneous reserves within seconds of being called on to do so;
- » Provide regulating reserves to rapidly raise or lower output within seconds when called on to do so;
- » The system sizes are small with medium capacity factors of between 10 to 40%, but are capable of operating as base load electricity supply for short periods of time;
- » Low heat rate to improve efficiency typically ~40%;
- » Multiple units are installed together for improved turn down rates and increased operational flexibility;
- » The power plant must be on demand and dispatchable either remotely or by an inhouse operator or by the system operator;
- » Capable of operating in multiple regimes: Peaking, Mid-Merit and Baseload;
- » Good load following capability to balance wind and solar and the ancillary service market;
- » Enables fuel flexibility as most systems can operate on diesel, LPG, natural gas or Naphtha;

The proposed 450MW RMPP will be operated in a simple cycle system, with no secondary steam driven turbine component, comprising of **either gas turbine or gas engine** technology that meet the criteria above for emergency and grid balancing power plants.

3.1.1. Gas Engine Technology

Gas engines are similar to automotive engines used to propel vehicles. The gas engines in a power plant configuration are used to turn a generator that creates electricity. Through the use of a transformer the electricity generated is shaped and sized for distribution into the electricity grid.

Gas engines for electricity generation offers the following benefits:

- » High electrical efficiency;
- » Low capacity output per engine block so this technology is very effective at responding to changes in the required load and capacity factor;
- » Dual fuel system capable of using LPG and Natural Gas; and
- » It's a simple reciprocating engine, based on common rail principle very similar to diesel engines.

Simple reciprocating engines are based on the common rail principle. The cylinders are constructed inline and mechanical power is transferred via a drive shaft to the electricity generator. Multiple engine blocks are combined and grouped together to form the entire power plant as shown in figure below.

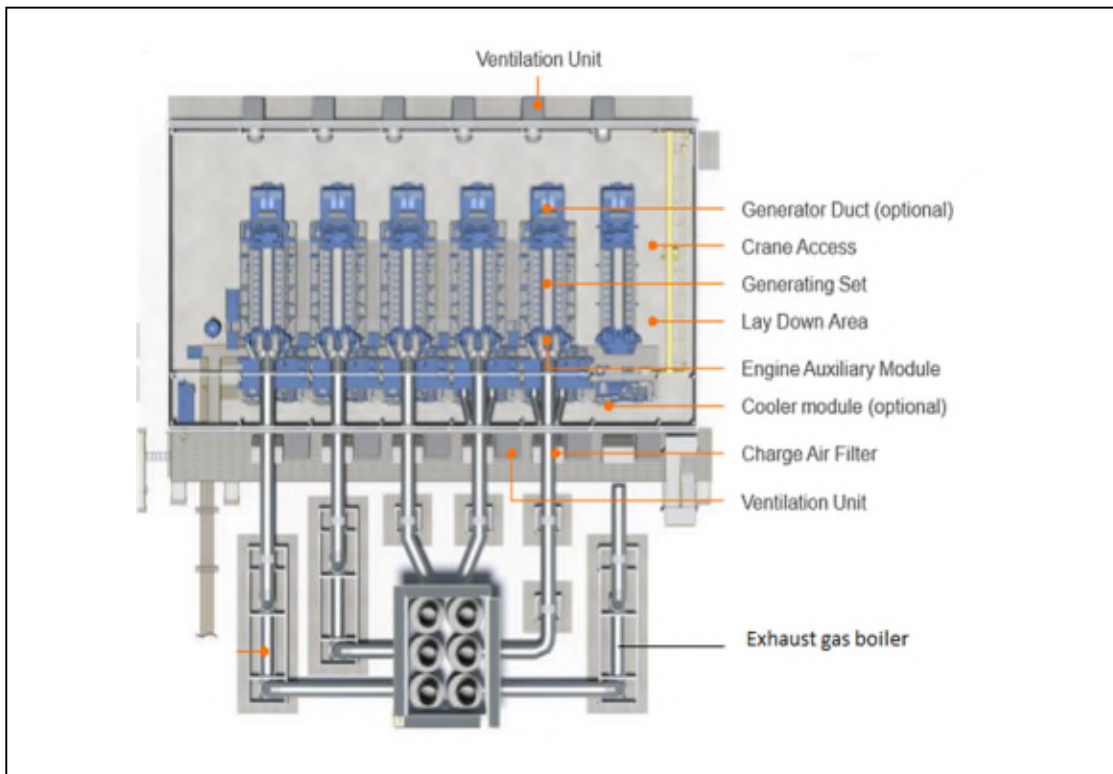


Figure 3.1: Gas Engine configuration

The general process followed by the operation of a gas engine power plant, which increases energy efficiency of a power resource and electrical output, is described below:

- 1) The gas engine power plant will be equipped with a number of reciprocating internal combustion engines comprising 450MW of output capacity, as the prime mover;
- 2) If black start capabilities are required, diesel fuel will be used in the black start diesel generator. This diesel generator will be started first to provide start-up power the first gas engine;
- 3) The engine is a spark-ignited lean-burn gas engine. The engine is connected to a synchronous, brushless, salient pole three-phase electricity generator. The engine and generator form a generating set;
- 4) The engine is cooled by a closed-circuit cooling water radiator system, divided into a high temperature (HT) circuit and a low temperature (LT) circuit. The cooling water is cooled with roof-mounted (on top of the engine hall), horizontal-type fin fan radiators with electrically driven induced draft fans;
- 5) The engines are equipped with a two-stage charge air cooling system;
- 6) The gas engine power plant is designed to use LPG (comprising of between 80% and 100% Propane) or Natural gas as its fuel source.

3.1.2. Gas Turbine Technology

Gas turbines used in electricity generation are typically small compact turbines, similar to the ones used in the aircraft industry, but can vary greatly in size for different applications. The gas turbines are mounted inline with a generator and in larger systems can be coupled to steam turbines to maximise the energy extraction from the hot gas exhaust plume.

The benefit of a gas turbine power plant is that it can be fitted with several auxiliary systems to improve performance, reduce emissions and prolong maintenance. A dry low emission combustion chamber also supports dual fuel sources such as LPG, LNG or Naphtha. The following auxiliary systems can be fitted to the 450MW RMPP to improve performance and reduce emissions:

- » Leading edge guide vanes to improve air intake flow rate;
- » Evaporative coolers to lower the ambient temperature of the inlet air, resulting in high combustion efficiency;
- » Water suppression systems to reduce the exhaust gas pollutants;
- » Heat recovery systems to extract heat energy from the exhaust plume to boil water to form steam. This steam is fuel for a steam turbine that is coupled to a generator. This second steam cycle will not be used in the 450MW RMPP as the electricity dispatch regime anticipated is not suited to combined cycle technologies.

The configuration of a typical aero derivative or industrial gas turbine used for power generation can be shown in the figure below:



Figure 3.2. Example of the typical setup of a aero derivative or industrial gas turbine power plant used for electricity generation

The general process followed by the operation of a gas turbine power plant, which increases energy efficiency of a power resource and electrical output, is described below:

- 1) The gas turbine power plant will have air intake structures and major equipment in the required number of sets to generate 450MW of output;
- 2) The turbine air inlet system receives, filters, and directs the ambient air flow into the inlet of the compressor section of the gas turbine;
- 3) The gas turbine compresses the inlet air in the compressor section;
- 4) The air is then mixed with fuel in the combustion chamber;
- 5) The hot gases from the combustion expands over the turbine section and rotates the turbine blades;
- 6) The hot exhaust gas then flows to the exhaust section;
- 7) The gas turbine is coupled to an electricity generator.

The technologies that are being considered for the power plant i.e. gas engines or gas turbines, are the only technologies capable of utilising LPG and/or Natural Gas or Naphtha in utility scale power generation.

Small scale technologies (low kW range) that can convert LPG to electricity such as fuel cell technology cannot be scaled to utility size plants that supports an output capacity more than a few 100 megawatts or meet the system flexibility requirements. Other generation technology using LPG in a LPG fired steam boiler to drive a steam turbine is not a very efficient way of generating power as the steam cycle requires large amounts of cooling in the air cooled condenser and balance of plant systems.

In addition to the introduction of much needed new electricity generation capacity that can be brought onto the grid using gas to power technologies, the technologies proposed for the 450MW RMPP provides an opportunity for the future importation of natural gas into the Richards Bay region as the power plant will provide a base level of natural gas demand that can support the establishment of the LNG import infrastructure. The project will also provide much needed direct investment into the Richards Bay area and will stimulate additional business in and around the power station in support of its operations.

CHAPTER 4: PROJECT DESCRIPTION AND ALTERNATIVES

This chapter provides an overview of the 450MW RMPP project proposed by Phinda Power Producers, The 450MW RMPP components and infrastructure presented in this chapter are indicative at this stage and aimed at enabling the reader to obtain an understanding of the proposed project. These will be further refined in the EIA Phase of the process and confirmed through the final design prior to implementation.

4.1 Legal Requirements as per the EIA Regulations for the undertaking of a Scoping Report, 2014 (as amended)

This chapter of the scoping report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
(g)(i) details of all the alternatives considered;	The details of all alternatives considered for the development of the 450MW RMPP are included in Section 4.3.
(g)(ix) the outcome of the site selection matrix	The outcome of the site selection process undertaken for the identification of the preferred project site is included in Section 4.4
(g)(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such	No project site alternatives are considered for the 450MW RMPP. Technology alternatives considered for the development of the 450MW RMPP are considered within Section 4.7. The motivation behind the exclusion of site alternative have been included in Section 4.4.

4.2 Description of the Proposed Project

The 450MW Emergency Risk Mitigation Power Plant (RMPP) involves the construction of a gas-fired power station which will provide mid-merit power supply⁵ to the electricity grid. The 450MW RMPP is planned to operate on a mid-merit basis at an average annual minimum dispatch rate of ~50% (i.e. operational between 5am and 9:30pm daily and being deployed on average for a minimum 72% over the year during this time period) and has been designed and developed as a power balance system to manage electricity demand during peak periods to stabilise the grid, as well as provide back up support for base load generation in the event of unscheduled maintenance on the coal fired power stations. The power station will have an installed capacity of up to 450MW, to be operated on LPG or naphtha and later converted from utilising LPG to natural gas. The natural gas or naphtha is to be supplied via a pipeline to the RMPP from the supply take-off point at the Richards Bay Harbour with LPG being supplied via truck from the import terminal at the Richards Bay harbour. The use of Naphtha or LPG and the associated infrastructure will be investigated further within the EIA phase and the preferred fuel source presented. The LNG terminal infrastructure and naphtha supply infrastructure at the port and the relevant pipelines do not form part of the scope of this assessment, whereas LPG infrastructure does form part of this report.

⁵ Mid-merit electricity generation capacity refers to the generation of electricity which is adjusted according to the fluctuations in demand in the national grid. Baseload electricity generating capacity refers to the generation of electricity continuously for all hours of the day and night in order to satisfy the minimum demand required in the national grid.

The main infrastructure associated with the facility includes the following:

- » Main Power Island consisting of either gas turbines comprising of air intake, air filter structures and exhaust stack for the generation of electricity through the use of natural gas, naphtha or LPG; or Gas engines comprising of reciprocating internal combustion engines and exhaust stack utilising LPG or natural gas.
- » Generator and Auxiliary transformers.
- » Balance of Plant systems.
- » Dry Cooling systems.
- » Auxiliaries.
- » 132kV interconnecting substation and power lines connecting to the grid transmission infrastructure (The power lines to the grid transmission structure will be applied for under a separate environmental approvals process).
- » LPG fuel pipe routing between the LPG storage site and the power plant site **or** Naphtha import pipeline from the port of Richards Bay to the onsite storage of Naphtha (the Naphtha pipeline will be applied for under a separate environmental approval process).
- » Stormwater management ponds.
- » LPG storage comprising of up to 15 000m³ of storage in total, comprising of a number of either bullets or spheres storage tanks in design **or**;
- » Naphtha storage on the power plant site of up to 90,000m³ in total, comprising of a number of tanks,
- » Once imported LNG is available in Richards Bay, the 450MP RMPP will be converted from utilising LPG / Naphtha to the use of regassified LNG by means of a new dedicated natural gas pipeline which will replace or supplement the LPG / Naphtha supply to the power plant (The approval for the pipeline will be conducted under a separate process);
- » 3 effluent reticulation systems - i.e. 1) sanitary wastewater system; 2) oily water collection system and 3) storm water and rainwater collection system.
- » Diesel generator to provide start-up power to the first gas engine / turbine.

Table 4.1 provides details of the proposed 450MW RMPP, including the main infrastructure and services.

Table 4.1: Details of the 450 MW RMPP located near Richards Bay

Component	Description/ Dimensions
Location of the site	<p>450MW Emergency Risk Mitigation Power Plant (RMPP) & Naphtha Storage:</p> <ul style="list-style-type: none"> » Remainder of Erf 1854 and » Portion 2 of Erf 1854. <p>Liquid petroleum gas (LPG) storage:</p> <ul style="list-style-type: none"> » Remainder of Erf 1795 and » Portion 1 of Erf 1795,
Landowner	All of the affected properties of the 450MW RMPP and LPG site are privately owned by associated group companies of the project proponent.
Municipal Jurisdiction	King Cetshwayo District Municipality and the City of uMhlatuze Local Municipality
Electricity Generating capacity	450MW

Component	Description/ Dimensions
Proposed technology	<ul style="list-style-type: none"> » Gas Engine technology or; » Simple Cycle Gas Turbine technology
Extent of preferred project sites	<ul style="list-style-type: none"> » 450MW RMPP: 49ha » LPG Storage: 3,2 ha
Extent of the 450MW RMPP and fuel Storage development footprint	<ul style="list-style-type: none"> » Up to 8,29ha (considering the Power Plant, naphtha storage and 132kV substation) » Up to 3,2 ha LPG storage area)
Stack dimensions (Site elevation: 25 - 33 m above mean sea)	<ul style="list-style-type: none"> » Gas Engine or Turbine Exhaust Stack Height: 30m above ground level
Fuel Sources	<p>Either LPG or Naphtha will be the initial fuel source, before converting to LNG once available in Richards Bay</p> <ul style="list-style-type: none"> » LPG: LPG fuel supply to the power plant will be delivered by LPG road tankers to the power plant. The LPG will be offloaded into a dedicated LPG storage facility at the power plant site comprising of 15,000m³ of storage in total, comprising of a number of either bullets or spheres storage tanks in design. The LPG road tanker discharge operations will be undertaken via 8 LPG discharge gantries within the LPG terminal site. LPG will then be pumped via an underground LPG pipeline from the LPG terminal to the power plant site, where it will be vaporised into a gas immediately prior to being fed into the power plant. » Naphtha: A pipeline is proposed to connect from existing liquid bulk berths 208 and 209 within the Port of Richards Bay to the boundary of the 450MW project site where the naphtha will be directed into a number of storage tanks by connecting pipelines. » LNG: Once pipeline natural gas is available in Richards Bay via the importation and regassification of LNG, a dedicated natural gas pipeline will be constructed to connected to the proposed import natural gas pipeline network, which will replace or supplement the LPG / Naphtha supply to the power plant.
Site access	<ul style="list-style-type: none"> » Main access to the project site will be via the existing access points on Kabelring Road and Kraft Link Road. » Main access to the LPG storage terminal site will be via the existing access points along Kraft Link Road.
Grid connection	<ul style="list-style-type: none"> » The 450MW RMPP will be connected to the national grid via two 132kV underground transmission cables that will connect to the existing unutilised 132kV distribution lines located approximately 1,8km to the south of the site, commonly referred to as the Bayside transmission lines. A separate basic assessment process is being undertaken for the 132kV transmission line, hence it has not been assessed within this scoping report.
Associated infrastructure	<ul style="list-style-type: none"> » Internal roads » Internal water, air and gas pipelines » Control and electrical buildings, including a central control room

Component	Description/ Dimensions
	<ul style="list-style-type: none"> » Warehousing and administrative buildings » Firefighting systems » Bulk water storage » Water demineralisation plant » Storage facilities for fuels, gas and chemicals » Emergency back-up generators » Stormwater management ponds » Effluent reticulation systems - i.e. 1) sanitary wastewater system; 2) oily water collection system and 3) storm water and rainwater collection system. » Dry Cooling systems » Balance of plant systems » Generator and Auxiliary transformers » Electricity substation
Services required	<ul style="list-style-type: none"> » Waste disposal - all waste material generated from the development will be collected by a suitable contractor and the waste will be disposed of at a licensed waste disposal site off site. This service will be arranged with the municipality or an independent waste management service provider when required. » Sanitation – during construction, all sewage waste will be collected by a contractor to be disposed of at a licensed waste disposal site. This service will be arranged with the municipality or an independent waste management service provider when required. During operation, the facility will be connected to the municipal sewer system. » Water – Water is to be sourced from either the uMhlatuze Municipality or Mhlatuze Water. The construction phase of the 450MW RMPP will require approximately of 3 292 kilo litres for construction per annum. Water volumes for gas engines is approximately 0.5 million litres per annum and gas turbines is approximately 700 to 980 million litres per annum for emission control depending on the level of dispatch of the power plant from the expected average minimum to average maximum. . » Electricity: the electricity requirements for this facility are to be obtained from the municipality. This service will be arranged with the municipality when required. <p>Services agreements will be entered into. .No agreements for the above services have been obtained as of yet.</p>
Raw/Process-Water Storage Reservoir	<ul style="list-style-type: none"> » Water storage facilities for process water will either be provided by Mhlatuze Water or will be located on site, or a combination of both » Water for fire-fighting purposes will be located on site

4.3. Project Alternatives

In accordance with the requirements of Appendix 2 of the 2014 Environmental Impact Assessment (EIA) Regulations (GNR 326), reasonable and feasible alternatives including site and technology alternatives, as well as the “do-nothing” alternative should be considered. Alternatives are required to be assessed in terms of social, biophysical, economic and technical factors.

As per the definition of alternatives as per the Environmental Impact Assessment (EIA) Regulations (GNR 326); “alternatives”, in relation to a proposed activity, means different means of meeting the general purpose

and requirements of the activity, which may include alternatives to the—

- (a) property on which or location where the activity is proposed to be undertaken;
 - (b) type of activity to be undertaken;
 - (c) design or layout of the activity;
 - (d) technology to be used in the activity; or
 - (e) operational aspects of the activity;
- and includes the option of not implementing the activity;

Most guidelines use terms such as “reasonable”, “practicable”, “feasible” or “viable” to define the range of alternatives that should be considered. Essentially there are two types of alternatives:

- » **Incrementally different** (modifications) alternatives to the project.
- » **Fundamentally (totally) different** alternatives to the project.

4.3.1. Consideration of Fundamentally Different Alternatives

Fundamentally different alternatives are usually assessed at a strategic level, and project-specific EIAs are therefore limited in scope and ability to address fundamentally different alternatives. Electricity generating alternatives have been addressed as part of the IRP 2010 – 2030. In this regard, the need for a diversification of the technology mix for power generation has been considered. The fundamental energy generation alternatives were assessed and considered within the development of the IRP and the need for the development of both gas generated energy and highly flexible generation capacity has been defined. Therefore, fundamental alternatives to the proposed project, including that of alternative energy development options, were not considered within the EIA report.

4.3.2. Consideration of Incrementally Different Alternatives

Incrementally different alternatives relate specifically to the project under investigation. “Alternatives”, in relation to a proposed activity, means different ways of meeting the general purposes and requirements of the activity, which may include alternatives to:

- » The property on which, or location where the activity is proposed to be undertaken.
- » The technology to be used in the activity.
- » The design or layout of the activity.

In addition, the option of not implementing the activity (i.e. the “do-nothing” alternative) must also be considered.

These alternatives are discussed below.

4.4. Site Alternatives

Richards Bay has been identified by Phinda Power Producers (Pty) Ltd as the preferred area for the development of the 450MW RMPP due to:

- » it being a location with existing large heavy industries and is specifically targeting the attracting of additional heavy industries through the Richards Bay Industrial Development Zone (RBIDZ), which attraction of new industries has been hampered by the unavailability of power to support these planned developments;
- » the location of the Port of Richards Bay in close proximity to the industrial areas for the importation of fuel to supply the 450MW RMPP, including the existing LPG import facilities and the future planned LNG import facilities;
- » its location in relation to Mozambique, the current exclusive natural gas supplied to South Africa, and the potential to connect Richards Bay to the gas reserves in the north of Mozambique via a new natural gas pipeline which is in accordance with Governments long term energy planning;
- » the existence of a large-scale electricity distribution and transmission network connecting to Richards Bay with a capacity of ~3,5000MW to facilitate the evacuation of electricity production with the least investment in additional;
- » the close proximity (<2km) of the project site to the existing unutilised 132kV that previously provided electricity to the Bayside aluminium smelter which has been closed; and
- » the close proximity of the project site to Mhlathuze Water's water processing plant (<3km) to facilitate bulk water supply.

Phinda Power Producers (Pty) Ltd identified their privately owned properties located in the greater Richards Bay area for the development of the proposed 450MW RMPP, these properties being one of the last industrial zoned undeveloped large land parcels in Richards Bay outside of the RBIDZ suitable for the development of a power plant. Following consideration of various technical aspects, the sites for the 450MW RMPP, LPG Storage and related infrastructure was deemed suitable for the project. No alternative sites have been identified.

This site is preferred over other sites as the identified project site is located approximately 12km from the existing LPG import terminal in the Port of Richards Bay, which is withing 500m of the preferred location for the future LNG import terminal. Accessibility to the site is possible via existing access points along Kabelring Road and Kraff Link Road. Regional roads also provide access which includes the R34 and the R619 which is linked to the N2. Smaller secondary roads within the area provide direct access to the sites which are linked either to the N2 or the regional roads, i.e. R34 and R619.

4.5. Design and Layout Alternatives

THE 450MW RMPP and LPG storage site will have a development footprint of approximately 8,6ha and 2.8 ha respectively, to be located within the project sites of approximately 49ha for the power plant site and 3,9 ha for the LPG storage site. Specialist field surveys and assessments were undertaken as part of the Scoping process in order to provide the proponent with site specific information regarding the study area and the development area considered for the development (refer to **Appendices D-N**). The site selection

of the 450MW RMPP facility and associated infrastructure was based on the close proximity of the site to the Port of Richards Bay for the supply of LPG and Naphtha in the immediate term and regassified LNG by pipeline in the future, the availability of a site located directly adjacent to the proposed power plant site that is also owned by the project proponent which can accommodate LPG storage, and the ease of access to the grid connection infrastructure. The proposed power plant and associated infrastructure is directly suited to the land use of the Alton Industrial area and neighbouring Richards Bay IDZ.

As a result, the preferred development area for the 450MW RMPP (8,6 ha) and LPG Storage (2.8 ha) within the affected properties (i.e. 52,9 in total extent) is considered as the most feasible and appropriate location for the 450MW RMPP and LPG Storage facility, based on the following considerations:

- i) Phinda Power Producers (Pty) Ltd, the proponent to this application for environmental authorisation and is an affiliate of the respective property owning companies for the 450MW RMPP and the LPG Storage site; and
- ii) the development area is considered suitable for the development of the 450MW RMPP and associated infrastructure from a technical and land use perspective to ensure the success of the development.

No feasible design or layout alternatives were identified for the proposed project.

4.6. Fuel Alternatives

Gas to power technology as proposed for this project is ideally placed, and is able to operate using various fuel sources, depending on availability. The 450MW RMPP is proposed to operate using Liquefied Petroleum Gas, comprising principally of propane (LPG) or Naphtha initially, with conversion to regassified imported Liquefied Natural Gas (LNG) once piped supply is available in Richards Bay. Diesel fuel will only be used in the black start diesel generator. This diesel generator will be started first to provide start-up power to the first gas engine/turbine.

4.6.1. Liquefied Petroleum Gas (LPG)

LPG (Liquefied Petroleum Gas, comprising principally of propane) is the term applied to those hydrocarbons which are vapours at room temperature and can be liquefied by moderate compressing. When LPG is liquefied, its volume decreases considerably so that it requires much less storage space. LPG is composed of a mixture of mainly propane and butane (approximate ratio 70:30 by mass, but can be up to 100% propane) but may contain some propylene and butylene as well as traces of ethane, ethylene, pentane and butadiene. It is colourless and odourless, however commercial LPG is usually stented with a substance called ethyl mercaptan to give it a characteristic odour. (<http://www.afrox.co.za/>)

4.6.2. Naphtha

Naphtha is a liquid petroleum product that boils from about 30°C to approximately 200°C, although there are different grades of naphtha within this extensive boiling range that have different boiling ranges. 'Naphtha' refers to a group of volatile, flammable mixtures of liquid hydrocarbons that are used mainly as solvents, diluents, or raw materials for petrol conversion. It is a lightweight petrochemical feedstock that is separated from crude oil in the fractional distillation process along with kerosene and jet fuel. There are many specific types of naphtha that vary in the amounts and types of hydrocarbons contained in their unique blend. (<https://energyeducation.ca/encyclopedia/Naphtha>).

The least expensive of oil fuels, naphtha is also used the world-over for power generation, either as primary or alternate fuel to natural gas. Naphtha requires special safety considerations for use in gas turbines and diesel/gas engines. It has a high volatility, as is the case of other liquid fuels. The related gas to power technology however has recently improved and more effective protection systems and safety management regulations are in place to accommodate for the use of Naphtha. The advantage of Naphtha is its lower price compared to other oil fuels. In addition, there is no increase in capital cost of power generation machinery as it is the same as applicable to using other oil fuels. (<https://www.dawn.com/news/967202/naphtha-based-power-generation>).

4.6.3. Liquid Natural Gas (LNG)

Natural gas is the cleanest-burning hydrocarbon, producing around half the carbon dioxide (CO₂) and just one tenth of the air pollutants of coal when burnt to generate electricity. If consumption remained at today's levels, there would be enough recoverable gas resources to last around 230 years. (<https://www.shell.co.za/energy-and-innovation/natural-gas.html>). A gas-fired power station takes much less time to start and stop than a coal-fired plant. This flexibility makes natural gas a good partner to renewable energy sources like solar and wind power, which are only available when the sun shines and the wind blows.

Natural gas is cooled to -162° Celsius, turning it into a liquid i.e. Liquefied Natural Gas (LNG) and reducing its volume by a factor of 600, which makes it easy and economical to transport to energy-hungry places around the world. The chemical composition of natural gas is a function of the gas source and type of processing. It is a mixture of methane, ethane, propane and butane with small amounts of heavier hydrocarbons and some impurities, notably nitrogen and complex sulphur compounds and water, carbon dioxide and hydrogen sulphide which may exist in the feed gas but are removed before liquefaction. Methane is by far the major component, usually, though not always, over 85% by volume. LNG is odourless, colourless, non-corrosive, non-flammable, and non-toxic. (<https://www.shell.co.za/energy-and-innovation/natural-gas.html>).

4.7. Gas to Power Technology Alternatives

The 450MW RMPP will be operated as a simple cycle system, with no steam driven turbine component. Two technologies are being proposed – i.e. **reciprocating gas engines** and **gas turbines**.

Reciprocating gas engines are similar to automotive and marine engines used to propel vehicles. The fuel, however, is LPG or LNG. The fuel is kept under pressure according to the demand of the engine and it is supplied to the cylinder mixed with air necessary for combustion. The gas engines in a power plant configuration are used to turn a generator that creates electricity. Through the use of a transformer, the electricity generated is shaped and sized to distribute into the electricity grid.

The principle of operation of a reciprocating gas engine during which chemical energy is converted into mechanical energy is illustrated in the figure below.

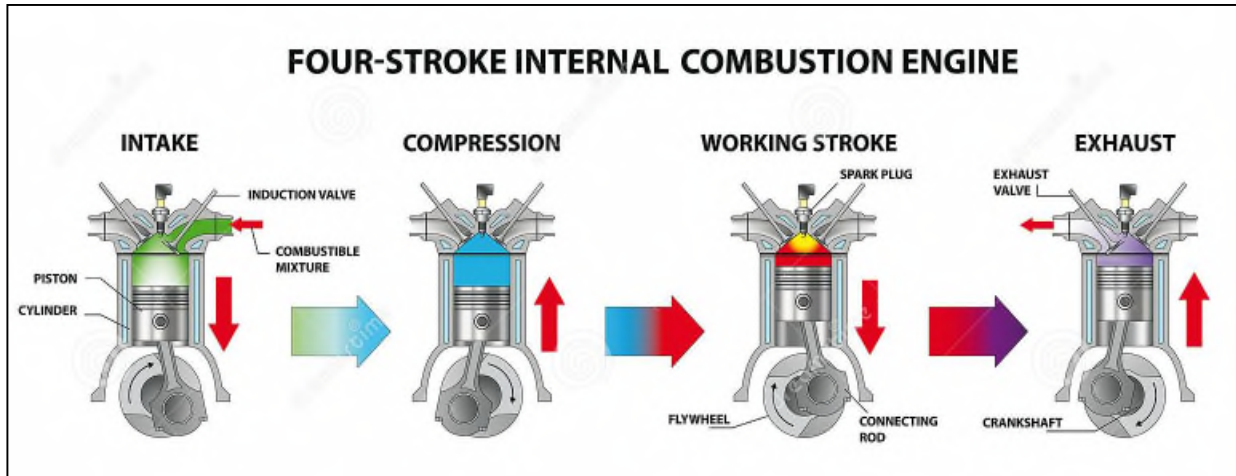


Figure 4.4: Illustration of the operation of reciprocating gas engine

The gas engine power plant proposed for the 450MW RMPP will be equipped with between 24 and 56 reciprocating internal combustion engines as the prime mover depending on the final choice of engine size.

Gas turbines used in electricity generation are typically small compact turbines, similar to the ones used in the aircraft industry or for industrial applications. The gas turbine compresses air and mixes it with fuel which is combusted to produce high temperature combustion gases. The high temperature combustion gases pass through a gas turbine resulting in the rotation of the turbine blades. The rotational movement of the turbine blades at a high speed drives a generator which converts a portion of the energy produced by the rotational blades into electricity. The principles of operation of the gas turbine power plant is illustrated in the figure below. The blue shading indicates the cold air section and red section illustrates the exhaust path.

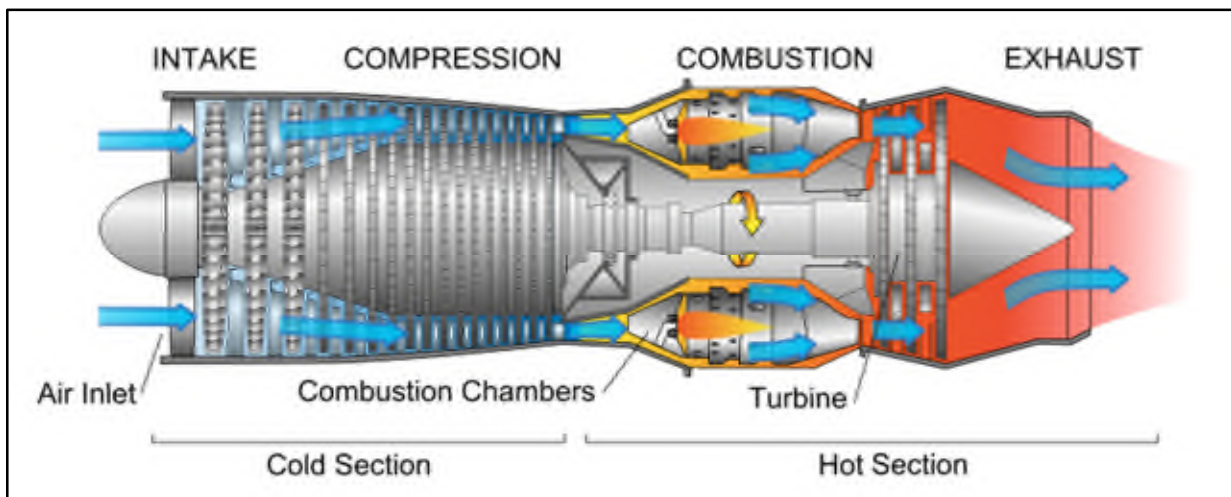


Figure 4.5: Typical configuration of the major components in the gas turbine engine

The gas turbine power plant proposed for the 450MW RMPP will comprise of between 8 and 16 gas turbine sets depending on the final choice of turbine.

4.8. Cooling Technology alternatives

4.8.1. Gas Engine Cooling Technology

The engines will be cooled with remote-mounted, horizontal-type radiators that are electrically driven induced draft fans that will be installed on top of the engine hall roof. The induced draft radiator fan is coupled directly to a vertically mounted electrical motor on top of the radiator. A common VFD (variable frequency drive) regulates the fan speed and thereby the capacity of the radiators for each engine. This is closed circuit cooling process with minimal water consumption. These radiators will be installed on top of the engine hall roof.

4.8.2. Gas Turbine Cooling Technology

All cooling is done with air cooled system where ambient air is drawn over finned tubes containing the medium (oils and water) that must be cooled. The air is forced over the tubes via fans. To minimize water usage the simple cycle generator and all auxiliary equipment including the oil coolers, the gas compressor coolers, and other balance of plant auxiliary equipment requiring cooling would utilize closed loop air-cooled heat exchangers.

The preferred cooling technology for the 450MW RMPP will be dependent on the technology alternative (gas engine or gas turbines) selected for the development.

4.9. The 'Do-Nothing' Alternative

The 'do-nothing' alternative is the option of not constructing the proposed 450MW RMPP on the project site within the Alton Industrial area. This alternative will be further assessed within the EIA phase of the process as required in terms of the EIA Regulations.

4.10. Life-cycle Phases of the 450MW Emergency Risk Mitigation Power Plant (RMPP)

4.10.1. Construction Phase

Construction of the 450MW RMPP is expected to take up to 24 months to construct depending on the choice of technology and the lead time for equipment. The construction activities involve the following:

- » Prior to initiating construction, a number of surveys will be required including, but not limited to, geotechnical survey, site survey and confirmation of the power station footprint and location of exhaust stacks key components.
- » Site preparation activities will include clearance of vegetation and excavations for foundations and internal roads. These activities will require the stripping of topsoil, which will need to be stockpiled, backfilled and/or spread on site.
- » Thereafter civil works will take place which involves concrete works for structures such as foundation, the production unit (which houses the engines/turbines, generator, engines and so forth), stacks, cooling towers (if applicable), substation and associated infrastructure.
- » Civil works for water demineralisation processing plant
- » Mechanical and electrical work will then follow.

- » Ancillary infrastructure such as guard house, admin building, workshops and a warehouse will be established.
- » Storage facilities for LPG / Naphtha and diesel for the black start generator
- » Water storage for both treated water from the bulk water supplier and demineralised water.
- » As construction is completed in an area, and as all construction equipment is removed from the site, the site will be rehabilitated where practical and reasonable.

Employment opportunities to local community members will be available during the construction phase of the project. Approximately 300 temporary positions will be available over the construction phase and approximately 40 employment opportunities will be for permanent positions which will transition into the operation phase of the development. Employment opportunities will include highly skilled, skilled and semi-skilled positions, however, highly skilled positions will be limited. Employees will not reside on the project site and will be accommodated in the Richards Bay area.

4.10.2. Operation Phase

Prior to the operation of the power station, testing and trials will need to be undertaken. The proposed facility will create approximately 40 permanent employment positions (dependent on final generation technology chosen) that will be retained for the 20 year life of the project. The permanent employment positions will include highly skilled, skilled and semi-skilled positions.

In order to operate a power plant of this nature, resources are required (input), and processes and outputs occur from the electricity generation process. For combustion, fuel (LPG / Naphtha as the initial fuel source and natural gas when available) and air will be required. Water is required in the power generation process –for the gas engine technology option, approximately 0.5 million litres per annum and gas turbines are approximately 700 to 980 million litres per annum for emission control depending on the level of dispatch of the power plant from the expected average minimum to average maximum. The output of the process is electricity. The 450MW RMPP is planned to operate on a mid-merit basis at an average annual dispatch rate of a minimum of ~35% (i.e. operational between 5am and 9:30pm daily and being deployed on average for 50% over the year during this time period), and a maximum of ~70%.

It is anticipated that there will be full time security, maintenance and control room staff required at the site.

4.10.3. Decommissioning Phase

The lifespan of the proposed 450MW RMPP will be at least 20 years from date of commissioning. Equipment associated with this facility would only be decommissioned once it has reached the end of its economic life or if it is no longer required. Upgrade of the RMPP technology could be possible after the initial 20 year operational life should an extension of operational life be required as the gas engines and turbines are common to have longer operational lives than 20 years. Should the 450MW RMPP be decommissioned, the fuel supply infrastructure would similarly need to be decommissioned (LPG / Naphtha for the initial fuel supply, and natural gas should this switch have taken place during the 20 year operational life).

It is most likely that decommissioning activities of the infrastructure of the facility discussed in this EIA process would comprise the disassembly and disposal of the infrastructure. Decommissioning activities will

involve disassembly of the production units and ancillary infrastructure, demolishing of buildings, fuel storage tanks and pipelines, removal of waste from the site and rehabilitation to the desired end-use.

Future use of the site after decommissioning of the 450MW RMPP could possibly form part of another energy generating project of an alternative industry that would be able to utilise some of the existing infrastructure associated with the RMPP. This would however be dependent on the development plans of the area at the time.

CHAPTER 5: PROJECT NEED AND DESIRABILITY

Appendix 2 of the EIA Regulations, 2014 (as amended) requires the inclusion of 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. This Chapter provides an overview of the anticipated suitability of the 450MW RMPP being developed at the preferred location from an international, national, regional, and site-specific perspective. It also provides an overview of the need and desirability of the project specifically.

5.1 Legal Requirements as per the EIA Regulations for the undertaking of a Scoping Report, 2014 (as amended)

This chapter of the scoping report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
(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 development of the proposed 450MW RMPP is included in Section 5.2.

5.2 Need and Desirability for the Proposed Gas to Power Station

Appendix 2 of the 2014 EIA Regulations requires that a Scoping Report include a motivation for the need and desirability of a proposed development including the need and desirability of the activity in the context of the preferred location. The need and desirability of a development needs to consider whether it is the right time and right place for locating the type of land-use/activity being proposed. Need and desirability is therefore equated to the wise use of land, and should be able to answer the question of what the most sustainable use of land is.

This section of the report provides an overview of the anticipated suitability of the 450MW RMPP being developed at the preferred project location from a national, regional, and site-specific perspective. It provides an overview of the need and desirability, and perceived benefits of the project specifically. Potential impacts associated with the project which have been identified to date during the Scoping Phase are described separately in **Chapter 8** of this Scoping Report.

5.2.1. Need and Desirability from a National Perspective

The 450MW RMPP is proposed in response to a national government initiative, namely the requirement for the diversification of power generation technology within the IRP 2019 (as detailed within Chapter 2), and specifically the recently announced Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP). As a result the need and desirability of the project from a national perspective can largely be assimilated from the project's alignment with national government policies, plans and programmes which have relevance to energy planning and production (as discussed in detail in **Chapter 2**).

The promulgated IRP 2010–2030 identifies the preferred generation technologies required to meet expected demand growth up to 2030. It incorporates government objectives such as affordable electricity, reduced greenhouse gas (GHG) emissions, reduced water consumption, diversified electricity generation sources, localisation and regional development. In terms of the technology mix, 3000MW is allocated to gas to power technology up until 2030. The need for new gas to power generation has therefore been identified and assessed by government at a national scale considering the national energy requirements as well as international commitments in terms of addressing climate change issues.

The updated IRP 2019 further reconfirmed the allocation of 3000MW of gas to power technology up until 2030 as contained in IRP 2010 - 2030. The IRP 2019 further identified that there is short term generation capacity shortfall approximately 2000MW, and concludes as follows in section 5.3.1 entitled "Immediate Term Security Supply":

"In the short-term supply and demand side interventions will have to be deployed to minimise the risk of load shedding and/or extensive usage of diesel peaking plants. The short-term gap in this regard is estimated to be about 2 000MW. A medium-term power purchase programme (MTPPP) similar to that adopted following the IRP 2010 must be considered with the goal of avoiding extensive diesel usage and load shedding."

Following the publication of the IRP 2019 the Minister of Mineral Resources and Energy ("Minister") issued two section 34 determinations in terms of the Electricity Regulation Act, 2006 (Act No. 4 of 2006) ("the ERA") and the Electricity Regulation on New Generation Capacity (published in GNR. 399 in Government Gazette No. 34262 dated 4 May 2011 ("Regulations")) as follows:

- 1) 2000MW of new generation capacity should be procured from a range of energy source technologies in accordance with the short-term risk mitigation capacity allocated under the heading "Others", for the years 2019 to 2022 in Table 5 of the IRP 2019 by way of independent power producers ("IPP's") targeting connection to the grid by no later than December 2021 ("Risk Mitigation Independent Power Producers Procurement Programme"), which procurement process was initiated by the IPP Office in August 2020 targeting the procurement of 2000MW of dispatchable new generation capacity from a range of technologies; and
- 2) 3000MW of new generation capacity should be procured to be generated from gas, which represents the capacity allocated under heading "Gas and Diesel", for the years 2024 to 2027 in Table 5 of the IRP 2019 by way of IPP's ("Gas IPP Programme"), which procurement process has yet to be initiated by the IPP Office.

The 450MW RMPP is being developed in direct response to the 2000MW RMIPPPP, initially to utilise LPG or Naphtha, before transitioning to natural gas once supply is made available in Richards Bay via imported LNG. This project therefore aims to meet both the short term requirements of providing affordable dispatchable generation capacity, but also meet the long term goal of operating on natural gas. The IRP 2019 recognises that Gas Fired technologies present the most significant potential for developing the gas market in South Africa.

The implementation of the proposed project therefore has the potential to contribute positively towards the identified need at a national level, while simultaneously contributing to job creation and socio-economic development.

5.2.2. Need and Desirability of the project from a Regional Perspective

According to the IEP (2016), if South Africa is to make the transition to a low carbon economy, it will become increasingly important to reduce dependence on fossil fuels and diversify energy resources to include other energy forms. The role that LPG, Naphtha and natural gas can play in the transition to a low carbon future should also be considered. Diversifying the energy mix is necessary in order to improve security of supply, while at the same time minimising environmental impact and facilitating regional development. The dominance of a single energy system, which is highly reliant on fossil fuels, inevitably places an excessive burden on the environment. This eventually weakens it through environmental fatigue, failure (permanent damage) or even catastrophe if the situation continues for too long. This inevitably poses a health and environmental risk.

South Africa's electricity generation mix has historically been dominated by coal. This can be attributed to the fact that South Africa has abundant coal deposits, which are relatively shallow with thick seams, and are therefore easy and comparatively cost effective to mine. In 2016, South Africa had a total generation capacity of 237 006GWh. Approximately 85.7% (equivalent to 203 054GWh) of this figure was generated by coal (predominantly located in Mpumalanga and Limpopo), and only 3.2% (equivalent to 7 584GWh) was generated by natural gas (refer to **Figure 5.2**).

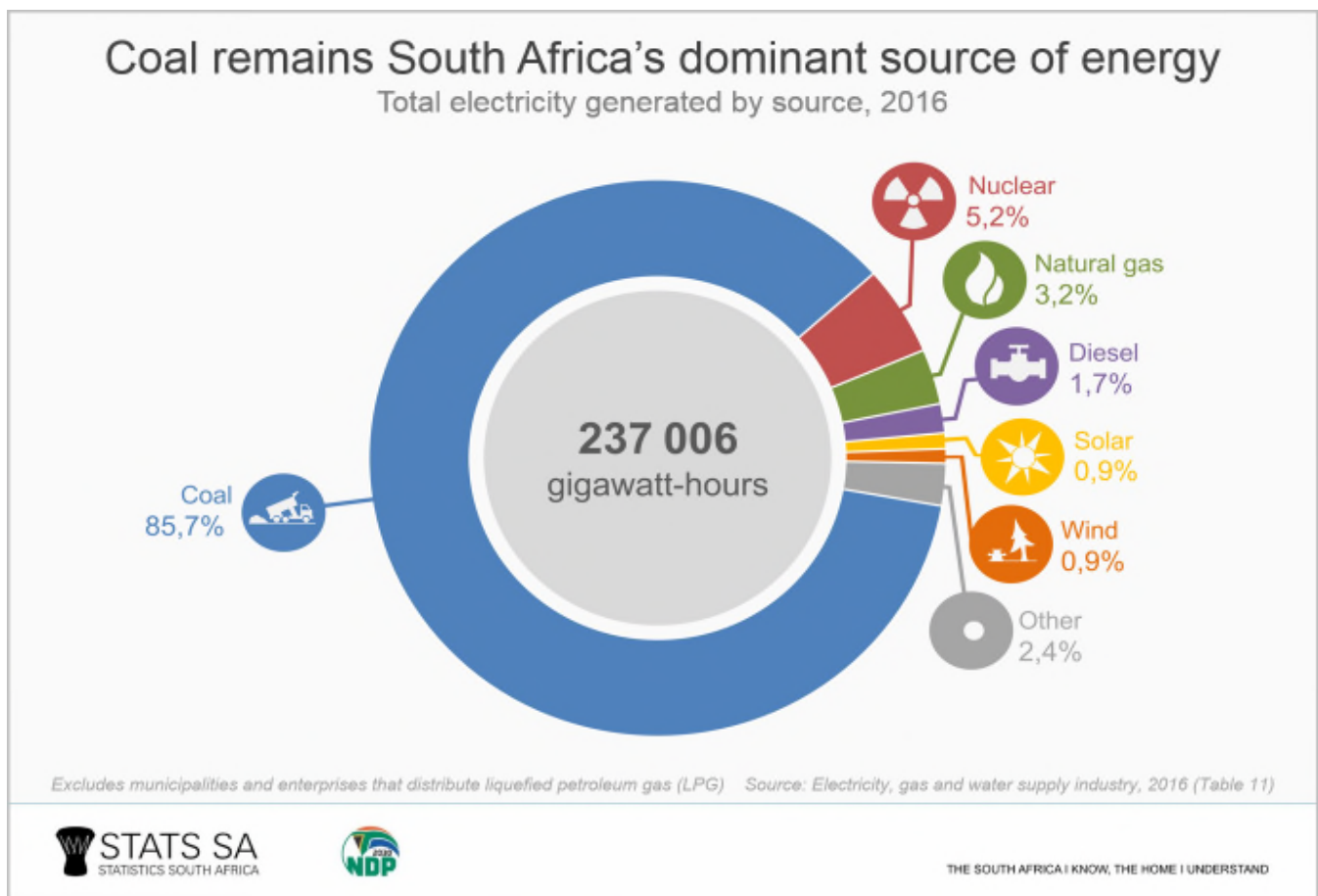


Figure 5.2: Overview of South Africa's electricity generation by source (Source: StatsSA 2016 Electricity, gas and water supply industry).

Whereas the majority of South Africa's electricity generation infrastructure is currently located within Mpumalanga Province due to the location of coal resources within this province, the KwaZulu-Natal Province has been identified as an area where the development of gas to power facilities is a feasible and suitable option for electricity generation.

The Richards Bay area has been ear-marked as a hub for the development of gas to power projects as it is one of the preferred location for the for the import of Natural Gas in liquid form. Richards Bay is considered to be 'energy-hungry' due to the nature of the heavy industries in the vicinity. Richards Bay is the only port with the ability to connect imported natural gas into existing gas pipeline transmission networks to enable the supply of regasified LNG to gas users. There is also the ability to supply LNG to non pipeline connected users utilising the operation of LNG transshipment vessels and land-based LNG distribution solutions.

The 450MW RMPP will initially make use of either LPG or naphthat as its fuel supply in the interim whilst the necessary LNG import infrastructure is established in Richards Bay. The overarching objective for the gas to power facility is to introduce a technology solution the is 100% dispatchable (within 15 minutes) at short notice, able to provide electricity supply into the grid as and when is required to avert electricity disruptions and is flexible and that is capable of operating across a wide variety of dispatch profiles, from base load to peaking and providing ancillary services to aid grid stability.

The 450MW RMPP is aligned with the KwaZulu-Natal's Provincial Growth and Development Strategy (PGDS) to address the triple challenge of poverty, inequality and unemployment by creation of 300 job opportunities during the construction phase and 40 job opportunities during its operational lifespan. The project will contribute to human resource development, and strategic infrastructure for social and economic growth which will contribute towards reducing poverty and inequality in KZN. The development of the 450MW RMPP will also drive economic growth, infrastructural transformation and development and is seen as a favourable area for investment and development in terms of the KwaZulu-Natal Provincial Spatial Economic Development Strategy. The project will also contribute towards economic value, economic support and economic growth in Richards Bay in support of the KwaZulu-Natal Provincial Spatial Development Framework. The project will also support the attraction of industries to the Richards Bay Industrial Development Zone, the development of which has been hampered by the lack of electricity supply to support the establishment of new industrial activities. The use of LPG or Naphtha initially and ultimately of natural gas once available, in the development of the 450MW RMPP will offer reduced emissions when compared to the use of coal or diesel for electricity generation in line with the KwaZulu-Natal Climate Change Response and Sustainable Development Plan.

5.2.3. Receptiveness of the proposed project site to development of the 450MW RMPP

Richards Bay has been identified by Phinda Power Producers (Pty) Ltd as the preferred area for the development of the 450MW RMPP due to:

- » it being a location with existing large heavy industries and is specifically targeting the attracting of additional heavy industries through the Richards Bay Industrial Development Zone (RBIDZ), which attraction of new industries has been hampered by the unavailability of power to support these planned developments;

- » the location of the Port of Richards Bay in close proximity to the industrial areas for the importation of fuel to supply the 450MW RMPP, including the existing LPG import facilities and the future planned LNG import facilities;
 - » its location in relation to Mozambique, the current exclusive natural gas supplied to South Africa, and the potential to connect Richards Bay to the gas reserves in the north of Mozambique via a new natural gas pipeline which is in accordance with Governments long term energy planning;
 - » the existence of a large-scale electricity distribution and transmission network connecting to Richards Bay with a capacity of ~3,500MW to facilitate the evacuation of electricity production with the least investment in additional;
 - » the close proximity (<2km) of the project site to the existing unutilised 132kV that previously provided electricity to the Bayside aluminium smelter which has been closed; and
- the close proximity of the project site to Mhlathuze Water's water processing plant (<3km) to facilitate bulk water supply.

Phinda Power Producers (Pty) Ltd identified their privately owned properties located in the greater Richards Bay area for the development of the proposed 450MW RMPP, these properties being one of the last industrial zoned undeveloped large land parcels in Richards Bay outside of the Richards Bay IDZ suitable for the development of a power plant. Following consideration of various technical aspects, the sites for the 450MW RMPP, LPG Storage and related infrastructure was deemed suitable for the project. The following was considered:

These criteria are further explored in the sections below.

Extent of the site: The 450MW RMPP and its associated infrastructure requires an area of land approximately 8,6ha in extent. The project site is approximately 49ha, which is sufficient to accommodate the proposed project while still allowing for the avoidance of environmental sensitivities.

Site access: Access to the site is obtained via the existing access points on Kabelring Road and Kraft Link Road with access to the LPG storage terminal site via the existing access point along Kraft Link Road.

Current land use considerations: The properties comprising the project site are privately owned by associated group companies of the project proponent. The properties are adjacent to the Richards Bay Industrial Development Zone (IDZ) and are zoned for industrial use. The proposed development is therefore considered to be compatible with the surrounding land use.

Fuel resources:

- » **LPG:** A LPG storage site, which is considered as an interim fuel source for the 450MW RMPP until natural gas is available, located directly south of the project site.
- » **Naphtha:** The project site is also ideally located from the Port of Richards Bay in which piped supply of Naphtha as an alternative fuel to LPG can be easily obtained.
- » **Natural gas:** The location of the site within Richards Bay was selected due to its location in relation to the port of Richards Bay where plans for the importation and regassification of LNG are well advanced, and Mozambique which is home to some of the world's largest undeveloped gas reserves creating the potential for pipeline supplied natural gas.

Environmental sensitivity of the site: The Scoping process conducted for the project to date has identified no fatal flaws which could restrict the development of the proposed project at the preferred site, rendering the site a desirable site. Sensitive areas which have been identified onsite will be excluded from the development footprint (refer to **Chapter 9**).

Integrated Environmental management: It complies with the objective of integrated environmental management and the principles of sustainable development taking into account economic, social and environmental factors.

CHAPTER 6: DESCRIPTION OF THE RECEIVING ENVIRONMENT

This section of the Scoping Report provides a description of the environment that may be affected by the 450MW Emergency Risk Mitigation Power Plant (RMPP). This information is provided in order to assist the reader in understanding the receiving environment within which the proposed development is situated. Features of the biophysical, social and economic environment that could directly or indirectly be affected by, or could affect, the proposed development have been described. This information has been sourced from existing information available for the area (refer to Chapter 11 for list of references), and aims to provide the context within which this EIA process is being conducted.

6.1. Legal Requirements as per the EIA Regulations for the undertaking of a Scoping Report, 2014 (as amended)

This chapter of the scoping report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
(g)(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	<p>The environmental attributes associated with the development of the 450MW RMPP is included as a whole within this chapter. The environmental attributes that are assessed within this chapter includes the following:</p> <ul style="list-style-type: none"> » The regional location of the project site is described in Section 6.2. » The climatic conditions of the Richards Bay area is described in Section 6.3. » Biophysical characteristics of the project site and the surrounding areas are described in Section 6.4. This includes the topography, hydrology, geology, soils, agricultural potential, geo-hydrology and ecology of the project site. » Visual considerations are described in Section 6.5 » The air quality of the area is considered in Section 6.6 » Ambient noise levels of the area are described in Section 6.7. » Heritage resources, including the palaeontology and archaeology of the project site are described in Section 6.8. » Social and economic characteristics of the Richards Bay area are described in Section 6.9

6.2. Regional Setting: Location of the Project Site

The KwaZulu-Natal Province is situated in the north-eastern portion of South Africa. The province shares boundaries with the Mpumalanga, Free State and Eastern Cape Provinces. The proposed development falls under the jurisdiction of the City of uMhlathuze Local Municipality and within the greater King Cetshwayo District Municipality in the KwaZulu-Natal Province. The City of uMhlathuze Local Municipality is situated on the coast of the Indian Ocean in KwaZulu-Natal, South Africa. It is one of five local municipalities that form part of the King Cetshwayo District Municipality. In 2002 Richards Bay and Empangeni, as well as the surrounding rural and tribal areas merged to form the “City of uMhlathuze” covering an area of approximately 800 km² and supporting approximately 334 4459 people.

The proposed development site falls within the Alton Industrial area which is located just outside the Richards Bay IDZ Phase 1F Estate. The 450MW RMPP site is currently vacant and is being used for communal cattle grazing and an informal dwelling is located in the north eastern sections of the site. Mondi Richards Bay is located directly north west of the project site. The LPG storage site is currently fully developed and the existing structures will be demolished in order to construct the LPG storage infrastructure.

The project site has been reserved for the development of the gas to power plant by Phinda Power Producers (Pty) Ltd who is an affiliated group company to Moondream Trading (Pty) Ltd and Baront Investments (Pty) Ltd, the current owners of the power plant and LPG storage sites respectively. The zoning of the proposed 450MW RMPP site is 'general industrial'. The broader area is characterised by intense past land-use modifications from agriculture, mining, tourism, residential, recreational and industrial development activities. The study area is within the Alton Industrial area and is bordered by mixed-use industrial developments as well as open areas and Zone 1F of the Richards Bay IDZ. Railway lines are located along the north western, northern and south eastern boundaries of the site adding to the industrial nature of the area and project site. Natural features also occur within the surrounding areas, including Lake Nsezi, located approximately 3km north-west of the project site and the channel valley bottom to south of the site. Agricultural activities, mainly relating to plantations are located ~2km of the project site.

The site for the proposed 450MW RMPP and associated fuel storage area is situated north west of the of the regional road (R34), which is also known as the John Ross Highway. Access to the 450MW RMPP site is available along Kabeling Road. Access to the LPG site is available via Kraft Link Road.

6.3. Climatic Conditions

The Richards Bay area is characterised by a subtropical climate. Summers are warm and wet, and winters are mild, moist to dry and do not experience frost conditions. The average annual rainfall of the area is 1128mm, with an average annual temperature of 21.5 °C. Day time temperatures peak from January to March at 29°C. Day time highs in winter from June to August are 23°C, with minimum temperatures of 12°C. Long-term climatic data has been summarised in **Figure 6.1** below.

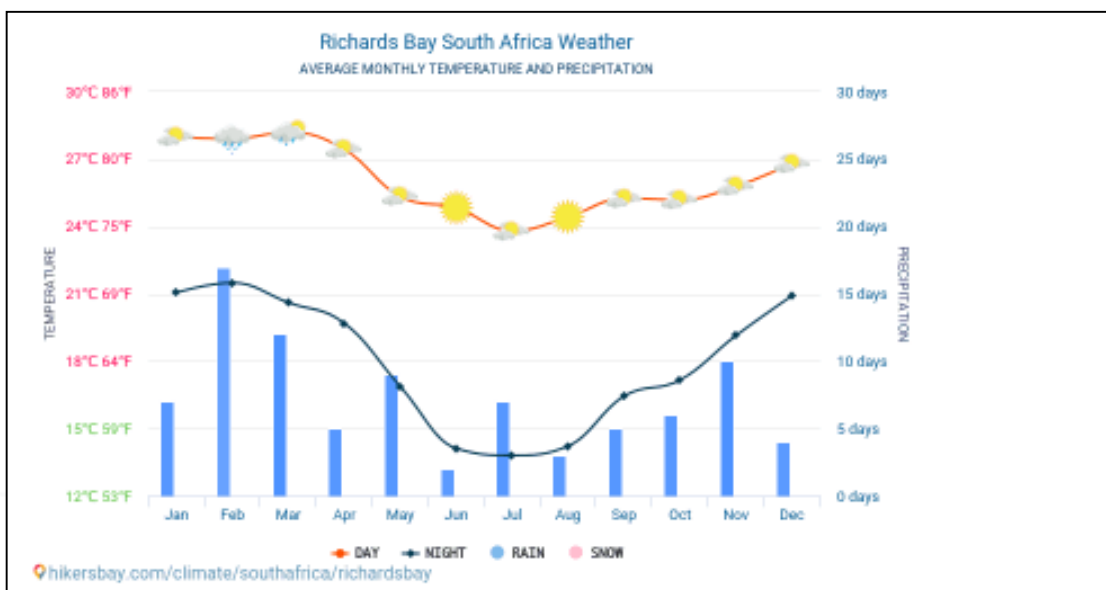


Figure 6.1: Average minimum and maximum temperatures and monthly rainfall for Richards Bay (<https://cdn.hikb.at/charts/meteo-average-weather/richardsbay-meteo-average-weather.png>).

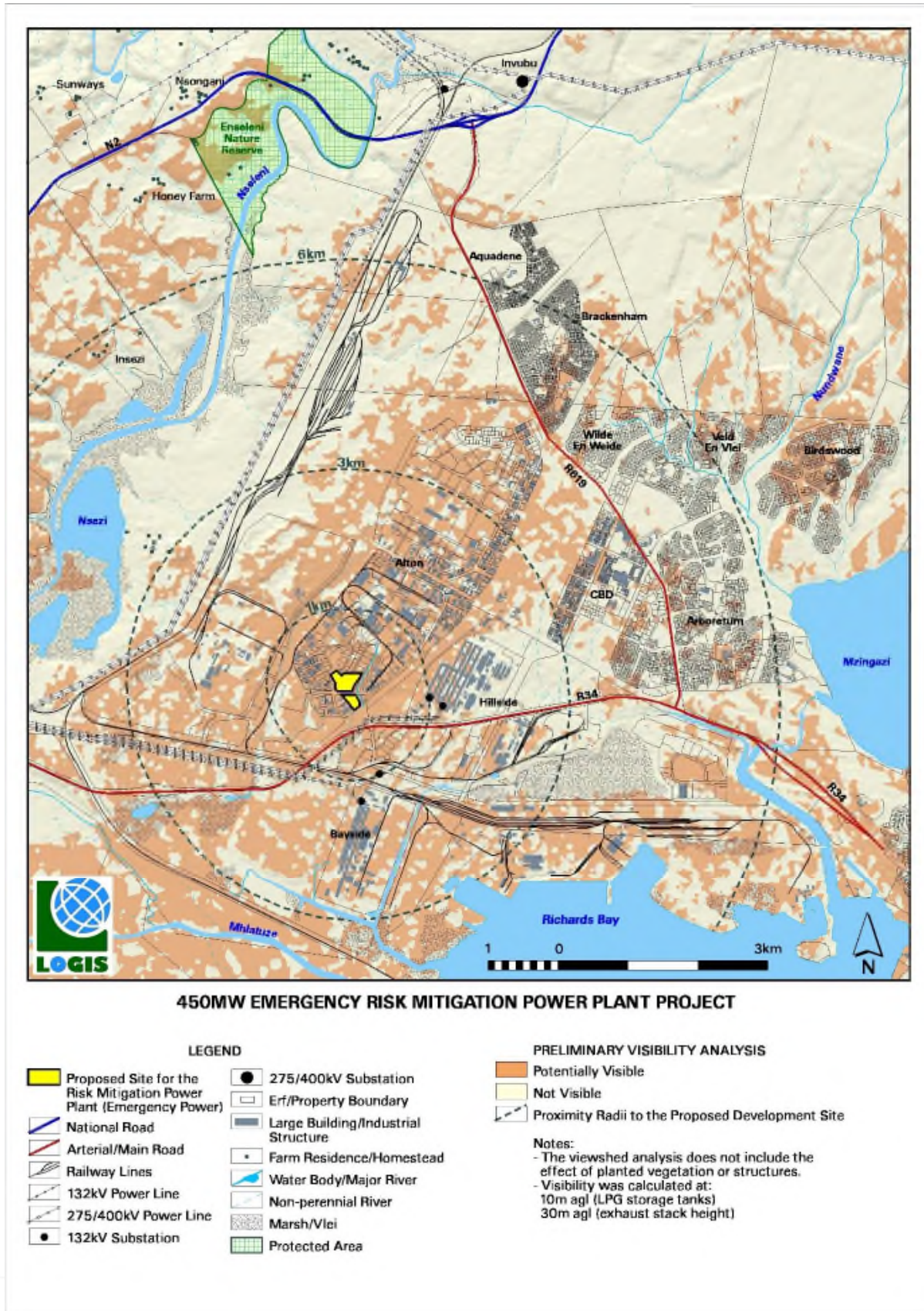


Figure 6.2: Context of the 450MW RMPP project site in relation to the Richards Bay IDZ zones and surrounding areas (du Plessis, 2020)

6.4. Biophysical Characteristics of the Study Area

6.4.1 Topography

The topography of the study area is described as plains of the eastern coastal foreland. The region has an even slope with elevation ranging from sea level at the Indian Ocean to approximately 130m above sea level to the north-west. The flat topography is dominated by wetlands and water bodies (e.g. the Nsezi and Mzingazi lakes, the harbour bay and its numerous channels) while the Mhlatuze River meanders to the south of the study area. The project site is considered to be relatively flat with maximum and minimum elevations of between 32 and 46m above sea level across the north western portions of the site.

6.4.2 Geology, Soils and Agricultural Potential

The larger study area is underlain by unconsolidated, Quaternary-age sediments. These redistributed cover sands are underlain by recent clays and sands of the upper Port Durnford Formation of the Maputaland Group. The Port Durnford Formation rests unconformably on either Cretaceous sediments or partially calcified / lithified sediments of the Uloa or Umkwelane Formations. It comprises a succession of carbonaceous muds and sands, with basal sandstones, black muds and lignite in evidence. Nearer the surface however, white and orange mottled clayey sands are overlain by younger dune sands, which cover much of the coastal plain.

Lot 1854 and Lot 1795 in Alton and the surrounding areas of Richards Bay are underlain by a cover of unconsolidated and partly consolidated sediments of aeolian and alluvial origin. These sediments are in turn underlain by weathered calcarenite and coquina of the Uloa Formation of Miocene age, which is then typically underlain by siltstones of the St Lucia Formation of Cretaceous age. The results of the excavations of the Inspection Pits using a TLB together with the results of the DCPs indicate that the class of excavation in terms of SABS 1200 D; Subclause 3.1.2 should be "soft excavation" to depths of at least 3m below EGL. Additionally, the drilling of Boreholes suggests that excavations to depths of approximately 25m below EGL can be considered "soft excavation (**Appendix N**)".

Soil parent materials have been identified by reference to the Council for GeoScience geological survey map no. 2732, St Lucia. Although these maps are on a scale of 1: 250 000 they do provide useful indicators of the quality of soils that are likely to be encountered within the study site. The soil parent material is described as "Yellowish redistributed sand" code Qs.

Fernwood is fine unstructured sand that was deposited along the South African coastline as sediment from the Great Flood which took place some 10 000 years ago and is named after the farm Fernwood between Mtubatuba and Hluhluwe. It is first found as a narrow strip in the southern KZN and then gradually widens as it moves northwards, reaching a width of 30-40 km on the Maputaland coast. This soil does little more than hold the plant upright. Although the climate has a good rating, the Fernwood Soils that cover the site will only support eucalyptus species and casuarina equisetifolia.

The empirical evidence taken at site clearly demonstrates that the target site comprises of non-arable land within a fully transformed industrial development zone.

In terms of Government Notice 320, being non-arable land within a fully transformed industrial development zone, the project site is considered to be a low sensitivity area with a Land Capability Value of 1-5 on a scale of 1-15.

6.4.3 Hydrology

The site is typically gently sloping and displays typical gentle inland hummocky type dune topography, while there are portions across the central and northern plateau areas of the site that are level. Along the eastern boundary of the site lies an approximately north-east to south-west trending surface water drainage feature, with $\pm 6\text{m}$ difference in elevation between the base of the channel and the central flat lying plateau area.

The streams/ drainage courses are artificially channelled through upstream industrial sites and into this surface water drainage feature. It is expected that surface runoff and subsurface seepage of contaminants from these upstream industrial sites will potentially impact the site of the proposed 450MW RMPPP Power Plant development, particularly after periods of heavy rainfall or major storm events.

A shallow water table is typically associated with surface drainage features such as rivers, streams, wetlands, pans and dams, together with the flood plains and low-lying areas associated with them, and in this case is represented by the north-east to south-west trending natural surface water drainage feature along the eastern boundary of the site in which surface water is very gently flowing.

6.4.3 Geo-hydrology

Richards Bay's groundwater occurs within the inter-granular primary aquifer in the semi consolidated and unconsolidated materials deposited during the Tertiary and Quaternary periods. Boreholes drilled into the unconsolidated sediments typically intercept groundwater of good quality, with pH values generally varying between 6.0 – 9.0 and electrical conductivity (EC) values below 100 mS/m. Boreholes drilled into the unconsolidated sediments typically intercept groundwater of good quality, with pH values generally varying between 6.0 – 9.0 and electrical conductivity (EC) values below 100 mS/m.

Within the upper layers of the Port Durnford Formation, calcium (Ca) concentrations reportedly vary between 1.02 mg/l – 15.24 mg/l, magnesium (Mg) between 2.23 mg/l – 4.33 mg/l and sodium (Na) between 15.51 mg/l – 26.21 mg/l. Recharge to the underlying inter-granular aquifer has been reportedly estimated at 5% to 18% of mean annual precipitation (MAP), which is described as holding 'huge and renewable' groundwater reserves.

Surface drainage features such as those represented by the north-east to south-west trending natural surface water drainage feature along the eastern boundary of the site indicate a shallow water table.

6.4.4 Ecological Profile

The larger part of the study area falls within the Indian Ocean Coastal Belt bioregion comprising of Maputaland Wooded Grassland, interspersed with Subtropical Alluvial Vegetation, Swamp Forests, Subtropical Freshwater Wetlands and Freshwater Lakes. It must be noted that large parts of the study area, especially to the north, have been transformed by forestry (exotic plantations) and sugar cane

cultivation, and industrial development. The dominant land cover types, where intact, are described as Thicket and Dense Bushland and Grassland.

i) Protected and other conservation areas

Protected areas considered include National Parks, Provincial Nature Reserves, Local Authority Nature reserves, Wildlife Management Areas, Private Nature Reserves, Important Bird Areas (IBA) Areas, Game Farms, Game Reserves, Nationally Protected Forest Patches and NPAES focus areas. The following protected areas are located within a 30 km radius of the project site (refer to **Figure 6.3**):

- » Richards Bay Nature Reserve and IBA located 4 km to the south
- » Enseleni Nature Reserve located 6 km to the north
- » Ngoye Nature Reserve and IBA located 23.3 km to the south west
- » Thukela NPAES focus area located 22.9 km to the west

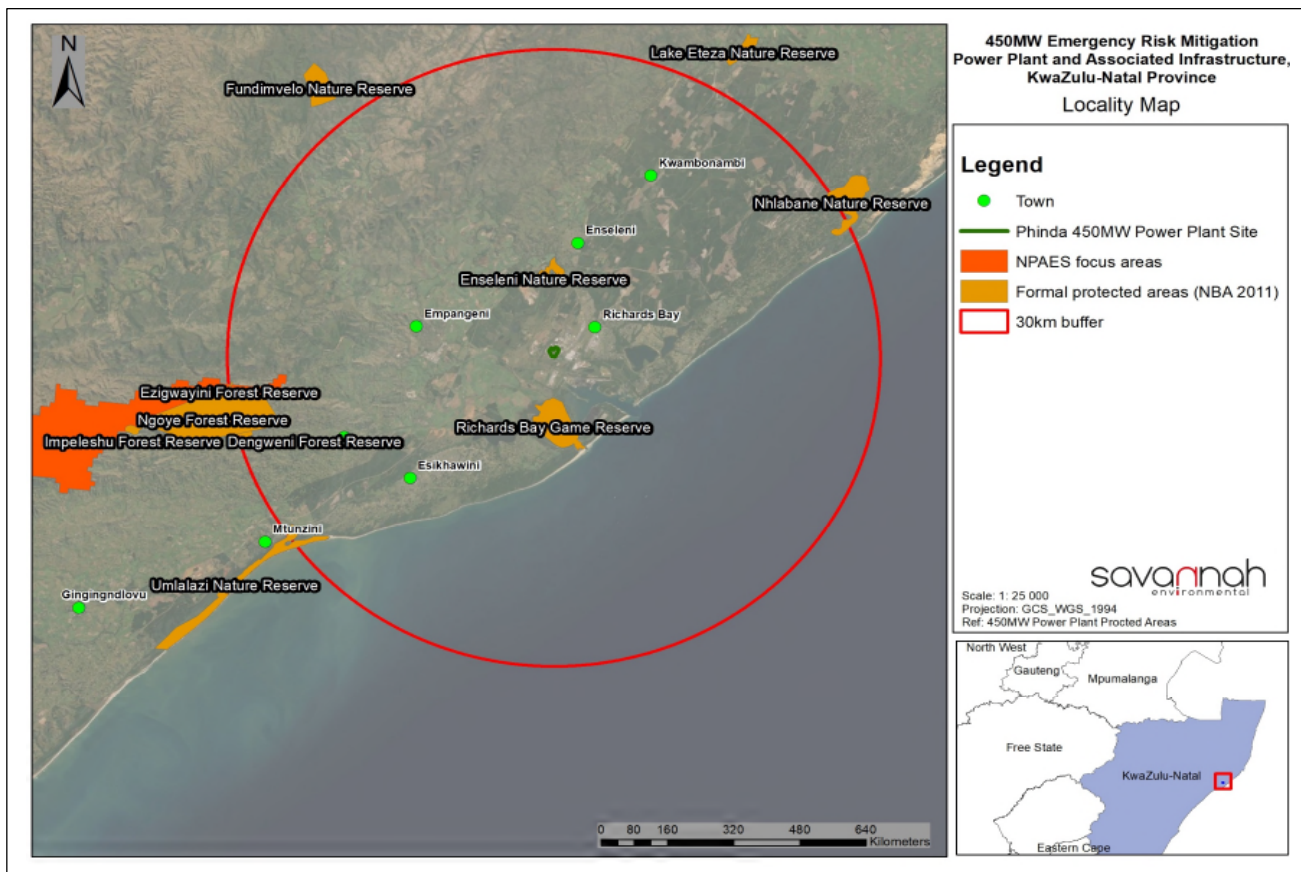


Figure 6.3: Protected and other conservation areas in relation to the project site

ii) Threatened Ecosystems

According to the Ecosystem Threat Status of the National Biodiversity Assessment (NBA, SANBI 2018) and EKZNW (2011) the Maputaland Wooded Grassland is classified as Endangered. Following ground truthing, the vegetation confirmed on the development site resembles that of Maputaland Wooded Grassland.

Potential plant species within the region include *Crinum stuhlmannii* in the *Helichrysum – Chrysanthemoides* coastal grasslands and *Alsophila dregei*, *Boophone disticha*, *Ficus trichopoda* and *Barringtonia racemosa* individuals in the *Phragmites – Typha* channelled valley bottom wetlands (as detailed below). No protected species were observed during the site visit, however searches for the potential species will be continued during follow-up site visits.

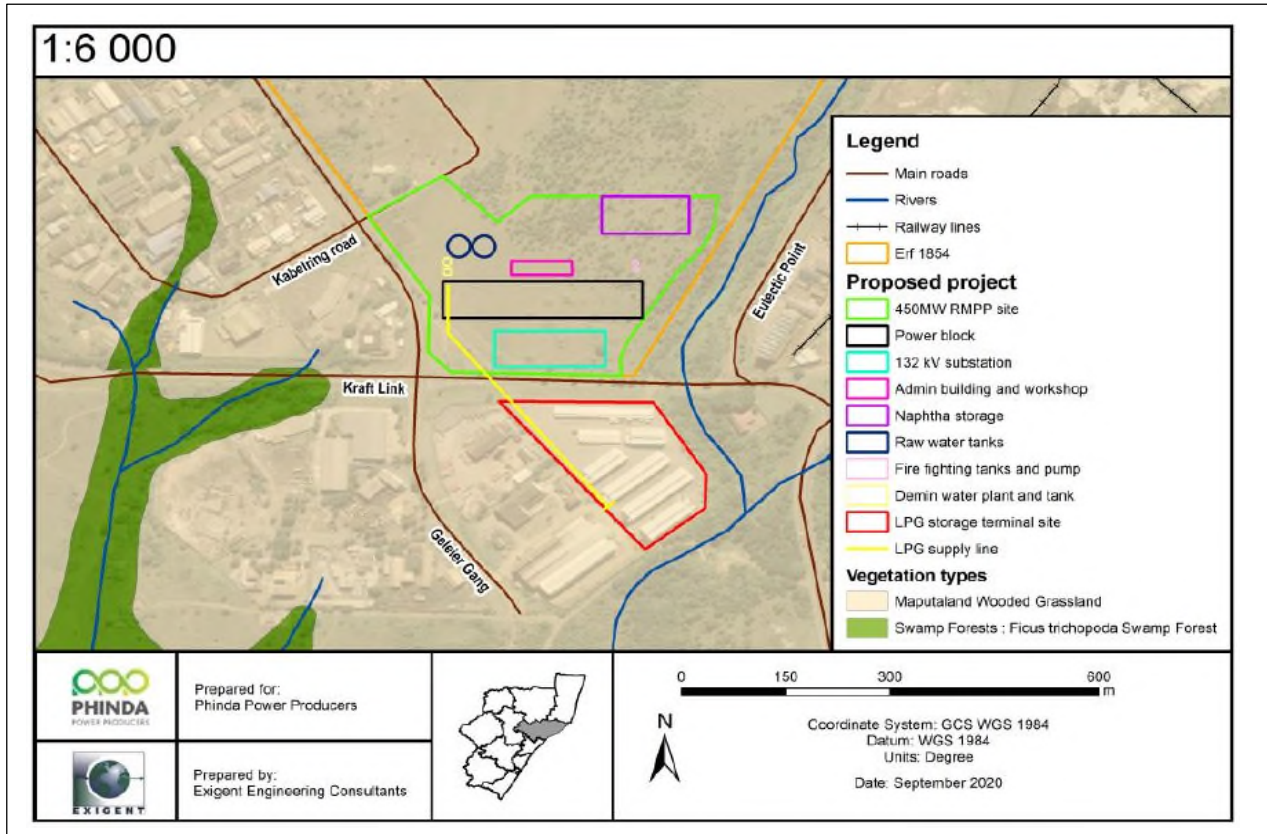


Figure 6.4: Critically Endangered Ecosystems

iii) Critical Biodiversity Areas

According to EKZNW (2016), the planning units (PU) identified in these CBA's represents the localities for one or more biodiversity feature for which conservation targets can be achieved. The distribution of the biodiversity features is not always applicable to the entire extent of the PU but is more often confined to a specific niche habitat e.g. a forest or wetland reflected as a portion of the PU. Generally CBAs are terrestrial (land) and aquatic (water) features (e.g. vleis, rivers and estuaries) in the landscape and/or indicates the potential for the occurrence of protected species that are critical for conserving biodiversity and maintaining ecosystem functioning in the long term. The site may have been incorrectly classified as CBA due to an error in the land cover map, or alternatively a disturbance to the site has occurred subsequent to the development of the CBA Map. The site must be assessed for its potential to be rehabilitated and/or its role as part of a landscape corridor and the potential presence of protected species. Further, the proposed activity at the site should be investigated in terms of its potential impact on adjacent correctly classified CBA and ESAs. Following ground truthing, no protected species were observed during the site visit, however searches for the potential species will be continued during follow-up site visits. The relevance of the PU in the context of the CBA will be further assessed in the EIA phase of the project. Following ground truthing, no protected species were observed during the site visit, however

searches for the potential species will be continued during follow-up site visits. The relevance of the PU in the context of the CBA will be further assessed in the EIA phase of the project.

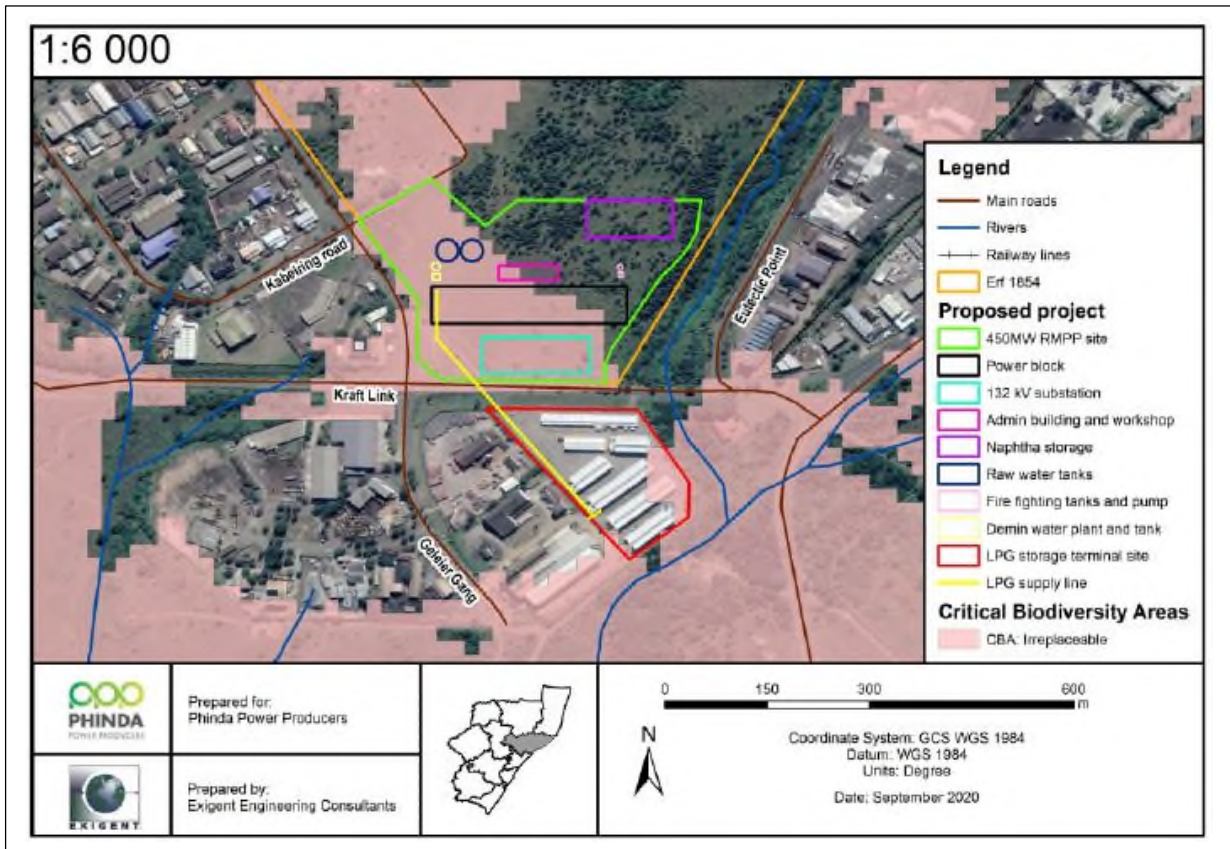


Figure 6.5: Critical Biodiversity Areas present in the study area

iv) Vegetation of the Project Site

The proposed development site has a long history of transformation, from being surveyed in 1909 as Reserve No. 6 surrounded by Crown Land, 1937 used for agriculture with the presence of human settlement and confirmation of these settlements on maps from 1964. The topographic map of 1984 shows the area as an industrial zone (HIA, Anderson, 2019) with plantations. Aerial imagery from 2004 indicates that this area has been transformed from Eucalyptus plantations to the coastal grassland present on site today. Cattle was observed grazing the site daily during the field surveys undertaken. The vegetation on the site is currently degraded as a result of historical activities.

The vegetation was broadly classified into two vegetation communities, namely *Helichrysum - Chrysanthemoides* coastal grasslands (Figure 6-6), and a small portion of the site consisted of Eucalyptus plantations. A *Phragmites - Typha* channelled valley bottom wetland community was observed on the eastern border of the site, and the Closed coastal woodland vegetation community was identified south of the proposed LPG Storage Terminal. but does not impede into the site as it is currently fully developed. Approximately 3.27 hectares of the development site consists of *Helichrysum - Chrysanthemoides* coastal grasslands. It is dominated by shrubs such as *Helichrysum krausii* and *Chrysanthemoides monilifera* subspecies *rotundata*. Invaders such as *Psidium guajava*, *Cuscuta campestris*, *Chromolaena odorata* and *Lantana camara* were only recorded in close proximity to and along tracks and road edges. Several

Crinum stuhlmannii individuals, protected in terms of the KZN Nature Conservation Ordinance, were located in this vegetation community.

A Closed coastal woodland vegetation community was identified south of the proposed LPG Storage Terminal. This community's natural vegetation is mostly replaced by alien, invasive and ruderal species undergrowth. Species such as *Brachylaena discolor*, *Bridelia micrantha*, *Salacia kraussii*, *Phoenix reclinata*, *Rhus natalensis*, *Trema orientalis* and *Ziziphus mucronate* were recorded. The edges of this community comprise of dense thickets of *Chromolaena odorata* and *Lantana camara*. Other dominant aliens include *Melia azedarach*, *Solanum mauritanum* and *Ricinus communis*. Footpaths traverse this area and numerous informal structures were observed. A servitude with a gravel track bisects this vegetation. Eucalyptus plantations occupy approximately 191m² of the development site. It is remnants of a historical plantation. No flora species protected in terms of the KZN Ordinance were confirmed on the proposed development site.

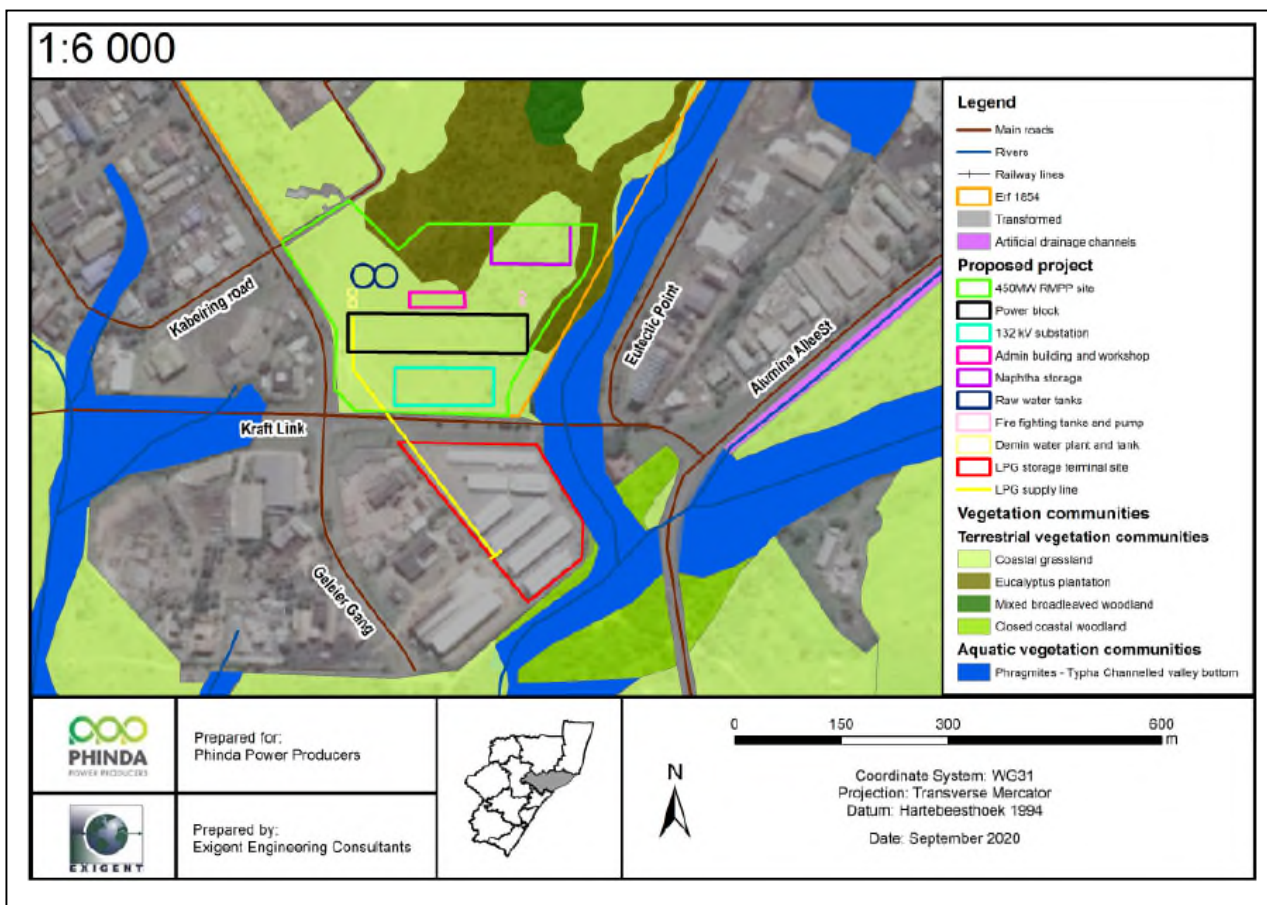


Figure 6.6: Vegetation map of the project site indicating the extent of the present vegetation types

Flora species of Conservation Concern

Although the project site is in poor ecological condition, some natural vegetation is still present and the presence of Red Listed/Protected flora species is still possible. Potential plant species of special concern include *Crinum stuhlmannii* in the Helichrysum – *Chrysanthemoides* coastal grasslands and *Alsophila dregei*, *Boophone disticha*, *Ficus trichopoda* and *Barringtonia racemosa* individuals in the Phragmites – Typha channelled valley bottom wetland. However, as the proposed project site is located outside these wetlands, no impacts to those species in this habitat are expected. Species such as *Crinum stuhlmannii* in

the *Helichrysum – Chrysanthemoides* coastal grasslands is listed on the DEA Screening tool with a high potential to occur on the proposed development site. No protected species were observed during the site visit, however searches for the potential species will be continued during follow-up site visits.

Invasive Plant Species

Invasive alien plants (IAPs) are widely considered as a major threat to biodiversity, human livelihoods and economic development. The Closed coastal woodland vegetation at the site is mostly replaced by an alien, invasive and ruderal species undergrowth. Eucalyptus plantations, remnants of a historical plantations occupy approximately 191m² of the 450MW RMPP development site. Species such as *Brachylaena discolor*, *Bridelia micrantha*, *Salacia kraussii*, *Phoenix reclinata*, *Rhus natalensis* and *Trema orientalis* were recorded. The edges of the closed coastal woodland vegetation community comprise of dense thickets of *Chromolaena odorata* and *Lantana camara*. Other dominant aliens include *Melia azedarach*, *Solanum mauritianum* and *Ricinus communis*.

v) Sensitive Aquatic Ecosystems

No watercourses are present within the project footprint. Due to the waterlogged nature of the lower laying areas of the coastal plain in the Richards Bay area, three major stormwater drainage channels were historically constructed to mitigate flooding and enable development in the Alton industrial area. A wetland system was identified on the eastern border of the site, namely a *Phragmites - Typha* channelled valley bottoms. The project development area does not infringe on this wetland. This wetland has experienced a moderate change in ecosystem processes and a loss of natural habitats has taken place, however the basic ecosystem functions are still predominantly unchanged. This wetland is ecologically important and sensitive at a local scale. Species of special concern were recorded in the wetland and include *Alsophila dregei*, *Boophone disticha*, *Ficus trichopoda* and *Barringtonia racemosa* individuals. Although *Phragmites australis* and *Typha capensis* are the dominant plant species, several pockets of swampy *Barringtonia racemosa* and *Ficus trichopoda* are imbedded in the channel with *Cyperus fastigiatus* also present in very dense stands.

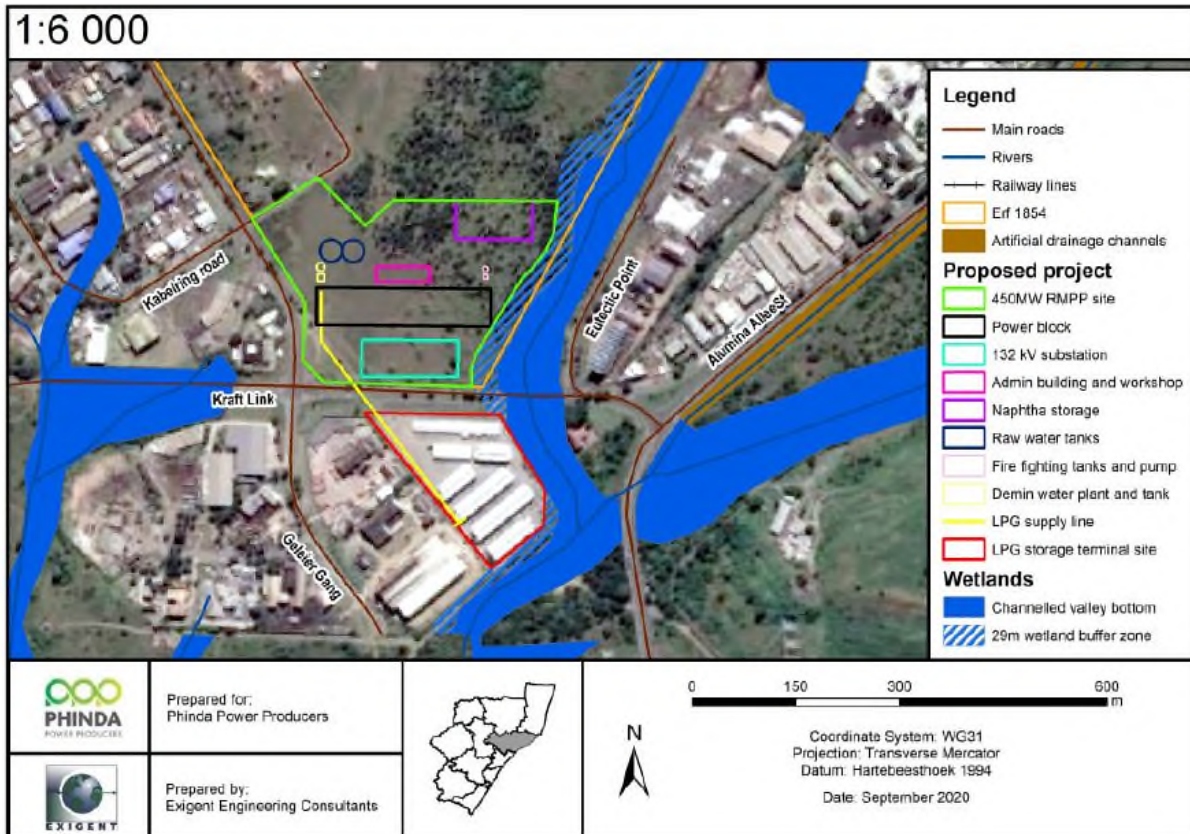


Figure 6.7 The extent of the wetland areas and buffers in relation to the project site

vi) Provincial and District Level conservation Priorities

The proposed project site includes areas designated as a Critical Biodiversity Area (CBA Irreplaceable). CBA Irreplaceable Areas considered critical for meeting biodiversity targets and thresholds, and which are required to ensure the persistence of viable populations of species and the functionality of ecosystems. (https://conservationcorridor.org/cpb/Ezemvelo_KZN_Wildlife_2015_Zululand.pdf). This rating is due to the potential presence of a number of threatened invertebrates such as molluscs, millipedes and orthopterans and threatened vegetation types, i.e. the Maputaland Coastal Grassland and *Ficus trichopoda* Swamp Forest. Refer to **Figure 6.8 (A)**. Maputaland Coastal grassland is made up of *Helichrysum – Chrysanthemoides*. No protected species were observed during the site visit, however searches for the potential species will be continued during follow-up site visits. No swamp forest is on the site.

The Biodiversity Sector Plan has not been updated with the municipal ESMP. While there is a great deal of information on conservation priorities at a provincial level, it is recognised that this is undertaken at a provincial scale and that there is a need to ensure that local biodiversity priorities are identified and provincial scale information verified.

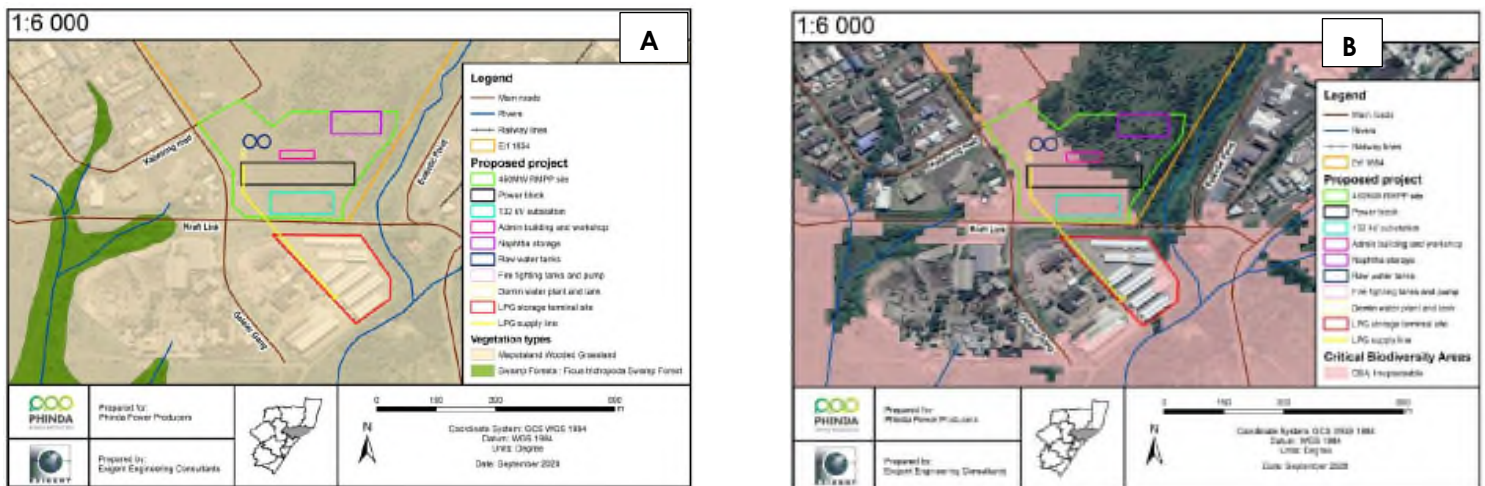


Figure 6.8: Critical Biodiversity Areas located within the project site.

- » A – Threatened Vegetation types (SANBI, 2018).
- » B – CBA: Irreplaceable area (KZNBS, 2014).

vii) uMhlatuze Environmental Services Management Plan (ESMP)

The uMhlatuze Environmental Services Management Plan (ESMP) provides the municipality with a clear understanding of activities that need to be undertaken to protect and enhance the supply of environmental services in the area. Based on the final 2016/2017 uMhlatuze Spatial Development Framework (SDF), the two critical goals of the ESMP are:

- » 'To define cohesive and functional spatial management units within the municipal area that need to be managed in order to optimise the delivery of environment services.'
- » 'To develop management plans for each management unit that identify the management activities required to secure environmental services supply.'

The areas that provide environmental services to the City are spatially defined, and the following "Levels" of protection were determined:

Nature Reserves (Level 1): These are areas of high biodiversity and environmental significance that require a high level of legal protection. Included are unique habitats or areas that are considered important at International, National or Provincial level; estuaries, lakes, major wetlands, natural forests, coastal buffers and critically endangered habitats that are protected in terms of international or national legislation and/or treaties. It is recommended that these areas be proclaimed as nature reserves in terms of relevant legislation such as the National Environmental Management Protected Areas Act.

Conservation Zone (Level 2): Areas of biodiversity / environmental significance, which are not viable for proclamation as nature reserves, but that require some form of legal protection. Included are unique or regionally important natural habitats; wetland and forest areas that are protected in terms of national legislation; and all areas that fall within the 1:100-year flood line. No transformation of the natural assets or the development of land for purposes other than conservation should be permitted in this zone. Sustainable use of renewable resources is permitted.

Open Space Linkage Zone (Level 3): Included in the open space linkage zone are areas that provide a natural buffer for Level 1 and 2 Zones, areas that provide a natural link between Level 1 and 2 Zones and areas that supply, or ensure the supply of, significant environmental services. Transformation of natural assets and the development of land in these zones should only be permitted under controlled conditions.

Development Zone (Level 4): Includes all areas that are not included in Level 1, 2 and 3 zones. Areas in this zone are either already developed or transformed and contain land and natural assets that are not critical for environmental service supply. However, it is recognised that the development of these zones can impact on environmental services supply. As such, they should be developed in a manner that supports, or at least does not adversely impact on, the sustainability of environmental service supply in Level 1, 2 and 3 zones.

Areas earmarked as Municipal conservation zones and its associated open space linkage zones lie east of the proposed 450MW RMPP and LPG Storage Terminal sites.

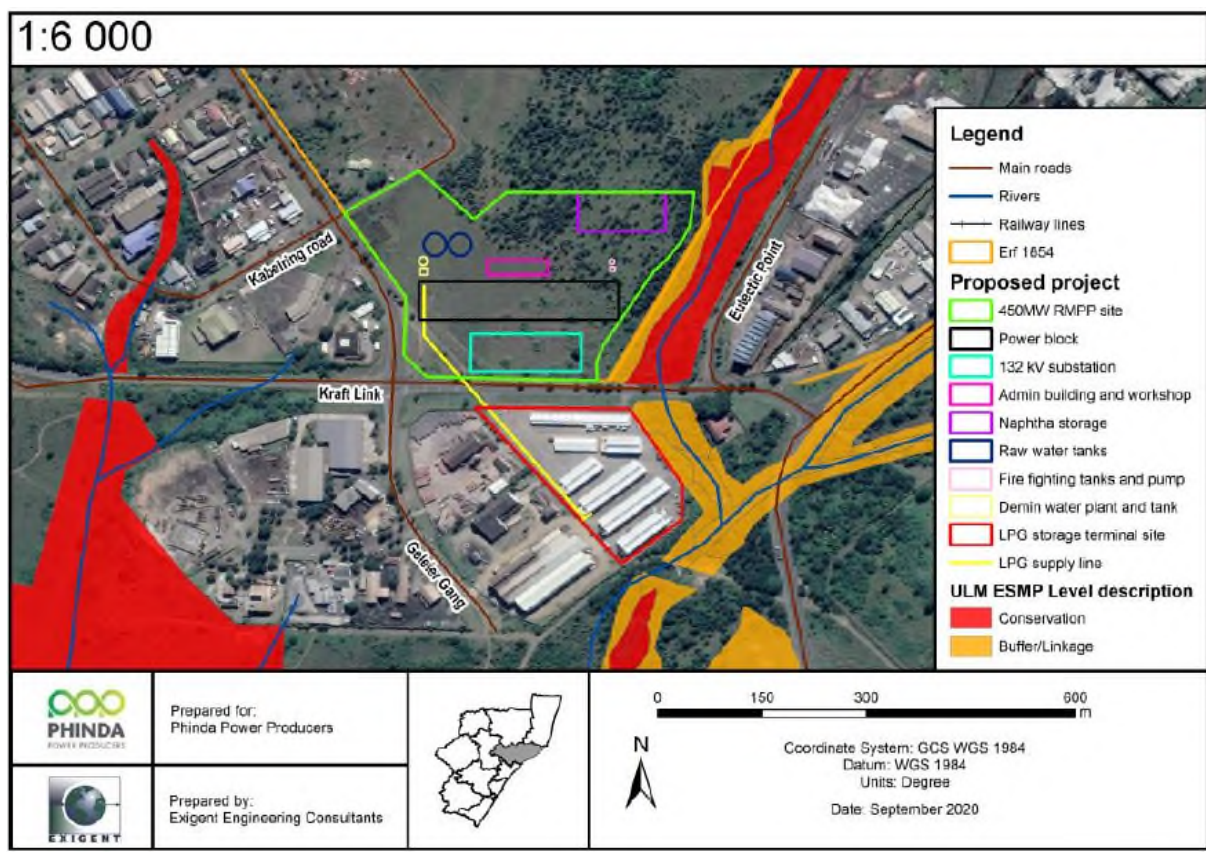


Figure 6.9. ESMP conservation zones and open space linkages associated located outside the project footprint.

viii) Faunal Communities

Mammals

The project site offers three major mammal habitats, i.e. terrestrial, arboreal and wetland/aquatic. The terrestrial habitat is the most abundant and provides habitat to a vast variety of small mammals such as rodents, shrews, mongooses etc. At present, large mammals are only expected in protected and privately owned reserves and are therefore generally excluded in mammal assessments for urban developments.

Arboreal habitat is represented by trees, often used by bats while shrews occasionally find refuge in vegetation associated with water bodies of aquatic habitats. Approximately 48 species have the potential to use the development site and its surrounding areas.

The majority of the species of the resident diversity are common and widespread, all with wide habitat tolerances. The reason for their survival success lies predominantly in their remarkable reproductive success and wide habitat tolerance.

Table 6.2 lists fourteen (14) species previously observed in the Degree Grid 2832CC and recorded on the MammalMap. Surveys for small mammals will be conducted from 07:00 – 11:00 and 16:00 – 19:00 daily for 3 days as part of the detailed EIA investigation.

Table 6.2: Mammal species previously recorded in Degree Grid 2832CC (MammalMAP)

Group name	Group Species	Species Name	Observation
Monkey	Vervet Monkey	<i>Chlorocebus pygerythrus</i>	MammalMap (2012, 2013, 2015, 2016, 2018, 2019)
Leopard	Leopard	<i>Panthera pardus</i>	MammalMap (2016)
Hippopotamus	Common Hippopotamus	<i>Hippopotamus amphibius</i>	MammalMap (2016)
Otter	African Clawless Otter	<i>Aonyx capensis</i>	MammalMap (2016)
Mongoose	Marsh Mongoose	<i>Atilax paludinosus</i>	MammalMap (2015, 2018)
Mongoose	Slender Mongoose	<i>Herpestes sanguineus</i>	MammalMap (2017)
Mongoose	Banded Mongoose	<i>Mungos mungo</i>	MammalMap (2015, 2016, 2017, 2018, 2019)
Mouse	Natal Multimammate mouse	<i>Mastomys natalensis</i>	MammalMap (2016) <i>Helichrysum</i> coastal grasslands
Mouse	South African pygmy mouse	<i>Mus (Nannomys) minutoides</i>	MammalMap (2003) Phragmites – Typha channelled valley bottom wetland
Mouse	South Africa pouched mouse	<i>Saccostomus campestris</i>	MammalMap (2016)
Shrew	Reddish-grey musk shrew	<i>Crocidura cyanea</i>	MammalMap (2016)
Rat	Greater cane rat	<i>Thryonomys swinderianus</i>	MammalMap (2011)
Genet	Cape large spotted genet	<i>Genetta tigrina</i>	MammalMap (2016)
Bat	Epauletted fruit bats	<i>Epomophorus sp.</i>	MammalMap (2015)
Bat	Egyptian free-tailed bat	<i>Tadarida aegyptiaca</i>	Phragmites – Typha channelled valley bottom wetland

Herpetofauna

The project site offers three major reptile habitats, i.e. terrestrial, arboreal and fossorial. Several herpetofauna species have a distribution range in the area. 23 reptile species and 53 frog species were previously observed in the grid cell 2832CC and recorded on the South African Reptile Conservation Assessment (SARCA) and South African Frog Atlas databases respectively.

Approximately 23 reptile species and 53 frog species have the potential to use the development site and its surrounding areas. Majority of the reptile and frog species of the resident diversity is common and

widespread. No reptiles or frogs were observed during the screening site visit. No Red Listed/Protected reptile species are expected to be present within the project site.

Avifauna

Approximately 358 bird species have been recorded in pentads 2840_3200 and 2845_3200 of which 12 were observed during this study's site investigation (Table 6.3). The diversity is expected to be high due to the Richards Bay Game Reserve Important Bird Area (IBA) located approximately 3,4 km south of the development site. The proposed development is however unlikely to impact on any individuals of the area.

Table 6.3: Bird species observed within the project site

Group name	Group Species	Species Name	Observation
Barbet	Black-collared	Lybius torquatus	Phragmites – Typha channelled valley bottom wetland
Barbet	White-eared	Stactolaema leucotis	Phragmites – Typha channelled valley bottom wetland
Bishop	Southern Red	Euplectes orix	Phragmites – Typha channelled valley bottom wetland
Bulbul	Dark-capped	Pycnonotus tricolor	All habitats
Buzzard	Steppe	Buteo vulpinus	Helichrysum - Chrysanthemoides coastal grasslands
Crow	Pied	Corvus albus	Helichrysum - Chrysanthemoides coastal grasslands
Ibis	Hadedda	Bostrychia hagedash	Helichrysum - Chrysanthemoides coastal grasslands
Lark	Rufous-naped	Mirafrā africana	Helichrysum - Chrysanthemoides coastal grasslands
Long-claw	Yellow throated	Macronyx croceus	Helichrysum - Chrysanthemoides coastal grasslands
Mousebird	Speckled	Colius striatus	Phragmites – Typha channelled valley bottom wetland
Nightjar	Fiery-necked	Caprimulgus pectoralis	Phragmites – Typha channelled valley bottom wetland
White-eye	Cape	Zosterops capensis	Phragmites – Typha channelled valley bottom wetland

6.5 Visual Considerations

It is possible that landscape change due to the proposed development could impact the character of the landscape. Landscape character can be derived from specific features relating to the urban or rural setting and may include key natural, historic or culturally significant elements.

Topography, vegetation and hydrology

The proposed project site is located at approximately 46m above sea level. The topography of the study area is described as plains of the eastern coastal foreland. The region has an even slope with elevation ranging from sea level at the Indian Ocean to approximately 130m above sea level to the north-west.

The flat topography is dominated by wetlands and water bodies (e.g. the Nsezi and Mzingazi lakes, the harbour bay and its numerous channels) while the Mhlathuze River meanders to the south of the study area. The project site falls within the Mhlathuze River quaternary catchment and the Nseleni River floodplain (a tributary of the Mhlathuze) is prominent to the west of the study area.

The larger part of the study area falls within the Indian Ocean Coastal Belt bioregion comprising of Maputaland Wooded Grassland, interspersed with Subtropical Alluvial Vegetation, Swamp Forests, Subtropical Freshwater Wetlands and Freshwater Lakes. It must be noted though, that large parts of the study area, especially to the north, have been transformed by forestry (exotic plantations) and sugar cane cultivation, and industrial development. The dominant land cover types, where intact, are described as Thicket and Dense Bushland and Grassland.

Land use and settlement patterns

The industrial activities, the Richards Bay IDZ and the transportation infrastructure related to the port, as mentioned earlier, are the primary land use activities within the study area. This and the intensive forestry and sugar cane production to the north (and south) account for the largest economical drivers within the region. There is a well-established railway network and a large number of electricity distribution and transmission power lines traversing the study area.

The N2 national road, the R34 arterial road (John Ross Parkway) and the R619 main road provide motorised access to the region. The John Ross Parkway traverses south of the proposed development site, and is expected to be the quickest access road (via Alugang and Kraft Link Roads) to the site.

The majority of residential areas within Richards Bay are located north of the city and east of the R619 main road. Residential neighbourhoods include Arboretum, Birdwood, Veld-en-Vlei and Wilde-en-Weide. None of these residential areas are located in close proximity to the proposed development site.

There are only two proclaimed terrestrial protected areas within the region, namely; the Enseleni Nature Reserve to the north-west and the Richards Bay Nature Reserve south of the study area. Other than these protected areas, and potentially along the Indian seaboard, there are no identified tourist attractions or destinations in closer proximity to the development site.

The power plant and LPG depot may have a fairly large area of potential visual exposure (Figure 6.8), not considering the built structures and vegetation. The visual impacts will not be in isolation, but rather determined in the context of the existing structures and buildings present at this location and within the region.

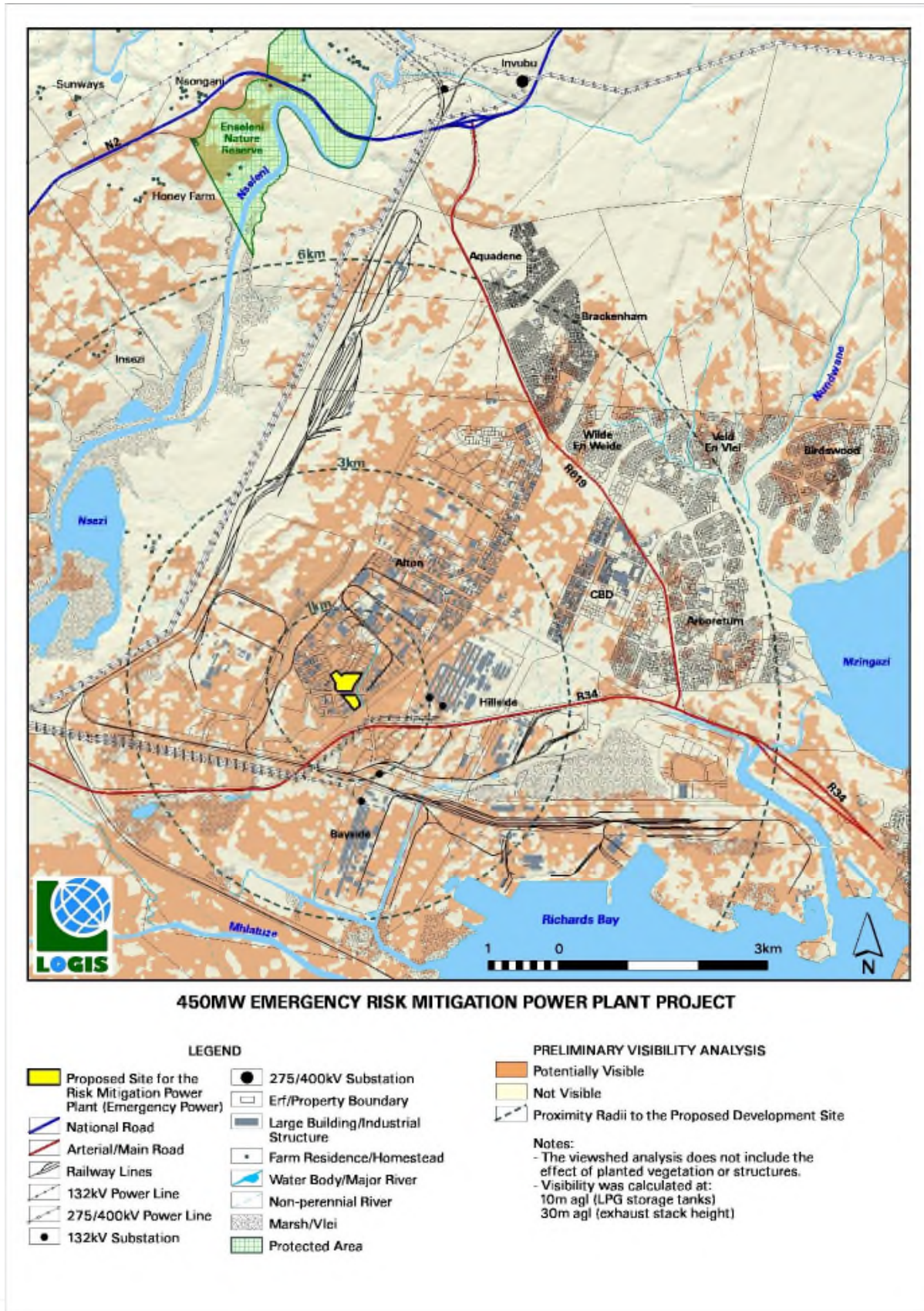


Figure 6.9: Map indicating the potential (preliminary) visual exposure of the proposed power plant.

6.6 Air Quality

Meteorological mechanisms direct the dispersion, transformation and eventual removal of pollutants from the atmosphere. The extent to which pollution will accumulate or disperse in the atmosphere is dependent on the degree of thermal and mechanical turbulence within the earth's boundary layer. This dispersion comprises vertical and horizontal components of motion. The stability of the atmosphere and the depth of the surface-mixing layer define the vertical component. The horizontal dispersion of pollution in the boundary layer is primarily a function of the wind field. The wind speed determines both the distance of downward transport and the rate of dilution of pollutants. The generation of mechanical turbulence is similarly a function of wind speed, in combination with surface roughness. The wind direction, and variability in wind direction, determines the general path pollutants will follow, and the extent of crosswind spreading. The pollution concentration levels therefore fluctuate in response to changes in atmospheric stability, to concurrent variations in the mixing depth, and to shifts in the wind field.

i) Sources of air pollution in the region

The identification of existing sources of emission in the region and the characterisation of existing ambient pollutant concentrations is fundamental to understand the current air quality of the area. Source types present in the area and the pollutants associated with such source types are noted with the aim of identifying pollutants, which may be of importance in terms of cumulative impact potentials. The source types include:

- » Stack, vent and fugitive emissions from industrial operations;
- » Fugitive emissions from industrial, mining, commercial and miscellaneous operations;
- » Vehicle tailpipe emissions;
- » Biomass burning (veld fires, forest fires and sugar cane burning);
- » Waste treatment facilities (i.e. water treatment plants, landfills, incinerators etc.); and
- » Various miscellaneous fugitive dust sources (agricultural activities, wind erosion of open areas, vehicle-entrainment of dust along paved and unpaved roads).

Figure 6.10 provides the location of the main industries and mines within the Local Municipality.



Figure 6.10: Location of all the main industries and mines within the City of uMhlatuze Local Municipality

Industrial Sources

Most of industrial sources within the region are located within Richards Bay. These industrial operations have a substantial influence on ambient concentrations in Richards Bay.

Mining sources

Mining operations within the Richards Bay area almost exclusively include mineral sand mining activities. Only two mines are operational within the municipal boundaries namely Tronox Hillendale, and Hlanganani Sandwork Operations. There might be other smaller sandwork operations within the municipality. The Tronox Hillendale Mine is nearing the end of its life, and the Fairbreeze Mine to the south of Hillendale, will provide the mineral concentrate for the smelter once the Hillendale operations have ceased. The Zulti South Mining Lease Area is a proposed mineral sand mine to be located northeast of Mtunzini, covering an area of 20 km in length by a maximum of 2 km in width. The operations will include opencast dry mining of dune sand and processing to produce heavy mineral concentrate (HMC).

Mining operations represent potentially significant sources of fugitive dust emissions, where the particulate emissions are the main pollutant of concern. Fugitive dust sources associated with sand mining activities include materials handling activities, vehicle-entrainment by haul trucks and wind-blown dust from tailings impoundments and stockpiles.

Transport related emissions

Vehicles, railroad, shipping and the airport are included in this category. The main source of concern in the area is vehicle tailpipe emissions. The main national and provincial highways and roads include the N2 from Durban in the south to north of Empangeni. Various main and secondary roads link the rural and urban areas within the municipality.

Biomass burning

Crop-residue burning and general wild fires (veld fires) represent significant sources of combustion-related emissions associated with agricultural areas and forestry. Major pollutants from veld fires are particulates, CO and VOCs. The extent of NOX emissions depend on combustion temperatures, with minor quantities of sulfur oxides released. Emissions are greater from sugar cane burning than for savannas due to sugar cane areas being associated with a greater availability of existing material to be burned.

Miscellaneous sources

Various miscellaneous fugitive dust sources, including agricultural activities, wind erosion of open areas, vehicle-entrainment of dust along paved and unpaved roads are found in the area.

ii) Measured Baseline Ambient Air Quality

The Richards Bay Clean Air Association (RBCAA) operates 12 ambient monitoring stations, measuring meteorological parameters and ambient SO₂, TRS and PM₁₀ concentrations. Hourly data from all stations was provided by the RBCAA for the period January 2016 to December 2019.

PM₁₀ Ambient Concentrations

The daily PM₁₀ concentrations – for the data period provided (January 2016 to December 2019) – indicate non-compliance with the daily PM₁₀ NAAQS at Brackenheim station during 2018, where daily average concentrations measured exceeded 75 µg/m³ on more than four occasions during the year. Annual average PM₁₀ concentrations were compliant with the NAAQS at all stations and similarity between years at each station is noted.

SO₂ Ambient Concentrations

Hourly SO₂ concentrations recorded at seven RBCAA stations complied with the hourly NAAQS for all years in the data set. Harbour West AQMS had the largest number of hourly exceedances, 22 hours in 2018 and 1 hour in 2016. The NAAQS allows for 88 hours exceeding the limit concentration per year (350 µg/m³). The Scorpio AQMS recorded 12 hours in 2018 and 2 hours in 2016. The CBD AQMS recorded 1 hour (in 2016) exceeding the hourly limit concentration. No hourly exceedances were measured at the other stations during the January 2016 to December 2019 period. The Harbour West AQMS recorded non-compliance with the daily SO₂ NAAQS (125 µg/m³) in 2018 due to 5 days recording averages in excess of the limit concentration (4 days are allowed). Although the daily average SO₂ concentrations exceeded the limit concentration at Scorpio for one day during 2018 no further daily exceedances at the Scorpio (or other AQMS) have been recorded. Annual average SO₂ at all stations was compliant with the NAAQS with a slight trend towards improvement at all stations.

6.7. Noise

Potential noise sensitive receptors which could be affected by the development of the 450MW RMPP and associated infrastructure have been identified from aerial images. Two potential noise-sensitive developments were identified during the site screening process and the status of these locations was confirmed during the site visit. The site visit identifies a number of dwellings that are used for residential purposes within 2 000m from the proposed activity.

The current environmental sound character was determined through a methodology used to measure ambient sound levels as defined by the South African National Standard SANS 10103:2008. A number of single measurements were collected to gauge the ambient sound character and levels around the project site while being able to hear and possibly identify noise sources.

Short-term (10-minutes) measurements were collected over a period of two (2) nights close to residential dwellings within the industrial area as per the requirements of GG 43110 of 20 March 2020. There are approximately 60 structures used by contractors in the area as residential dwellings. Ambient sound levels close to the residential dwellings are elevated and higher than the World Health Organization recommended noise limits for residential use. Ambient noise levels in the Alton Industrial area were elevated and typical of a busy urban (with roads, business and workshops) to central business noise district. It should be noted that SANS 10103 highlights that ambient sound levels in an industrial noise district (appropriately zoned) up to 70 dBA is expected and typical.

Monitoring location	GPS Co-ordinate	Night-time sound level (L _{Aeq,t}) - dBA	Night-time sound level (L _{Aeq,t}) - dBA	Night-time statistical sound level (L _{A90,t}) - dBA	Night-time rating level i.t.o SANS 10103
RBNSTSL11 (Night 1, 10 PM)	-28.764698°, 32.020459°	54.3	53.4	49.6	Central Business District
RBNSTSL11 (Night 1, 04 AM)	-28.764698°, 32.020459°	55.5	53.8	50.2	Central Business District
RBNSTSL11 (Night 2, 10 PM)	-28.764698°, 32.020459°	52.1	51	46.8	Urban (with main roads, workshops, etc.)
RBNSTSL11 (Night 2, 04 AM)	-28.764698°, 32.020459°	55.3	54.3	48.1	Central Business District

Figure 6.11. Summary of average sound levels measured

6.8. Heritage features of the region

6.8.1. Heritage and archaeology

The proposed site was first surveyed in 1909 as Reserve No. 6 surrounded by Crown Land. It indicated that some of the land was subdivided for lease purposes and may be linked to the Native Delimitation Act of 1904. This leased area is not present on later maps. A 1937 map indicates that the study area was mostly used as agricultural fields surrounding wetlands (Figure 6.12). Settlements and one cattle byre are visible on this map. Human graves could be associated with these settlements.

Only agricultural fields occur in the study area, while settlements occur outside it.



Figure 6.12. Topographical map of the proposed development (1937)

A 1964 topographical map indicated that there were two settlements within the study area that human graves would generally be associated with. The project area had also been one of the many areas regarding forced removals of the Mandlazini people (Griffiths 1996; Ntuli 2019). No land claims on the proposed project site are recorded as at 21 September 2020.

The 1984 topographical map indicates the area as an industrial zone. These maps concur that there was a wetland formed by the Hlangabenzani River. However, by 1983 furrows/canals had drained much of the water. The historical maps thus indicate that human settlements did exist in the general area and thus there is a possibility for human graves in the general area. No human settlements were identified in the specific study site. The presence of human remains is highly unlikely. The high water tables in the area, before canalization, would have resulted in the rapid decay of human remains.

Individual stone tools will probably occur as a lag deposit on the hard clay horizons as noticed in the previous surveys. These are not significant and do not constitute an archaeological site.

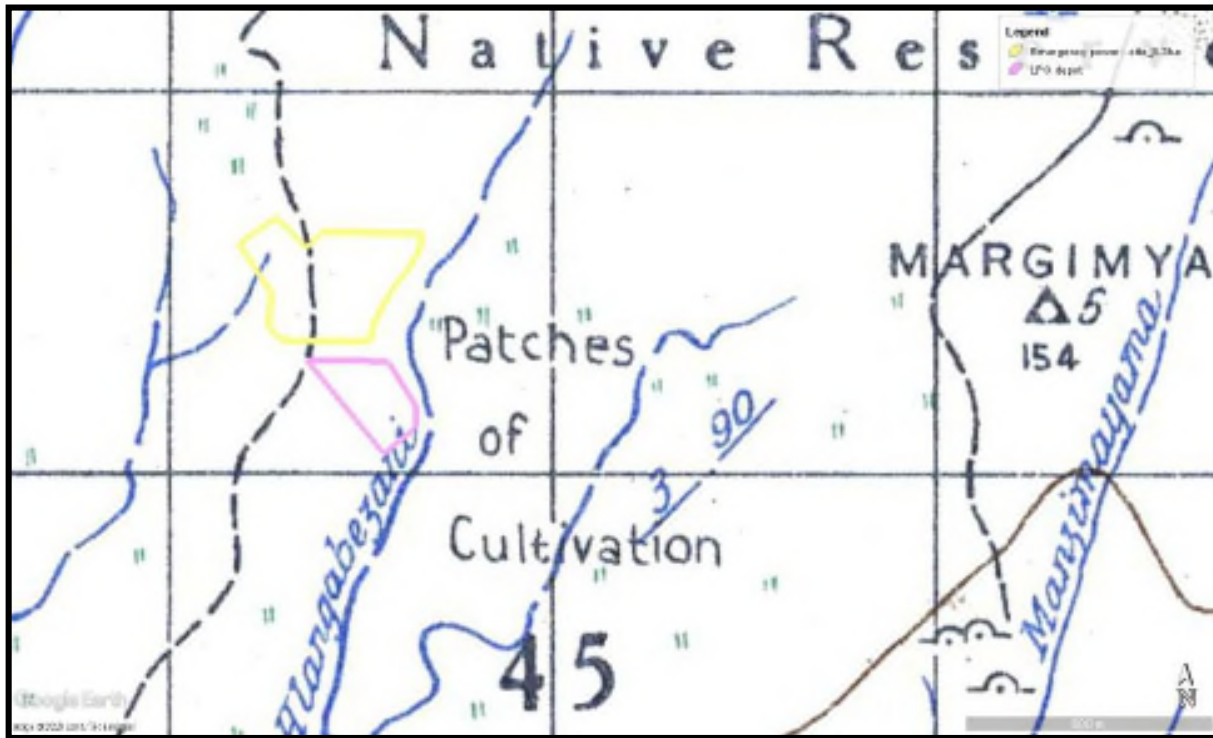


Figure 6.13. Topographical map of the proposed development (1943)

6.8.2. Palaeontology (Fossils)

The study area is coded blue according to the SAHRIS palaeosensitivity map, indicating no or very low palaeontological value. However, this is slightly misleading as there are Cretaceous deposits 4m+ below the surface. These deposits are noticeable for their megalodon teeth, large ammonites, and other shell species. The general area is of low palaeontological sensitivity. However Cretaceous deposits could occur at 4m+ below the surface. It is unlikely that excavations will extend to these depths. Any excavations reaching these layers would need to inform KZNARI and have a qualified palaeontologist assess the samples. This would include an assessment of the deposits and possible sampling. The sampling of these deposits will not affect the project as it is only the recovery of exposed fossils.



Figure 6.14. Palaeontological sensitivity map (The study area is coded blue according to the SAHRIS palaeosensitivity map indicating no or very low, palaeontological value.)

6.9. Current Social and Economic Characteristics of the Project Site and Surrounding Areas

Between 2001 and 2011 the City of uMhlathuze Local Municipality (LM) experienced an annual population increase of 1.5%, with the population in 2011 reported to be 362 778 people. According to the 2016, Community Survey 2016 population within the uMhlathuze LM reported to be 410 465 persons, indicating a growth rate of 2.81% annually between 2011 and 2016, significantly higher than previously experienced.

For the period 1996 to 2016, the percentage of the total population within the City of uMhlathuze Local Municipality classified as 'potentially economically active' (ages of 15 and 64) has been consistently higher than the percentage of the population within this age group in the District Municipality and KZN province. Access to education within uMhlathuze Local Municipality improved between 2001 and 2011, with the percentage of the population over the age of 20 reported to have never received formal education dropping from 18% to 8%. While the same trend was experienced within the DM (a drop of 32% to 16% reporting no access) and province (a drop of 22% to 11% reporting no access), access was better within the LM.

Despite improvements between 2001 and 2016, unemployment within the uMhlathuze Local Municipality remains high at 30% however, this is below the level of unemployment reported for the King Cetshwayo DM 34% and KwaZulu-Natal 33%.

The Gross Value Added (GVA) of City of uMhlathuze LM was valued to be R36 122 million in 2019 current prices as shown in the table below. This is equal to a GDP per capita of R102 152 which is significantly higher than the national and provincial economies with a GDP-R per capita of R75 205 and R61 174 respectively.

Access to electricity for lighting (the most basic level of access) within the uMhlathuze LM is better than access on a district and provincial level. Access to piped water improved significantly within the uMhlathuze LM between 2001 and 2016, with 94% of all households reported to have access to piped water either within their household or within their yard.

From a social perspective, there are 8 zones considered to be affected by the proposed development and should be assessed i.e. Zone 1: Industry; Zone 2: Harbour; Zone 3: Business; Zone 4: Tourism; Zone 5: Agriculture; Zone 6: Natural; Zone 7: Forestry and Zone 8: Residential

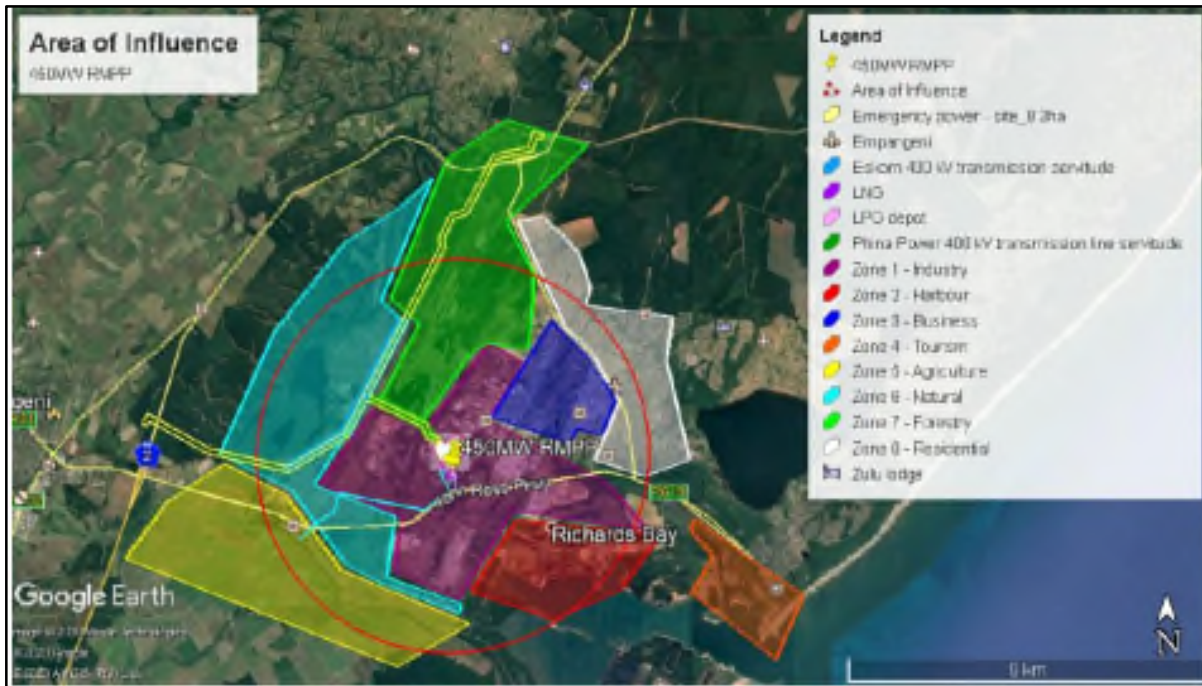


Figure 6.15. Area of Impact and the Zones of Influence

ZONES OF IMPACT	SHORT DESCRIPTION OF THE AREA OF IMPACT
# 1 INDUSTRY	<p>Consists mainly of industrial land uses, these include general industry as well as noxious industries. The R34 provides access to Richards Bay, the Harbour and divide the industrial area, harbour and the agricultural zones.</p> <p>Some of the industries include Mondi, Steelplate Solutions, South32 Aluminium, Lafarge, Grindrod Simunye, Macsteel, Bell Equipment and Foskor.</p>
# 2 HARBOUR	<p>This zone consists mainly of the harbour precinct and lies towards the south east of the site for the power plant.</p> <p>Some of the businesses and institutions residing within the harbour precinct include Transnet National Port Authority, Richards Bay Harbour, Fermentech, Vanguard, SGS South Africa, Kingston Park, Bayview and the Richards Bay Seafarers Club.</p>
# 3 BUSINESS	<p>Consists of the central business district (CBD) of Richards Bay and includes mainly retail, commercial and business uses.</p> <p>The zone includes the University of Zululand, City of uMhlathuze Municipality, Boardwalk Inkwazi Shopping Centre, Netcare The Bay Hospital, Lakeside Mall as well as numerous retail and commercial facilities.</p>

<p># 4 TOURISM</p>	<p>Although this zone falls outside of the 5km area of immediate impact, it was decided that due to the strong strategic importance of establishing this zone as a tourism destination in Richards Bay it should not be excluded from this assessment. The area includes high-end residential housing, numerous restaurants, and the main beach area for Richards Bay.</p> <p>Some of the tourism facilities include Bon Hotel Waterfront, Richards Bay Small Crafts Harbour, Pelican Island, Meerensee Boat Club, Richards Bay Ski Boat Club, Richards Bay Skate Park, Alkantstrand as well as numerous restaurants and tourism accommodation and lodging facilities.</p>
<p># 5 AGRICULTURE</p>	<p>Zone 5 consists mainly of sugarcane farming and lies to the south and south west of the project site. The sugarcane industry is a well-established industry that provides numerous jobs to the local communities and forms an integral part of the local economy.</p>
<p># 6 NATURAL</p>	<p>Zone 6 consists of natural land and green conservation areas that act as a buffer zone between the industrial areas and the agriculture land. This zone lies between zone 1 and zone 5 to the south as well as to the west of zone 1.</p> <p>To the south it is mostly wetlands and to the western portion of the zone there is the Nseleni River and the Nsezi dam. The water treatment works are located within this zone as well as the Richards Bay Radio Flyers Club and the Bay Saddle Club.</p>
<p># 7 FORESTRY</p>	<p>Zone 7 is the forestry areas to the north of the proposed power plant and zone 1.</p> <p>This zone also includes the Life Occupational Health Transnet Insezi Wagon Clinic and the Nsezi Transnet Engineering Depot.</p>
<p># 8 RESIDENTIAL</p>	<p>Zone 8 consists mainly of the residential neighbourhoods to the north and north east of Richards Bay, these include Wild en Weide, Arboretum, Veld en Vlei and Brackenham.</p>

CHAPTER 7: APPROACH TO UNDERTAKING THE SCOPING PHASE

In terms of the EIA Regulations of December 2014 (published in terms of the National Environmental Management Act (NEMA; No. 107 1998), as amended, the construction and operation of the proposed facility is a listed activity requiring environmental authorisation. This Scoping process for the proposed 450MW RMPP is being undertaken in accordance with the Section 24 (5) of the National Environmental Management Act (No 107 of 1998). In accordance with these Regulations, this Scoping process aims at identifying and describing potential issues associated with the proposed project, and defining the extent of studies required within the EIA phase. This was achieved through an evaluation of the proposed project involving desk-top specialist inputs, as well as a consultation process with the Interested and Affected Parties (I&APs), including the decision making authority, directly impacted landowners/occupiers, adjacent landowners/occupiers, relevant organs of state departments, ward councillors and other key stakeholders. This chapter serves to outline the process which was followed during the Scoping Phase of the EIA process.

7.1. Legal Requirements as per the EIA Regulations for the undertaking of a Scoping Report, 2014 (as amended)

This chapter of the scoping report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
(d) a description of the scope of the proposed activity, including (i) all listed and specified activities triggered and (ii) a description of the activities to be undertaken, including associated structures and infrastructure	All relevant listed activities triggered by the development of the 450MW RMPP and a description of the activities which form part of the development of the 450MW RMPP have been included in section 7.1 and Table 7.1.
(g)(ii) details of the public participation process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs	The details of the public participation process undertaken as part of the EIA process for the 450MW RMPP has been described and is included in section 7.3.2.
(g)(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	A summary of the issues raised by I&APs has been included in section 7.3.2. A Comments and Responses report including all comments and responses has been included in Appendix C8 .

7.2. Relevant Listed Activities

In terms of the EIA Regulations GNR 983-985 of 4 December 2014, (as amended, with particular reference to GNR 327-329 of 7 April 2017) , the following 'listed activities' are triggered by the proposed facility:

Table 7.1: Listed activities triggered by the 450MW RMPP

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity as per project description
GN 983 , 04 December 2014 (as amended, in particular, on 07 April 2017)	11	The development of facilities or infrastructure for the transmission and distribution of electricity - (i). outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity as per project description
		The project includes the construction and operation of a 132kV substation.
GN 983 , 04 December 2014 (as amended, in particular, on 07 April 2017)	12	<p>The development of</p> <ul style="list-style-type: none"> (ii) infrastructure or structures with a physical footprint of 100 square meters or more where such development occurs (a) within a watercourse or (c) if no development setback exists, within 32 meters of a watercourse, measured from the edge of a watercourse. <p>No wetlands occur within the project development footprint of the 450MW facility, LPG or Naphtha storage facilities. The 450MW facility, LPG or Naphtha storage facilities and associated infrastructure will however be located within 32 meters of wetlands.</p>
GN 983 , 04 December 2014 (as amended, in particular, on 07 April 2017)	27	<p>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.</p> <p>The development of the 450MW facility and associated infrastructure will result in the clearance of more than 1ha of indigenous vegetation.</p>
GN 983 , 04 December 2014 (as amended, in particular, on 07 April 2017)	28	<p>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</p> <ul style="list-style-type: none"> (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; <p>excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</p> <p>The site for the 450MW RMPP was utilised for agriculture on or after 01 April 1998. It is now zoned General Industrial and is currently surrounded by development zoned as General Industrial within the Alton Industrial area. The proposed LPG storage site has already been almost entirely developed and zoned as Limited Commercial.</p>
GN 984 , 04 December 2014 (as amended, in particular, on 07 April 2017)	2	<p>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</p> <p>The development will have an installed generating capacity of up to 450MW, using LPG, naphtha and natural gas as a fuel source.</p>
GN 984 , 04 December 2014 (as amended, in	4	The development and related operation of facilities or Infrastructure, for the storage, or storage and handling of a

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity as per project description
particular, on 07 April 2017		<p>dangerous good, where such storage occurs in containers with a combined capacity of more than 500m³</p> <p>The storage of dangerous goods (e.g.; oils, diesel, LPG or naphtha storage tanks) will be required. The capacity of the containers will be more than 500m³.</p>
GN 984 , 04 December 2014 (as amended, in particular, on 07 April 2017	6	<p>The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of the national or provincial legislation governing the generation or release of emissions, pollution or effluent.</p> <p>The development of the 450MW facility will require an air emissions license as per the NEM:AQA.</p>
GN 985 , 04 December 2014 (as amended, in particular, on 07 April 2017	2 (d)(viii)	<p>The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres (d) KZN (viii) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p> <p>A water reservoir may be required on site. The project site is located within a Critical Biodiversity Area (CBA).</p>
GN 985 , 04 December 2014 (as amended, in particular, on 07 April 2017GN	4 (d)(viii)	<p>The development of a road wider than 4 metres with a reserve less than 13,5 metres. (d) KZN (viii) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p> <p>No public roads are required to be developed. Internal roads are required to be developed as part of the project. These will be wider than 4m. The project site is located within a Critical Biodiversity Area (CBA).</p>
GN 985 , 04 December 2014 (as amended, in particular, on 07 April 2017GN	12 (d)(iv)	<p>The clearance of an area of 300 square meters or more of indigenous vegetation (d) KZN (iv) within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment, 2004</p> <p>The development of the 450MW RMPP facility, naphtha storage and pipeline and the associated LPG storage site and associated infrastructure will require the clearance of an area of 300 square metres or more of indigenous vegetation and is located within an endangered ecosystem due to the presence of the Maputaland Wooded Grassland.</p>
GN 985 , 04 December 2014 (as amended, in particular, on 07 April 2017GN	14 (ii)(b)	<p>The development of (ii) infrastructure or structures with a physical footprint of 10 square meters or more where such development occurs</p>

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity as per project description
		(c) within 32 meters of a watercourse, measured from the edge of a watercourse Wetlands occur outside the boundaries of the development footprint for the 450MW RMPP site. The development will be located within 32 meters of these wetlands. The project site is also located within a Critical Biodiversity Area (CBA).
GN 324, 08 December 2014 (as amended on 07 April 2017)	18 (d)(vii)	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1-kilometre (d) KZN (viii) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans Existing roads may need to be widened for the project. The project site is also located within a Critical Biodiversity Area (CBA).

On the basis of the above listed activities, a Scoping and an EIA process is required to be undertaken for the development. This process is to be undertaken in two phases as follows:

- » The Scoping Phase includes the identification and description of potential impacts associated with the proposed project through a desktop study and consultation with affected parties and key stakeholders. This phase considers the broader site in order to identify and delineate any environmental fatal flaws, no-go or sensitive areas, as well as project alternatives in order to determine which should be assessed in more detail in the EIA Phase. Following the public review period of the Scoping report, this phase culminates in the submission of a final Scoping Report and Plan of Study for EIA to the competent authority for acceptance and approval to continue with the EIA phase of the process.
- » The EIA Phase involves a detailed assessment of potentially significant positive and negative impacts (direct, indirect, and cumulative) identified in the Scoping Phase. This phase considers a proposed development footprint and includes detailed specialist investigations (including field surveys), consideration of feasible alternatives and public consultation. Recommendations of practical and achievable mitigation and management measures are included in an Environmental Management Programme (EMPr) considering all phases of the project. Following a review of the EIA report and EMPr by stakeholders, this phase culminates in the submission of a Final EIA Report and EMPr to the competent authority for review and decision-making.

7.3. Objectives of the Scoping Phase

This Scoping Phase aims to:

- » Identify, describe and evaluate potential environmental (biophysical and social) impacts and benefits of all phases of the proposed facility (including design, construction, operation and decommissioning) within the site through a desk-top review of existing baseline data and desk-top specialist studies.
- » Identify potentially sensitive environmental features and areas within the broader site in order to inform the preliminary design process of the facility.
- » Define the scope of studies to be undertaken within the EIA process.

- » Provide the authorities with sufficient information in order to make a decision regarding the scope of issues to be addressed in the EIA process, as well as regarding the scope and extent of specialist studies that will be required to be undertaken as part of the EIA Phase of the process.

Within this context, the objectives of this Scoping Phase are to, through a consultative process:

- » Identify the policies and legislation relevant to the project.
- » Motivate the need and desirability of the proposed project, including the need and desirability of the activity in the context of the preferred location.
- » Identify and confirm the preferred project and technology alternative.
- » Identify and confirm the preferred site.
- » Identify the key issues to be addressed in the EIA phase.
- » 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 project will impose on the preferred site through the life of the project, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site.
- » 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.

7.4. . Overview of the Scoping Phase

Key tasks undertaken within the scoping phase included:

- » Consultation with relevant decision-making and regulating authorities (at National, Provincial and Local levels).
- » Submission of the completed application for authorisation to the competent authority (i.e. the National DEFF) in terms of Regulations 5 and 16 of the EIA Regulations 2016, as amended in April 2017 (GNR326).
- » Undertaking a public participation process throughout the Scoping phase in accordance with Chapter 6 of GNR326 in order to identify issues and concerns associated with the proposed project.
- » Undertaking of independent specialist studies in accordance with Appendix 6 of GNR326.
- » Preparation of a Scoping Report and Plan of Study for EIA in accordance with the requirements of Appendix 2 of GN R326.
- » Preparation of a Comments and Responses Report detailing key issues raised by I&APs as part of the Scoping phase.

The tasks are discussed in detail below.

7.4.1. Authority Consultation and Application for Authorisation

In terms of Government Notice 779 of 01 July 2016, the National Department of Environment, Forestry and Fisheries (DEFF) is the competent authority for all energy related projects. As the project is located within the KwaZulu-Natal Province, the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (DEDTEA) is the commenting authority for the project. Consultation with these authorities will be undertaken throughout this Scoping phase. To date, this consultation has included the following:

- » Pre-application consultation meeting;
- » Submission and approval of the public participation plan;
- » Submission of the application for authorisation to DEFF;
- » Submission of this Scoping Report for review by I&APs, the Organs of State and the competent and commenting authorities.

A record of all authority correspondence undertaken prior to and within the Scoping Phase is included in **Appendix C4** and **Appendix C5**.

7.4.2. Public Participation Process

Public participation is an essential and regulatory requirement for an environmental authorisation process and is guided by Regulations under NEMA, specifically the EIA Regulations. The sharing of information forms the basis of the public participation process and offers the opportunity to Interested and Affected Parties (I&APs) to become actively involved in the EIA Process from the outset. The public participation process is designed to provide sufficient and accessible information to I&APs in an objective manner to assist them to:

During the Scoping Phase

- » identify issues of concern and suggestions for enhanced benefits;
- » verify that their issues have been recorded;
- » assist in identifying reasonable alternatives; and
- » contribute relevant local information and knowledge to the environmental assessment.

During the EIA Phase

- » contribute relevant local information and knowledge to the environmental assessment;
- » verify that their issues have been considered in the environmental investigations; and
- » comment on the findings of the environmental assessments.

During the decision-making phase:

- » to advise I&APs of the outcome of the competent authority's decision, and how and by when the decision can be appealed.

The public participation process therefore aims to ensure that:

- » Information that contains all the relevant facts in respect of the application is made available to I&APs for review.
- » Public participation is facilitated in such a manner that I&APs are provided with a reasonable opportunity to comment on the 450MW RMPP project.
- » Adequate review periods are provided for I&APs to comment on the findings of the Scoping and EIA Reports.

The restrictions enforced in terms of Government Gazette 43096 which placed the country in a national state of disaster limiting the movement of people to curb the spread of the COVID-19 virus has placed some limitations on the commencement and continuation of the public consultation as part of the EIA process. Considering these limitations, a public participation plan (**Appendix C9**) and consultation process has been designed by Savannah Environmental and approved by DEFF to cater for the undertaking of the public participation process which includes I&APs, the competent authority, directly impacted

landowners/occupiers, adjacent landowners/occupiers, relevant Organs of State departments, Municipalities, ward councillors and other key stakeholders.

The traditional means and opportunities available for the undertaking of public participation will still be covered and implemented as part of the public participation plan considering the current limitations. Alternative means of undertaking consultation has been designed and will be implemented by Savannah Environmental to ensure that I&APs are afforded sufficient opportunity to raise comments on the project through an interactive web-based platform readily available and accessible to any person illustrating interest in the project and enables the public participation process to be undertaken in line with Regulations 41 to 44 of the EIA Regulations, 2014, as amended.

This online stakeholder engagement platform allows the EAP to visually present details regarding the project and our consultation documentation, including project maps and plans, presentations and posters regarding the project, and reports available for review. The use of online tools enables stakeholders and I&APs to explore the project- specific content in their own time, and allow them to participate in a meaningful way in the consultation process. The online platform allows for instant feedback and comments to be submitted, in so doing saving time for the stakeholder and also giving the assurance that their comments have been submitted for inclusion in the project reporting. The online stakeholder engagement platform considered the limitations applied by the Disaster Management Act Regulations prohibiting the gathering of people, as well as limitations which certain I&APs may have in terms of access to computers and internet as well as access to public spaces not open for operation or which have restricted access.

The schematic illustration overleaf provides an overview of the tools that are available to I&APs and stakeholders to access project information and interact with the public participation team to obtain project information and resolve any queries that may arise, and to meet the requirements for public participation.



Key tasks undertaken in the Scoping Phase to ensure effective participation includes the following:

- » Distribution of project related information in the form of notification letters and a background information document at the outset of the EIA process.
- » Identification of stakeholders and I&APs, including:
 - o all organs of state which have jurisdiction in respect of the activity to which the application for environmental authorisation relates;
 - o owners, person in control of and occupiers of the site where the activity is to be undertaken or to any alternative site where the activity is to be undertaken;
 - o owners, person in control of, and occupiers of land adjacent to the site where the activity is to be undertaken or to any alternative site where the activity is to be undertaken;
 - o 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;
 - o the municipality which has jurisdiction in the area; and

- o any other I&AP as required by the competent authority.
- » Placement of site notices at the project site.
- » Placement of advertisements in a local and a regional newspaper.
- » Radio live reads.
- » Compilation of an I&AP database which is updated throughout the Scoping and EIA process.
- » On-going consultation with all registered I&APs regarding the progress in the EIA process through stakeholder consultation via notification letters, telephone calls, sms's, whatsapp, 'please call me' and consultation meetings or virtual focus group meetings.
- » Release of the Scoping and EIA reports for 30-day review periods.

The following sections detail the tasks which were undertaken as part of the public participation process within the Scoping Phase to date.

i. Stakeholder identification

The first step in the public participation process is to initiate the identification of potential I&APs. I&APs have been identified through a process of networking and referral, obtaining information from Savannah Environmental's existing stakeholder database, liaison with potentially affected parties in the study area and a registration process involving the completion of a registration and comment sheet. Key stakeholders and affected and surrounding landowners have been identified and registered on the project database. Other stakeholders are required to formally register as stakeholders or interested and affected parties (I&APs) for the EIA process. An initial list of stakeholders identified and registered is listed in **Table 7.2**.

Table 7.2: List of Stakeholders identified during the Scoping Phase

Organs of State
National Government Departments
Department of Mineral Resources and Energy (DMRE)
Department of Environment, Forestry and Fisheries (DEFF)
Department of Agriculture, Rural Development and Land Reform (DARDLR)
Department of Human Settlement, Water and Sanitation (DHSWS)
Government Bodies and State Owned Companies
Eskom Holdings SOC Limited
National Energy Regulator of South Africa (NERSA)
South African Civil Aviation Authority (CAA)
South African National Roads Agency Limited (SANRAL)
South African Heritage Resources Agency (SAHRA)
Telkom SA Ltd
Transnet SA SOC Limited
Provincial Government Departments
KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA)
Amafa / Heritage KwaZulu-Natal
Ezemvelo KZN Wildlife
Local Government Departments
King Cetshwayo District Municipality
City of uMhlatuze Local Municipality

Non-Governmental Organisations

BirdLife South Africa

Wildlife and Environment Society of South Africa (WESSA)

Endangered Wildlife Trust (EWT)

Richards Bay Clean Air Association

GroundWork

Landowners

Affected landowners

- » Moondream Trading (an associated group company of Phinda Power Producers)
- » Baront Investments (an associated group company of Phinda Power Producers)

Neighbouring landowners

- » City of uMhlathuze Local Municipality
- » Mondi
- » Transnet Ltd
- » Richards Bay IDZ

ii. Database of Interested and Affected Parties

As per Regulation 42 of the EIA Regulations, 2014 (as amended in April 2017), all relevant stakeholder and I&AP information has been recorded within a register of I&APs (refer to **Appendix C1** for a listing of the recorded parties). The register of I&APs contains the details of¹³:

- » all persons who requested to be registered on the database in writing;
- » all organs of state which hold jurisdiction in respect of the activity to which the application relates; and
- » all persons who submitted written comments or attended meetings during the public participation process.

While I&APs have been encouraged to register their interest in the EIA process from the onset, the identification and registration of I&APs will be on-going for the duration of the EIA process. The register of I&APs will be updated throughout the EIA process, and will act as a record of the parties involved in the public participation process.

iii. Adverts and Notifications

The EIA process, commencing in September 2020, was announced with an invitation to the organs of state, potentially affected and neighbouring landowners and general public to register as I&APs and to actively participate in the EIA process. This was achieved via the following:

- » Placement of site notices announcing the EIA process on 11 September 2020 at visible points along the boundary of the project site, in accordance with the requirements of the EIA Regulations. Photographs and the GPS coordinates of the site notices are contained in **Appendix C2**.
- » Placement of advertisements announcing the EIA process for the project and inviting members of the public to register themselves as I&APs on the project database in the Zululand Observer newspaper on 10 September 2020. Proofs are contained in **Appendix C2**.

¹³ Note that addresses and contact details are not contained within the register presented to the public in line with the requirements of the Protection of Personal Information (POPI) Act (Act 4 of 2013).

- » An advertisement announcing the availability of and inviting comment on the Scoping Report in Zululand Observer newspaper on 02 October 2020. The tear sheet of the newspaper advert is available in **Appendix C2**.
- » Radio adverts (live reads) on a local community radio station have been undertaken on the 07 October 2020, 14 October 2020 and the 28 October announcing the project and the availability of the scoping report and where I&AP's can register their details should they require any further information. Proof of the live read schedule is available in Appendix C2.
- » Compilation of a background information document (BID) for the project in order to provide information regarding the 450MW RMPP and the EIA process (refer to **Appendix C3**). The BID has been distributed to identified stakeholders and I&APs together with a notification letter on 10 September 2020. The BID is also available electronically on the Savannah Environmental website (<https://www.savannahsa.com/public-documents/energy-generation/450mw-emergency-risk-mitigation-power-plant/>).
- » Distribution of EIA process notification letters notifying registered I&APs of the 450MW RMPP and of the availability of the Scoping Report for review, and stakeholder reply forms to organs of state, potentially affected and neighbouring landowners as well as stakeholders/I&APs via email on 10 September 2020. The evidence of this process notification is contained in **Appendices C4** and **C5**. I&APs have been encouraged to view the Scoping Report and submit written comment. The Scoping Report has been circulated to Organs of State via CD or electronic transfer (Dropbox, WeTransfer, etc), as per individual request. The evidence of distribution of the Scoping Report has been included in this Scoping Report (refer to **Appendix C**).

iv. Public Involvement and Consultation

In order to accommodate the varying needs of stakeholders and I&APs within the study area, as well as capture their views, issues and concerns regarding the project, various opportunities have been provided in the scoping phase and will continue to be provided to I&APs to note their issues during the remainder of the EIA process. I&APs have been consulted through the following means:

- » **Focus group meetings:** Focus group meetings have been held with key government departments, stakeholders and landowners during the scoping phase of the process. The purpose of these focus group meetings were to introduce the project and EIA process, to facilitate comments on the EIA process and Scoping Report, as well as to record any issues or concerns raised by stakeholders regarding the project. As per the approved public participation plan, these meetings were held via virtual platform. The minutes of these meetings have been included in this final Scoping Report for review and acceptance by the DEFF (**Appendix C7**). The list of meetings that were held is included in Table 6.3.
- » **One-on-one consultation meetings** for example with directly affected or surrounding landowners As per the approved public participation plan, these meetings have been held via virtual platform.
- » **Telephonic** consultation sessions.
- » Written, faxed or e-mail correspondence.

All comments received during the 30-day review period have been included in **Appendix C6** and minutes of all meetings held during the review period have been included in **Appendix C7** within this Final Scoping report.

Table 7.3: Summary of Public Participation Process

Activity	Date
The EIA process was advertised in: » The Zululand Observer.	10 September 2020
Placement of site notices, on-site and in public places.	11 September 2020
Distribution of process notification letters and background information documents to organs of state departments, ward councillors, landowners within the study area, neighbouring landowners and stakeholder groups.	10 September 2020
The availability of the scoping report was advertised in: » The Zululand Observer	01 October 2020
Distribution of notification letters for the availability of the scoping report to organs of state departments, ward councillors, landowners within the study area, neighbouring landowners and stakeholder groups.	02 October 2020
Distribution of Scoping Report	02 October 2020
Review period for the Scoping Report for public comment.	02 October 2020 – 02 November 2020
List of Focus Group Meetings that were held: » City of Mhlathuze Local Municipality » KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs » Richards Bay Clean Air Association » Adjacent Landowners – Mondli and Transnet » <u>Ezemvelo KZN Wildlife</u> » <u>Richards Bay IDZ</u> » <u>King Cetshwayo District Municipality</u>	<u>Focus Group Meetings were held on the following dates as per the meeting minutes provided within Appendix C7:</u> » <u>28 October 2020</u> » <u>29 October 2020</u> » <u>30 October 2020</u> » <u>18 November 2020</u>

v. Identification and Recording of Issues and Concerns

A Comments and Responses Report has been compiled and includes all comments received during the 30-day review period. The Comments and Responses Report is included as **Appendix C8**.

A summary of the issue raised during the 30-day review period are summaries below:

- » **Eskom Transmission:** Comments were received from the Eskom Transmission division to ensure that the approved Eskom corridors in the vicinity of the site were taken into consideration for the project and project's transmission infrastructure.
- » **Openserve:** Openserve indicated that Telkom infrastructure in the form of subsurface fibre cables may be affected by the proposed development and transmission infrastructure. Approval for alternations or moving of the fibre cables may be required and this must be obtained from Openserve.
- » **Groundwork:** Groundwork enquired on the public participation procedure undertaken for the project thus far and the inclusion of fishing communities and subsistence farmers in the area.
- » **Richards Bay Clean Air Association:** The RBCAA enquired on the detail of the Air Quality Scoping report i.e. the data used in the baseline assessment, modelling and need for a Mercaptan tank at the site. The RBCAA enquired about the Climate Change Assessment, AEL Application timeframes and corrections to the cumulative map provided in the Scoping report. A meeting was held with the air quality specialist to address these issues. The RBCAA further indicated that it was their perception, the project was split into phase 1 and phase 2 with the 450MW RMPP being phase 1 and a 3000MW facility being phase 2 and requested a meeting to clarify this. The meeting was held on the 18 November

2020. It was explained that the 450MW RMPP project is a stand alone discreet project, and not part of a phased project. The minutes of the meeting are available in Appendix C7 of this Final Scoping report.

- » **The Zululand Observer:** The Chief Editor of the Zululand Observer enquired about the progress, employment opportunities and status of the project and any pending land claims.
- » **Ezemvelo KZN Wildlife:** Indicated that offset receiving areas must be considered within the Terrestrial Assessment in the EIA phase of the project.

7.5. Review of the Scoping Report

The Scoping Report was made available for review from **02 October 2020 – 02 November 2020** and was available for download from the Savannah Environmental website, www.savannahSA.com.

7.6. Identification and Evaluation of Issues

In terms of GN R960 (promulgated on 5 July 2019) and Regulation 16(1)(b)(v) of the 2014 EIA Regulations (as amended), the submission of a Screening Report generated from the national web based environmental screening tool is compulsory for the submission of applications in terms of Regulation 19 and 21 of the 2014 EIA Regulations.

The requirement for the submission of a Screening Report (**Appendix P** for the proposed development is applicable as it triggers Regulation 19 of the 2014 EIA Regulations (as amended). **Table 7.4** provides a summary of the specialist assessment requirements identified for the project site in terms of the screening tool and responses to each assessment requirement based on the nature and extent of the project.

Table 7.4: Sensitivity ratings from the DEFF's web-based online Screening Tool associated with the development of 450MW RMPP and associated infrastructure

Specialist Assessment	Sensitivity Rating as per the Screening Tool (relating to the need for the study)	Project Team Response
Landscape/Visual Assessment	Not specified within screening tool	A Visual Impact Assessment has been undertaken for the proposed project.
Archaeological and Cultural Heritage Impact Assessment	Not specified within screening tool	A Heritage Impact Assessment has been undertaken for the proposed project.
Palaeontology Impact Assessment	Not specified within screening tool	A Heritage Impact Assessment encompassing a Palaeontology assessment has been undertaken for the proposed project
Terrestrial Biodiversity Impact Assessment	Very High Sensitivity	A Terrestrial Biodiversity Impact Assessment has been undertaken for the proposed project.
Aquatic Biodiversity Impact Assessment	Very High Sensitivity	An Aquatic Biodiversity Impact Assessment has been undertaken for the proposed project.
Hydrology Assessment	Not specified within screening tool	A surface water assessment has been undertaken for the proposed project.
Socio- Economic Assessment	Not specified within screening tool	A Socio- Economic Impact Assessment has been undertaken for the proposed project.
Plant Species Assessment	Medium Sensitivity	A plant species assessment has been included within the Terrestrial Biodiversity Assessment.
Animal Species Assessment	High Sensitivity	An animal species assessment has been included within the Terrestrial Biodiversity Assessment.

Specialist Assessment	Sensitivity Rating as per the Screening Tool (relating to the need for the study)	Project Team Response
Soil and Agricultural Assessment	Very High Sensitivity	A Soil and Agricultural Potential Assessment has been undertaken for the proposed project.

Based on the results of the screening, and from experience on similar projects and in the study area, the EIA project team has identified the following issues as requiring investigation.

Table 7.5: Specialist consultants appointed to evaluate the potential impacts associated with the 450MW RMPP

Issue	Specialist	Refer Appendix
Terrestrial Ecology	Jacquette Adam and Charlene Smuts of Exigent Engineering Consultants	Appendix D
Wetland and Aquatic Ecology	Jacquette Adam and Charlene Smuts of Exigent Engineering Consultants	Appendix E
Geo-Hydrology	Andrew Greet of Davies Lynn & Partners	Appendix F
Surface Water	Andrew Greet of Davies Lynn & Partners	Appendix G
Soils and Agricultural Potential	John Phipson of Mzansi Agriculture	Appendix H
Archaeology & Palaeontology	Gavin Anderson of Umlando: Archaeological Surveys and Heritage Management	Appendix I
Air Quality	Terri Bird of AirShed Planning Professionals	Appendix J
Noise	Morne de Jager of Enviro Acoustic Research cc	Appendix K
Visual	Lourens de Plessis of LOGIS	Appendix L
Socio-Economic	Eugene de Beer of Urban Econ Development Economists	Appendix M
Geotechnical Assessment	Andrew Greet of Davies Lynn & Partners	Appendix N

In order to evaluate issues and assign an order of priority, the following methodology was used to identify the characteristics of each potential issue/impact for each of the proposed project components:

- » Identify the **nature** of the potential impact, which includes a description of what causes the effect, what will be affected and how it will be affected
- » Identify the **extent** of the potential impact, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development) or regional
- » Identify **sensitive receptors** that may be impacted on by the proposed facility and the **types of impacts** that are most likely to occur.
- » Evaluate the **significance** of potential impacts in terms of the requirements of the EIA Regulations.
- » Identify the potential impacts that will be **considered further** in the EIA Phase.

7.7. Finalisation of the Scoping Report

This final stage of the Scoping Phase captures responses from stakeholders and I&APs on the Scoping report in order to finalise and submit this Final Scoping report for consideration. It is this final Scoping report upon which the decision-making environmental authorities provide comment, recommendations, and acceptance to undertake the EIA Phase of the process.

7.8 Assumptions and Limitations of the EIA Process

In conducting this Scoping report, the following general assumptions have been made:

- » It is assumed that the project site identified represents a technically suitable site for the establishment of the 450MW RMPP and associated infrastructure (i.e. based on the surrounding land use, access to the site, access to infrastructure etc.)
- » This Scoping report has been prepared based on information available at the time of undertaking the study. More detailed information will be available for consideration in the EIA phase of the process.

Refer also to the specialist studies contained in **Appendices D – N**.

CHAPTER 8: SCOPING OF ISSUES ASSOCIATED WITH THE 450MW RMPP

The potential impacts of the proposed 450MW RMPP (i.e. construction, operation and decommissioning phases) are identified, described and evaluated in this chapter in accordance with the requirements of the EIA Regulations. In accordance with the objectives of the scoping study (as defined in Chapter 7 of this report), this has been informed by a review of existing baseline information and desktop investigations. This has been undertaken with the aim of determining the feasibility of undertaking the development within the project site, and identifying issues which will be assessed further and confirmed in the EIA phase.

The majority of the environmental impacts are expected to occur during the construction phase with developments of this nature. Environmental issues associated with construction and decommissioning activities of the development are similar and include, among others:

- » Impacts on ecology, including wetlands, fauna and flora within and around the site.
- » Impacts on underground-water, soil and agricultural potential of the development footprint.
- » Impacts on heritage resources, including archaeological and palaeontological resources, within the development footprint.
- » Impacts on the social aspects of the affected communities within and around the project site, including visual, noise and traffic impacts.

Environmental issues specific to the operation of the 450MW RMPP and its associated infrastructure could include, among others:

- » Impacts on water resources.
- » Impacts on ambient noise levels in the area.
- » Impacts on ambient air quality of the area.
- » Impacts on climate change.
- » Impacts on the social and visual aspects of the affected communities within and around the project site.
- » Traffic impacts.
- » Economic impacts

The sections which follow provide a summary of the findings of the scoping study undertaken for the construction and operation phases of the proposed project. Impacts associated with the decommissioning phase are expected to be similar to those associated with construction and are therefore not repeated. Impacts of the 450MW RMPP are described and evaluated, and recommendations are made regarding further studies required within the EIA phase of the process.

8.1 Legal Requirements as per the EIA Regulations for the undertaking of a Scoping Report, 2014 (as amended)

This chapter of the scoping report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
(g)(v) the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified 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.	The potential impacts associated with the construction and operation of the 450MW RMPP have been identified and assessed within Section 8.3.
(g)(vi) the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives	The methodology used in identifying the potential impacts and risks is included in Section 8.2.
(g)(vii) positive and negative impacts that 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	The positive and negative impacts associated with the development of the project have been included in Section 8.3.
(g)(viii) the possible mitigation measures that could be applied and level of residual risk	Recommendations regarding the development of the 450MW RMPP have been included in Section 8.3.

8.2. Methodology for the Impact and Risk Assessment during the Scoping Phase

The following methodology was used to describe and evaluate the main issues and potential risks and impacts associated with the 450MW RMPP during the scoping phase:

- » The identification of potential sensitive environments and receptors that may be impacted on by the development and the types of impacts (i.e. direct, indirect and cumulative) that are most likely to occur. This was achieved through a review of existing baseline information and desk-top investigations to define sensitivities in relation to the project description and layouts provided at this stage in the process.
- » Description of the nature, significance, consequence, extent, duration and probability of potential impacts, as well as the degree to which these impacts are reversible, may cause irreplaceable loss of resources and can be avoided, managed or mitigated during the construction and operation phases.
- » The identification of potential risks to the development and the environment, and identification of 'No-Go' areas within the broader area and project site, where applicable.
- » The compilation of a summary of the potential impacts that will be considered further in the EIA Phase through specialist assessments.

8.3. Impacts during the Construction Phase

8.3.1 Potential Impacts on Ecology

The following impacts on the ecology within the project site and the surrounding area could potentially occur during the construction phase of the 450MW RMPP (refer to **Appendix D**):

Loss of vegetation and terrestrial habitats

Vegetation plays an important part in the functioning of ecosystems, as well as maintaining biological processes in the soil, reducing the loss of topsoil and nutrients, and recycling of nutrients. The removal of natural vegetation results in a loss of habitat for fauna and flora species. The proposed development site is however surrounded by industrial development and is an isolated patch of terrestrial habitat. The vegetation on the 450MW RMPP site was broadly classified into two vegetation communities, namely *Helichrysum - Chrysanthemoides* coastal grasslands, and approximately 191m² of the site consisted of Eucalyptus plantations. A *Phragmites - Typha* channelled valley bottom wetland community was observed on the eastern border of the site. This channelled valley will be excluded from the development footprint. The proposed LPG Storage Terminal site itself is developed and consists of mini factories and warehouses that will be demolished in order to accommodate for the LPG infrastructure. Therefore impacts on the receiving environment in its current state are expected to be moderate.

Potential loss of faunal species.

The removal of natural vegetation results in a loss of habitat for faunal species. Species typically resident in and around urban and industrial areas are commonly generalists with a wide range of habitat types. It is therefore unlikely that the proposed development will have lasting adverse impact on the faunal species of the area. Terrestrial habitat is the most abundant and provide habitat to a vast variety of small mammals such as rodents, shrews, mongooses etc. Approximately 48 mammal species, 23 reptile species and 53 frog species have the potential to use the development site and its surrounding areas and approximately 358 bird species have been recorded in the area. The proposed development is however unlikely to impact on any avifauna individuals of the area. The impacts on the receiving environment in its current state is expected to be low.

Potential loss of species of special concern

Species of special concern could potentially occur on the proposed 450MW RMPP site, such as *Crinum stuhlmannii* in the *Helichrysum - Chrysanthemoides* coastal grasslands. *Zoothera guttata* (spotted ground thrush) is listed on the DEA Screening tool with a high potential to occur on the proposed development site. No protected species were observed during the site visit, however searches for the potential species will be continued during follow-up site visits. Potential loss of protected species and species of special concern within the terrestrial biodiversity habitats in the development site were considered to be low.

Habitat fragmentation (loss of corridors)

The entire surrounding land use is industrial. However the proposed site is currently undeveloped and does provide habitat for species. The change of land use may impact on migration corridors of small mammals and reptiles. The eastern corridor will remain open and areas in and around the development will remain open. Loss of migration corridors for terrestrial fauna and flora species was considered to be low.

Impact			
<p>Potential impacts on the terrestrial biodiversity is related to the loss of vegetation and terrestrial habitat. Potentially, this results in a loss of fauna and flora species, migration corridors and the potential loss of protected species and species of special concern. Disturbance of the natural vegetation by the proposed activities may furthermore accelerate the growth of exotic species. <i>Crinum stuhlmannii</i> has been recorded in the <i>Helichrysum – Chrysanthemoides</i> coastal grasslands, outside the proposed development footprint. <i>Zoothera guttata</i> (spotted ground thrush) is listed on the DEA Screening tool with a high potential to occur on the proposed development site. No protected species were observed within the development area during the site visit, however searches for the potential species will be continued during follow-up site visits.</p> <p>The habitat present at the proposed development site is degraded through historical land uses and alien plant infestations.</p>			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Loss of vegetation and terrestrial habitat	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> » Loss of biological processes in the soil » Loss of topsoil and nutrients » Loss of nutrient recycling » The removal of natural vegetation results in a loss of habitat for fauna and flora species <p><u>Indirect Impacts:</u></p> <ul style="list-style-type: none"> » Minimal edge effects leading to loss of habitat outside development site 	Regional	None identified at this stage
Potential loss of faunal species	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> » Loss of habitat will potentially lead to a loss faunal species <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> » Minimal edge effects leading to loss of habitat outside development site, thus loss of faunal species 	Regional	None identified at this stage
Potential loss of Species of Special Concern	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> » None <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> » Loss of protected species in terrestrial habitat 	National	None identified at this stage

Habitat fragmentation (loss of corridors)	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> » Loss of habitat for terrestrial species » Potential loss of migration routes for terrestrial fauna » Potential decrease in dispersal of flora seeds <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> » Minimal edge effects leading to potential loss of habitat for terrestrial species » Potential loss of migration of terrestrial fauna 	Regional	29 m wetland buffer zone
Infestation of alien species	<p><u>Direct Impact</u></p> <ul style="list-style-type: none"> » Increase in the invasions by alien and invasive species through loss of natural vegetation and disturbance of soil <p><u>Indirect Impacts</u></p> <ul style="list-style-type: none"> » Loss of habitat for terrestrial species » Potential loss of protected species in terrestrial habitat 	Regional/Local	None identified at this stage

Description of expected significance of impact

The proposed development site has a long history of transformation and therefore the impacts on the terrestrial environment are likely to be limited as the species typically resident in and around urban and industrial areas are commonly generalists with a wide range of habitat types. Protected species such as *Crinum stuhlmannii* and *Zoothera guttata* have potential to occur on the proposed development site. However, no protected species were observed within the development areas during the previously conducted site visits. Impacts can be minimised through the implementation of appropriate mitigation measures.

Gaps in knowledge & recommendations for further study

- » Mapping of all protected species and species of special concern within the development footprint.
- » Mapping of known and potential habitats used in breeding, foraging, roosting, aestivation and hibernation.
- » Describing the condition of all habitats and clearly indicating these on an Ecological sensitivity map.
- » Indication of the potential of protected species to occur on the proposed development site.

Recommendations with regards to general field surveys

- » Field surveys must include the proposed development site and adjacent surrounding areas with indigenous vegetation and habitats within a 500 m radius of the project footprint.
- » In season (November to April) follow-up terrestrial site visits to determine the diversity of resident fauna species
- » In season follow-up terrestrial site visits to determine the diversity of vegetation species.
- » A follow up site visit is to be undertaken for small mammal trapping.
- » Active search will be required for the protected species and species of concern that have a high probability of occurrence which will be impacted by the proposed facility.

8.3.2 Potential Impacts on Wetlands and Aquatic Features

The following potential impacts are expected to occur within the project site and on the wetland and aquatic features present in the surrounding areas during the construction phase (**Appendix E**):

Destruction of natural habitat –wetland habitat

Two wetland systems were identified within the 500 m regulated area as per the National Water Act - one to the west of the proposed 450MW RMPP development site and one along the eastern border of the site. Both were classified as *Phragmites - Typha* channelled valley bottom wetlands. Two depression wetlands are located on Erf 1854, just north of the regulatory area. No wetlands were identified within the boundaries of the proposed 450MW RMPP Power Plant and fuel storage development areas, 132 kV substation, and internal LPG supply pipeline. However, a *Phragmites - Typha* channelled valley bottom wetland lies to the eastern boundary of the proposed 450MW RMPP Power Plant and LPG Storage Terminal sites, following the low points in the landscape around the southern boundary of the LPG Storage Terminal. A 29 m buffer is required for the *Phragmites - Typha* channelled valley bottom wetland, the proposed RMPP is located outside of the recommended 29m buffer zone. No development should be allowed within the 29 m buffer. Buffer zones are required to protect natural resources and limit the negative adverse effects of activities on the sensitive watercourse habitats. Existing threats to watercourses from adjacent activities includes increases in sedimentation and turbidity, increased nutrient inputs, increased inputs of toxic organic and heavy metal contaminants and pathogen inputs, as well as loss of habitat for aquatic to semi-aquatic species (Macfarlane et. al, 2017). The destruction of natural wetland habitat was therefore considered to be of medium significance.

Potential loss of Species of Special Concern

Pockets of *Barringtonia racemosa* and *Ficus trichopoda* species were recorded in the *Phragmites - Typha* channelled valley bottom wetland adjacent to the proposed development activities. However, as no development will take place within this wetland system, the impact on species of special concern will be negligible and no permits in terms of the NEMBA, NFA or the KZN Nature Conservation Ordinance will be required. Potential loss of protected species and species of special concern within the aquatic and semi-aquatic habitats in the study area was determined to be low.

Habitat fragmentation (loss of corridors)

The *Phragmites - Typha* channelled valley bottom wetland which lies adjacent to the eastern boundary of the proposed 450MW RMPP Power Plant and LPG Storage Terminal sites, is part of a large wetland system with an outflow indirectly into the Port of Richards Bay. This wetland system provides connectivity to the other similar habitats in the area. As no development will take place in this wetland and or the 29m buffer there will be no potential loss of wetlands; therefore migration of aquatic and semi-aquatic fauna and dispersal of flora seeds will remain possible during construction and the operational phases of the project. The loss of migration corridors for aquatic and semi-aquatic fauna and dispersal of flora was determined to be low.

Infestation of alien invasive species

The disturbance of the natural vegetation by the proposed activities may aid exotic species to invade the area. Utmost care should be taken not to disperse and increase the colonisation of these species. The increase in the invasions by alien and invasive species through loss of natural vegetation and disturbance soil was determined to be low.

Hydrological Impacts

Vegetation clearance may result in sheet erosion and will further reduce the capacity of the land surface to retard the flow of surface water, thus, decreasing infiltration, and increasing both the quantity and velocity of surface water runoff and erosion. Hydrological impacts relate to any alterations in the quantity, timing and distribution of water inputs and through flows within the wetlands. Construction activities associated with bulk earthworks (such as excavations, stockpiling, reshaping, back-filling and compaction) in the catchment area feeding downstream watercourses can alter natural patterns of surface runoff reaching water resources downslope/downstream. Excavations may impound and redirect water, thus starving downstream water resources. Infilling, compaction and rutting of soils caused by construction vehicles working outside the wetlands also alter the patterns of diffuse surface and sub-surface flows by altering micro-topography and the permeability of soil profiles. Changes in flow patterns reaching aquatic ecosystems does not only affect hydrological functionality and thus ecosystem integrity, but may lead to erosion and sedimentation through increased runoff velocities linked to concentrated flow paths created during construction. Hydrological impacts by altering natural patterns of surface runoff, diffusion of surface and sub-surface flows and erosion and sedimentation of watercourses were determined to be of medium significance.

Pollution of surface and groundwater due to chemical, oil and fuel spills

Contaminants such as hydrocarbons, solids and pathogens will be generated from several potential sources (examples include petrol/diesel, naphtha, LPG, oil/grease, cement/concrete and other hazardous substances). These contaminants have the capacity to negatively affect aquatic ecosystems including sensitive or intolerant species of flora and fauna. Where significant changes in water quality occur, this will ultimately result in a shift in aquatic species composition, favouring more tolerant species, and potentially resulting in the localised exclusion of sensitive species. Sudden drastic changes in water quality can also have chronic effects on aquatic biota leading to localised extinctions. During the construction and operational phase of the proposed project, the potential for spills and leakages will occur. Contaminants during the construction phase will include mainly oil/ grease and petrol/ diesel. These pollutants may result from leakages from operating equipment, vehicles, oil changes during the servicing of equipment and vehicles or, or from spills as a result of incorrect handling of substances or equipment. Pollution of surface and ground water was determined to be of medium significance.

Impact			
<p>Potential impacts on the aquatic biodiversity and pockets of <i>Barringtonia racemosa</i> and <i>Ficus trichopoda</i> protected species are expected to be negligible due to the location of the proposed project outside of the <i>Phragmites - Typha</i> channelled valley bottom wetland. The recommended 29 m buffer should be excluded from the development. This wetland system is degraded through trampling, subsistence farming and alien plant infestations. Although a loss of natural habitat has taken place, the basic functions performed by this wetland system are still predominantly unchanged.</p>			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Destruction of wetland habitat	<p><u>Direct Impact</u></p> <ul style="list-style-type: none"> » None <p><u>Indirect Impact</u></p> <ul style="list-style-type: none"> » Increases in sedimentation and turbidity » Increased nutrient inputs » Increased inputs of toxic organic and heavy metal contaminants and pathogen inputs » Degradation to wetland health » Loss of habitat for aquatic to semi-aquatic species 	Regional	<i>Phragmites - Typha</i> channelled valley bottom wetland and associated 29 m buffer zone
Potential loss of Species of Special Concern	<p><u>Direct Impact</u></p> <ul style="list-style-type: none"> » None <p><u>Indirect Impact</u></p> <ul style="list-style-type: none"> » Potential Loss of protected species in aquatic and semi-aquatic habitat due to the destruction of wetland habitat 	National	<i>Phragmites - Typha</i> channelled valley bottom wetland and associated 29 m buffer zone
Habitat fragmentation (loss of corridors)	<p><u>Direct impact</u></p> <ul style="list-style-type: none"> » Potential loss of migration of aquatic and semi-aquatic fauna » Potential decrease in dispersal of flora seeds <p><u>Indirect Impact</u></p> <ul style="list-style-type: none"> » Edge effects leading to potential loss of habitat for aquatic to semi-aquatic species » Potential loss of migration of aquatic and semi-aquatic fauna 	Regional	All wetland areas to be treated as No-Go areas. 29 m wetland buffer zone should also be regarded as a No-Go area
Infestation of alien species	<u>Direct Impact</u>	Regional	None identified at this

	<ul style="list-style-type: none"> » Increase in the invasions by alien and invasive species as a result of loss of natural vegetation and disturbance of soil <p><u>Indirect Impact</u></p> <ul style="list-style-type: none"> » Loss of habitat for aquatic to semi-aquatic species » Potential loss of protected species in aquatic and semi-aquatic habitat 		stage
Hydrological impacts	<p><u>Direct Impact</u></p> <ul style="list-style-type: none"> » Decreased infiltration of soils » Increased quantity and velocity of surface water runoff » Impoundment and redirection of water » Alteration in the patterns of diffuse surface and sub-surface flows by altering micro-topography and the permeability of soil profiles <p><u>Indirect Impact</u></p> <ul style="list-style-type: none"> » Starvation of downstream water resources » Erosion » Sedimentation of watercourse 	Regional	<i>Phragmites - Typha</i> channelled valley bottom wetland and associated 29 m buffer zone
Pollution of surface and groundwater due to chemical, oil and fuel spills	<p><u>Direct Impact</u></p> <ul style="list-style-type: none"> » Changes to water quality » shift in aquatic species composition <p><u>Indirect Impact</u></p> <ul style="list-style-type: none"> » Potential impact on aquatic fauna and flora species » Potential impact on of protected species and species of special concern 	Regional	<i>Phragmites - Typha</i> channelled valley bottom wetland and associated 29 m buffer zone
<p>Description of expected significance of impact</p> <p>The impacts on the aquatic resources are likely to be limited as the extent of the proposed project development area lies outside the sensitive <i>Phragmites - Typha</i> channelled valley bottom wetland. As no development should be allowed in the buffer zone, impacts can be minimised through the implementation of appropriate mitigation measures.</p>			
<p>Gaps in knowledge & recommendations for further study</p> <ul style="list-style-type: none"> » The description of the current state of this identified wetland, specifically focusing on Present Ecological State (PES), Ecological Importance and Sensitivity (EIS) as 			

well as the Ecosystem Regulating and Supporting Services that this wetland system provides will be presented in the Aquatic Biodiversity Impact Assessment Report during the EIA phase of the project.

- » In-situ water quality testing is planned during the follow-up site visit and the results will be presented and interpretation thereof presented in the Aquatic Biodiversity Impact Assessment Report which will be submitted during the EIA phase of the project.
- » The results obtained will form the baseline survey from which changes to both upstream and downstream impacts of the construction activities can be measured during the construction and operation phases of the proposed development and will inform monitoring requirements for the project Environmental Management Programme (EMPr).

Recommendations with regards to general field surveys

- » Water quality monitoring, through in-situ water testing will provide insights into the health of the river-wetland ecosystem. The following variables will be measured:
 - Temperature;
 - Dissolved Oxygen;
 - Conductivity @ 25°C;
 - pH @ 25°C; and
 - Flow Rate.
- » The recorded values will be compared to the acceptable ranges as indicated in the South African Water Quality Guidelines compiled by the Department of Water Affairs and Forestry (DWA, 1998) for Aquatic Ecosystems and presented and discussed in the Aquatic Biodiversity Impact Assessment Report during the EIA phase of the project.

8.3.3 Potential Impacts on Geo-hydrological Features

The following potential impacts were identified to be associated with the construction of the 450MW RMPP and associated infrastructure on the geo-hydrological features present (**Appendix F**):

- » During the Construction Phase, chemical pollutants (hydrocarbons from equipment, vehicles and plant, cleaning fluids, cement powder, wet concrete, shutter-oil, etc) associated with site clearing machinery and construction activities, as well as the demolition of existing structures (existing warehousing on Lot 1795) could migrate downwards through the subsoils and into the groundwater by rainfall infiltration. Construction phase impact were determined to be of low significance with the implementation of mitigation measures. Appropriate ablution facilities should be provided for the workers during the Construction Phase of the 450MW RMPPP Power Plant.

Impact
 During the Construction Phase, chemical pollutants (hydrocarbons from equipment, vehicles and plant, cleaning fluids, cement powder, wet concrete, shutter-oil, etc) associated with site clearing machinery and construction activities, as well as the demolition of existing structures (existing warehousing on Lot 1795) could migrate downwards through the subsoils and into the groundwater by rainfall infiltration

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Potential impact on groundwater due to on-site accidental fuel spills and leaks/ leachate and infiltration of dirty water.	Contamination of the groundwater located within the area of the project site	Local	All wetland areas and associated 29m buffer zone to be treated as No-Go areas.

Description of expected significance of impact
 Impacts on geo-hydrological features are likely to occur at the extent of the project site and the local area. The significance of the construction phase impacts will be low, subject to the implementation of appropriate mitigation measures.

Gaps in knowledge & recommendations for further study

- » It is recommended that the existing three (3) dual-purpose geotechnical and geohydrological monitoring boreholes be sampled on a quarterly basis during construction and operation. This may also need to be reviewed to monthly if there is a dramatic increase in reported groundwater contamination.
- » The collected samples should be sent to an independent SANAS accredited laboratory for the full SANS 241: 2015 Standards for Drinking Water analysis.
- » Prior to construction of the proposed new development, there will be a requirement to install additional groundwater monitoring boreholes around the perimeter of the site. The exact location for the installation of the proposed monitoring boreholes should be determined by a qualified geohydrologist / environmental geologist and will largely be based on the final stormwater management plan and infrastructure layouts.
- » The locations of these boreholes will be included within the EIA report for inclusion into the EMPr.
- » The shallow and deep monitoring boreholes should be installed according to the proposed borehole construction details proposed by the specialist or in terms of similar provisions.
- » Once drilled, the boreholes should be allowed to stabilize before being thoroughly purged to remove any sediments/rock flour and contaminants introduced during the drilling process.
- » The boreholes should then be allowed to recover, prior to recording the static groundwater levels and collection of groundwater samples utilizing a dedicated sampling pump
- » If the groundwater and/or surface water monitoring programme indicate that accelerated contamination is occurring from this new facility, then remediation and rehabilitation measures will need to be discussed and implemented.
- » As no detailed Geohydrological Assessments have been carried out at the site of the proposed LPG Storage Tanks on Lot 1795, Richards Bay, given that it is fully developed, additional investigations to fulfil the EIA submission requirements will be required.

8.3.4 Potential Impacts on Surface Water Features

The following potential impacts were identified to be associated with the construction of the 450MW RMPP and associated infrastructure on the surface water features present (**Appendix G**):

- » During the Construction Phase, chemical pollutants (hydrocarbons from equipment, vehicles and plant, cleaning fluids, cement powder, wet concrete, shutter-oil, etc) associated with site clearing machinery and construction activities, as well as the demolition of existing structures (existing warehousing on Lot 1795) could be washed down and migrate offsite to surrounding surface water bodies. Construction phase impact were determined to be of low significance with the implementation of mitigation measures.

Impact			
During the Construction Phase, chemical pollutants (hydrocarbons from equipment, vehicles and plant, cleaning fluids, cement powder, wet concrete, shutter-oil, etc) associated with site clearing machinery and construction activities, as well as the demolition of existing structures (existing warehousing on Lot 1795) could be washed down and migrate offsite to surrounding surface water bodies.			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Potential impact on surface water bodies due to on-site accidental fuel spills and leaks/leachate and infiltration of dirty water.	Contamination of the surface waterbodies surrounding the project site through the transportation of the contaminants via surface water runoff	Local	All wetland areas and associated 29m buffers to be treated as No-Go areas.
Description of expected significance of impact			
Impacts on hydrological features are likely to occur at the extent of the project site and the local area. The significance of the construction phase impacts will be low, subject to the implementation of appropriate mitigation measures.			
Gaps in knowledge & recommendations for further study			
<ul style="list-style-type: none"> » It is recommended that a surface water monitoring programme be undertaken both up-gradient and down-gradient of the natural surface water drainage feature along the eastern boundary of the site, initially on quarterly basis. This may need to be reviewed to monthly if there is a dramatic increase in reported surface water contamination. » The surface water monitoring programme will be provided during the EIA phase for inclusion into the EMPr. » The collected samples should be sent to an independent SANAS accredited laboratory for the full SANS 241: 2015 Standards for Drinking Water analysis. » As no detailed Surface Water Assessments have been carried out at the site of the proposed LPG Storage Tanks on Lot 1795, Richards Bay, given that it is fully developed additional investigations to fulfil the EIA submission requirements will be required. 			

8.3.5 Impacts on soil and agricultural potential

The following potential impacts were identified to be associated with the construction of the 450MW RMPP and associated infrastructure on the soil and agricultural potential present within the project site (**Appendix H**):

- » Impacts on soils
- » Impacts on climate
- » Impacts on the water table
- » Impacts on crops

Impact			
Impact on the 450MW RMPP Power plant site will be long term. The entire operation takes place within the context of presently vacant, unutilized land within an existing industrial area. The site comprises of non-arable land within a fully transformed industrial development zone. The long term economic and social benefits are positive in that the development of the site will provide long term employment for members of approximately 40 families, the most important form of food security, and provide much needed electricity.			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Soils	» The soils on the site are in their geological infancy and thus have no structure. Apart from a thin stratum of organic matter at the surface they are inert sand. The proposed development will have no effect on the physical or chemical properties of the soils. The soils at the site have a low relative agricultural theme sensitivity of 1 to 3.	Local	None identified at this stage
Climate	» The climate of the area is semi-tropical, the implication being that most arable crops can only be grown during the winter months. The proposed development will not impact on climate related agricultural effects.	Local	None identified at this stage
Water Table	» One of the features of very sandy soils as present on the site is that when they are dry, water poured over them runs through the profile without wetting it until the water reaches a water table or an impervious stratum. The profile then fills from the bottom upwards towards the surface. In this instance it will appear that the water table at the site is at the same level as the adjoining wetland as soil profiles started to show signs of leaching and regic	Local	None identified at this stage

	sand from depths of 700mm upwards.		
Crops	» The only crops that will grow on these soils are grasses that have a very shallow root concentration and woody vegetation that has strong rooting systems that will go deep and look for water. It is for this reason that eucalyptus trees can be grown commercially in such soils provided there are sufficient heat units and a rainfall close to 1 000mm pa.	Local	None identified at this stage
Description of expected significance of impact			
The impact of the 450MW RMPP and associated infrastructure on the soil and agricultural potential within the project site will be local in extent and is expected to be low.			
Gaps in knowledge & recommendations for further study			
» No further studies were recommended by the soil and agricultural specialist.			
» No impacts were identified for the operational phase of the development.			

8.3.6 Impacts on heritage (archaeological) and palaeontological resources

The following impacts can be expected during construction to heritage resources with the development of the 450MW RMPP and associated infrastructure (Appendix I):

- » Potential impacts to subsurface human graves.

Impact			
Potential impacts on subsurface human grave(s).			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Potential human remains	<u>Direct Impact</u> » Potential removal of ancestral remains <u>Indirect Impact</u> » None	Regional	None identified at this stage
Description of expected significance of impact			
Human settlements occur in the general area and have been noted on historical maps. No settlements are known to occur in the study area. The high water tables in the area, before canalization, would have resulted in the rapid decay of human remains.			
Specific recommendations with regards to Human remains:			
» If human remains are located then all work in that area must cease and KZNARI (0333946543) and the SAPS need to be informed. The area needs to be cordoned off.			

- » No impacts on archaeological and palaeontological resources is expected in this project study area.
- » The findings of the detailed site survey and recommendations during the operational phase will be discussed within the EIA Phase of the project.

8.3.7 Impacts on ambient air quality

The potential impacts on air quality associated with the development of the 450MW RMPP and associated infrastructure include (**Appendix J**):

- » Elevated ambient concentrations of particulate and gaseous atmospheric pollutants as a result of construction activities.

Impact Elevated ambient concentrations of particulate and gaseous atmospheric pollutants as a result of construction activities.			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Particulate and Gaseous pollutant emissions	Elevated ambient concentrations of particulate and gaseous atmospheric pollutants as a result of construction activities.	Local	None identified at this stage
Description of expected significance of impact The proposed 450 MW RMPPP may result in elevated (and potentially non-compliance with NAAQS) daily PM10 concentrations during the construction phase due to background PM10 and the proximity to other particulate emission sources. The impacts are likely to be local and of short duration.			
Gaps in knowledge & recommendations for further study » The duration and scale of construction activities is unknown at this stage. Construction impacts will be assessed during the EIA phase. Relevant information required includes: expected fuel use; vehicle types, activity patterns and on-site road usage; and, full extent of bulk earthworks and mitigation measures for optimal ambient air quality.			

8.3.8 Impacts on ambient noise levels

The construction activities associated with the development of the 450MW RMPP and associated infrastructure will increase the ambient noise levels in the area (**Appendix K**).

Construction activities that will have an impact include:

- » Additional traffic to and from the site, as well as traffic on the site;
- » Site preparation, including the site clearing and levelling, development of internal site roads and security fencing;
- » Establishment of contractor's camps, storage and laydown areas;
- » Earthworks, possible blasting (if hard rock is encountered) and piling activities;

- » Development of foundations;
- » Laying of pipelines and establishment of the switchyard; and
- » Construction of infrastructure and facilities.

Impact Increases in noise levels due to construction activities			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Increase in noise level at receptors.	Increased noises or disturbing noises may increase annoyance levels with project	Multiple night-time construction activities taking place simultaneously may impact an area within 2 000m from the activities	None
Description of expected significance of impact The significance of noise impacts will be low during the construction phase and will be of a local extent due to the location of the development and the nature of the construction phase noise.			
Gaps in knowledge & recommendations for further study Noise modelling to be undertaken during the EIA Phase will calculate potential noise levels considering topography, ground surface constants and potential noise-emitting activities.			

8.3.9 Visual Impacts

The following potential visual impacts have been identified for the construction of the 450MW RMPP and associated infrastructure (**Appendix L**):

- » The visibility of the construction activities at the facility from, and potential visual impact on observers travelling along the R34 arterial road or residing within a 1 – 3km radius of the site.
- » Potential cumulative visual impacts (or alternatively, consolidation of visual impacts) with specific reference to the location of the proposed power plant within an existing industrial area.

<p>Impact</p> <p>Visual impact of the construction activities on observers in close proximity to the proposed infrastructure and activities. Potential sensitive visual receptors may include:</p> <ul style="list-style-type: none"> » Observers travelling along the R34 arterial road » Residents of homesteads and farm dwellings (if present in close proximity to the facility). 			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
The viewing of the power plant and ancillary infrastructure and activities	The potential negative experience of viewing the power plant and ancillary infrastructure and activities	Primarily observers situated within a 1-3km radius of the power plant	None identified at this stage
<p>Description of expected significance of impact</p> <p>Visual impacts during the construction phase of the 450MW RMPP and associated infrastructure were determined to be of moderate significance but contained to the local extent of the site due to homesteads that were identified within 2000m of the proposed power plant site. Impacts during the construction phase can be mitigated.</p>			
<p>Gaps in knowledge & recommendations for further study</p> <ul style="list-style-type: none"> » A finalised layout of the power plant and ancillary infrastructure are required for further analysis. This includes the provision of the dimensions of structures and equipment. » Additional spatial analyses are required in order to create a visual impact index that will include the following criteria: <ul style="list-style-type: none"> • Visual exposure (including the effect of existing structures and vegetation) • Visual distance/observer proximity to the structures/activities • Viewer incidence/viewer perception (sensitive visual receptors) • Visual absorption capacity of the environment surrounding the power plant infrastructure and activities <p>Additional activities:</p> <ul style="list-style-type: none"> » Identify potential cumulative visual impacts (or consolidation of visual impacts) » Undertake a site visit » Recommend mitigation measures and/or infrastructure placement alternatives 			

8.3.10 Impacts on the socio-economic environment

The development of the 450MW RMPP and associated infrastructure will have both positive and negative impacts on the social environment during the construction phase. The section below provides more details of the associated potential impacts (**Appendix M**).

The potential positive impacts which could arise as a result of the construction activities include the following:

- » Increase in the production and GDP-R of the national and local economies due to capital expenditure;
- » Temporary employment creation in the local communities;
- » Skills development; and
- » Household income leading to improved standard of living.

The potential negative impacts which could arise as a result of the construction activities include the following:

- » Change in the demographics as a result of an influx of workers and job seekers;
- » Safety impacts;
- » Impacts of daily movements (a full assessment of the daily movements and the impacts thereof will be included a Traffic Impact Assessment for the EIA phase);
- » Nuisance impacts

Impact: Expenditure associated with the construction of the proposed development will impact on the production of the local economy			
Issue	Nature	Extent of Impact	No-Go Areas
The economic impact arising from the initial investment will be felt throughout the economy with windfall effects benefitting related sectors in the economy. The effect is allocated according to direct, indirect and induced impacts, together forming the “multiplier effect”	Positive – The initial investment spend on the project will inject significant business sales/ production for the local and regional economy	The impact will occur at a local and regional level	N/A
Description of expected significance of impact The estimated capital expenditure of the project is R7.64 billion. This will provide a significant injection into the local and regional economies. The impact will be positive, short term, local and regional extent with a high significance			
Gaps in knowledge & recommendations for further study » Information on the exact direct and indirect employment impact on business output / production will be determined during the EIA phase of the impact assessment.			

Impact: Temporary increase in country's GDP due to capital expenditure during construction			
Issue	Nature	Extent of Impact	No-Go Areas
The primary method of expanding GDP levels is through investment into infrastructure and enterprises that generate goods and services. Investment into the creation of new and improved goods and services, creates heightened levels of value added within the economy. Industries that will experience the largest temporary growth in value added, as a result of this, will include the building and construction, manufacturing and trade and accommodation sectors.	Positive – The initial investment spend on the project will create significant value added for the local and regional economy	The impact will occur at a local and regional level	N/A
Description of expected significance of impact The estimated capital expenditure of the project is R7.6 billion. This will create significant value added to the local and regional economy. The exact value of that impact will be determined during the EIA phase of the impact assessment. The impact will be positive, short term, local and regional in extent with a medium significance			
Gaps in knowledge & recommendations for further study » Information on the exact direct and indirect value added will be determined during the EIA phase when the economic modelling is done.			

Impact: The construction of the 450MW RMPP will positively impact on the community and beyond by creating a number of job opportunities (albeit temporary).			
Issue	Nature	Extent of Impact	No-Go Areas
The unemployment rate in the City of uMhlatuze is 30% and the number of employed individuals has been increasing in the past six years	Positive – The construction period of the power plant will create a significant number of employment opportunities for the local economy	The impact will occur at a local, regional and national level.	N/A

(Urban Econ Calculations based on Quantec). The development of this power plant will create significant employment opportunities during the construction period			
Description of expected significance of impact The job creation during construction is estimated at around 300 - 30 highly skilled, 50 skilled positions and 220 semi-skilled or unskilled positions. The impact will be positive, short term, local to regional extent with a high significance			
Gaps in knowledge & recommendations for further study » Information on the exact number of job opportunities will be determined during the EIA phase when the economic modelling is done.			

Impact: Employees will develop and enhance skills thereby increasing experience and knowledge			
Issue	Nature	Extent of Impact	No-Go Areas
Skills are imperative for satisfying job requirements and adequately performing tasks that ultimately boost the economy. The construction of the 450MW RMPP requires a variation of skill sets ranging from semi-skilled construction workers to highly skilled engineers	Positive – The transfer of skills to the workers, especially the semi-skilled workers will create a more capable workforce	The impact will occur at a local and regional level.	N/A
Description of expected significance of impact The job creation during construction is estimated at around 300 - 30 highly skilled, 50 skilled positions and 220 semi-skilled or unskilled positions. Employees who are new to the market will develop and attain new skills, whilst workers adept in particular skills will sharpen their abilities. In addition, the employees will improve their marketability for future employment and will be perceived positively by future employers. The impact will be positive, short term, local to regional in extend with a high significance.			
Gaps in knowledge & recommendations for further study Information on the exact number of job opportunities and associated skills development will be determined during the EIA phase when the economic modelling is done.			

Impact: Employed individuals will increase the income of their respective households and thereby experience an improvement in their standard of living			
Issue	Nature	Extent of Impact	No-Go Areas
Over a third of the population of the City of uMhlatuze Municipality are classified as low-income earners. The employment creation during the construction period will temporarily increase affected households' income	Positive – The increased income earned during the construction for workers will improve their standard of living as well as those of their households.	The impact will occur at a local and regional, and national level	N/A
Description of expected significance of impact Employed individuals will increase the income of their respective households and therefore improve their standard of living for a period of two years. In the context of the proposed power plant, workers employed in the construction as well as their households can expect an improvement in their quality of life and standard of living. The impact will be positive, short term, local to regional in extent and of high significance.			
Gaps in knowledge & recommendations for further study Information on the exact number of job opportunities and associated income will be determined during the EIA phase when the economic modelling is done.			

Impact: An impact on the demographics of the area as a result of in-migration in response to job opportunities will occur			
Issue	Nature	Extent of Impact	No-Go Areas
Increased pressure on infrastructure and basic services, and social conflicts during construction as a result of in-migration of people	The in-migration of job seekers to the area could result in increased pressure being placed on infrastructure and basic services, and a rise in social conflicts	The impact will occur at a local and Regional level.	N/A
Description of expected significance of impact The in-migration of people to the area as either non-local workforce and / or jobseekers could result in increased pressure being placed on infrastructure and basic services on the local population (rise in social conflicts). An influx of people into the area, could lead to a temporary increase in crime levels, cause social disruption, and put pressure on basic services. An influx of people looking for economic opportunities could result in pressure on the local population such as rise in social conflicts and change in social dynamics, increase in HIV, pregnancies and drug abuse. Adverse impacts could occur if a large in-migrant workforce, which is culturally different from the local population, is brought in during construction. The impact is likely to be negative, local in extent, short-term, and of medium significance due to the number of jobs expected to be created, and the proportion of which would accrue to the non-local workforce.			
Gaps in knowledge & recommendations for further study The secondary data sources used to compile the socio-economic baseline (demographics, dynamics of the economy) although not exhaustive, are indicative of the trends			

within the study area

Impact: Safety and security impacts			
Issue	Nature	Extent of Impact	No-Go Areas
The possible increase in population may result in an increased demand for housing.	The in-migration of job seekers to the area could be perceived to result in increased criminal activity.	The impact will occur at a local level	N/A
Description of expected significance of impact The perception exists that an influx of jobseekers, and / or construction workers to an area is a contributor to increased criminal activities in an area, such as increased safety and security risk for neighbouring properties and damage to property, increased risk of veld fire, stock theft, and crime etc. The impact is likely to be negative, local in extent, short-term, and of low significance due to the number of jobs expected to accrue to the non-local workforce.			
Gaps in knowledge & recommendations for further study The secondary data sources used to compile the socio-economic baseline (demographics, dynamics of the economy) although not exhaustive, are indicative of the trends within the study area			

Impact: Impacts on daily living and movement patterns			
Issue	Nature	Extent of Impact	No-Go Areas
Temporary increase in traffic disruptions and movement patterns during construction	An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety hazards for current road users	The impact will occur at a local level	N/A
Description of expected significance of impact Increased traffic due to construction vehicles and heavy vehicles could cause disruptions to road users and increase safety hazards. The use of local roads and transport systems may cause road deterioration and congestion. The impact is likely to be negative, local in extent, short-term, and of low significance given the proximity of the site to the R34 road. It will mostly be isolated to zone 1 (industry areas).			
Gaps in knowledge and recommendations for further study Number of vehicle trips anticipated during construction is required to be provided. A Traffic Impact Assessment should be undertaken within the EIA Phase of the process to inform the assessment of this impact.			

Impact: Nuisance impacts (noise and dust)			
Issue	Nature	Extent of Impact	No-Go Areas
Nuisance impacts in terms of temporary increase in noise and dust, and wear and tear on access roads to the site	Negative – The impact will negatively impact sensitive receptors and could cause disruptions for neighbouring properties	The impact will occur at a local level.	N/A
Description of expected significance of impact Impacts associated with construction related activities include noise, dust and disruption or damage to adjacent properties. Site clearing activities increase the risk of dust and noise being generated, which can in turn negatively impact on adjacent properties. The impact is likely to be negative, local in extent, short-term, and of medium significance.			
Gaps in knowledge & recommendations for further study The assessment of this impact will be informed by the outcomes of the Air Quality Impact Assessment and Noise Impact Assessment to be undertaken within the EIA Phase of the process.			

8.4. Impacts during the Operation Phase

8.4.1 Potential Impacts on Ecology

The following impacts on the ecology within the project site and the surrounding area could potentially occur during the operation phase of the 450MW RMPP and associated infrastructure (**Appendix D**):

- » Habitat fragmentation (loss of corridors);
- » Infestation of alien species

Impact Potential impacts on ecology are expected during the operation phase of the 450MW RMPP including the ecological functioning of the area.			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Habitat fragmentation (loss of corridors)	<u>Direct Impact</u> <ul style="list-style-type: none"> » Potential loss of migration of terrestrial fauna » Potential decrease in dispersal of flora <u>Indirect Impact</u>	Regional	29 m wetland buffer zone

	<ul style="list-style-type: none"> » Potential edge effects leading to potential loss of habitat for terrestrial species » Potential loss of migration of terrestrial fauna 		
Infestation of alien species	<p><u>Direct Impact</u></p> <ul style="list-style-type: none"> » Increase in the invasions by alien and invasive species through loss of natural vegetation and disturbance soil <p><u>Indirect Impact</u></p> <ul style="list-style-type: none"> » Loss of habitat for terrestrial species » Potential loss of protected species in terrestrial habitat 	Regional	None identified at this stage

Description of expected significance of impact

Even though the surrounding land use is industrial, a portion of the proposed site is currently undeveloped and does provide habitat for species. The change of land use of the undeveloped portion of the site will impact on migration corridors of small mammals and reptile. The disturbance of the natural vegetation by the proposed activities may accelerate exotic species growth. Utmost care should be taken manage disperse and colonisation of these species.

Gaps in knowledge & recommendations for further study

- » Mapping of all protected species and species of special concern within the development footprint.
- » Mapping of known and potential habitats used in breeding, foraging, roosting, aestivation and hibernation.
- » Describing the condition of all habitats and clearly indicating these on an Ecological sensitivity map.
- » Indication of the potential of protected species to occur on the proposed development site.

Recommendations with regards to general field surveys

- » Field surveys must include the proposed development site and adjacent surrounding areas with indigenous vegetation and habitats within a 500 m radius of the project footprint.
- » In season (November to April) follow-up terrestrial site visits to determine the diversity of resident fauna species
- » In season follow-up terrestrial site visits to determine the diversity of vegetation species.
- » A follow up site visit is to be undertaken for small mammal trapping.
- » Active search will be required for the protected species and species of concern that have a high probability of occurrence which will be impacted by the proposed facility.

8.4.2 Potential Impacts on Wetlands and Aquatic Features

The following potential impacts are expected to occur within the project site and on the wetland and aquatic features present during the operation phase **(Appendix E)**:

- » Pollution of surface and groundwater due to chemical, oil and fuel spills

Impact			
During the operational phase of the proposed project, the potential for spills and leakages will occur. Contaminants will include mainly from oil/ grease and petrol/ diesel and potentially from naphtha and LPG. These pollutants may result from leakages from operating equipment, vehicles, oil changes during the servicing of equipment and vehicles or, or from spills as a result of incorrect handling of substances or equipment			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Pollution of surface and groundwater due to chemical, oil and fuel spills	<u>Direct Impacts</u> <ul style="list-style-type: none"> » Changes to water quality » shift in aquatic species composition <u>Indirect Impacts</u> <ul style="list-style-type: none"> » Potential impacts to aquatic fauna and flora species » Potential impacts protected species and species of special concern 	Regional	29 m wetland buffer zone
Description of expected significance of impact			
Contaminants such as hydrocarbons, solids and pathogens will be generated from several potential sources (examples include petrol/diesel, oil/grease, naphtha/LPG and other hazardous substances). These contaminants have the capacity to negatively affect aquatic ecosystems including sensitive or intolerant species of flora and fauna. Where significant changes in water quality occur, this will ultimately result in a shift in aquatic species composition, favouring more tolerant species, and potentially resulting in the localised exclusion of sensitive species. Sudden drastic changes in water quality can also have chronic effects on aquatic biota leading to localised extinctions. The impacts on the aquatic resources are likely to be limited as the extent of the proposed project lies outside the sensitive Phragmites - Typha channelled valley bottom wetland. As no development must be allowed in the buffer zone, impacts can be minimised through the implementation of appropriate mitigation measures.			
Gaps in knowledge & recommendations for further study			
<ul style="list-style-type: none"> » The description of the current state of this identified wetland, specifically focusing on Present Ecological State (PES), Ecological Importance and Sensitivity (EIS) as well as the Ecosystem Regulating and Supporting Services that this wetland system provides will be presented in the Aquatic Biodiversity Impact Assessment Report during the EIA phase of the project; » In-situ water quality testing is planned during the follow-up site visit and the results will be presented and interpretation thereof presented in the Aquatic Biodiversity Impact Assessment Report which will be submitted during the EIA phase of the project. » The results obtained will form the baseline survey from which changes to both upstream and downstream impacts of the activities can be measured during the operation phases of the proposed development and will inform monitoring requirements for the project Environmental Management Programme (EMPr). 			
Recommendations with regards to general field surveys			
<ul style="list-style-type: none"> » Water quality monitoring, through in-situ water testing will provide insights into the health of the river-wetland ecosystem. The following variables will be measured: 			

- Temperature;
 - Dissolved Oxygen;
 - Conductivity @ 25°C;
 - pH @ 25°C; and
 - Flow Rate.
- » The recorded values will be compared to the acceptable ranges as indicated in the South African Water Quality Guidelines compiled by the Department of Water Affairs and Forestry (DWA, 1998) for Aquatic Ecosystems and presented and discussed in the Aquatic Biodiversity Impact Assessment Report during the EIA phase of the project

8.4.3 Potential Impacts on Geo-hydrological Features

The following potential impacts were identified to be associated with the operation of the 450MW RMPP and associated infrastructure on the geo-hydrological features present (**Appendix F**):

- » During the Operational Phase, chemical pollutants (hydrocarbons from operational equipment, vehicles and plant, cleaning fluids, emergency backup generators, maintenance equipment, etc), LPG or naphtha and other chemical storage areas or pipelines associated with the operation of the facility could migrate downwards through the subsoils and into the groundwater by rainfall infiltration. Appropriate ablution facilities should be provided for the workers during the Operational Phase of the 450MW RMPP Power Plant.

Impact			
Impact on localised Groundwater Quality during Operational Phase			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Ground water quality	» Contamination of the ground water located within the area of the project site	Local	29 m wetland buffer zone
Description of expected significance of impact			
Chemical pollutants (hydrocarbons from operational equipment, vehicles and plant, cleaning fluids, emergency backup generators, maintenance equipment, etc), LPG or naphtha and other chemical storage areas or pipelines associated with the operation of the facility could migrate downwards through the subsoils and into the groundwater by rainfall infiltration. Appropriate ablution facilities should be provided for the workers during the Operational Phase of the 450MW RMPP Power Plant.			
Gaps in knowledge & recommendations for further study			
» It is recommended that the existing three (3) dual-purpose geotechnical and geohydrological monitoring boreholes be sampled on a quarterly basis during construction and operation. This may also need to be reviewed to monthly if there is a dramatic increase in reported groundwater contamination.			
» The collected samples should be sent to an independent SANAS accredited laboratory for the full SANS 241: 2015 Standards for Drinking Water analysis.			

- » Prior to construction of the proposed new development, there will be a requirement to install additional groundwater monitoring boreholes around the perimeter of the site. The exact location for the installation of the proposed monitoring boreholes should be determined by a qualified geohydrologist / environmental geologist and will largely be based on the final stormwater management plan and infrastructure layouts.
- » The locations of these boreholes will be included within the EIA report for inclusion into the EMPr.
- » The shallow and deep monitoring boreholes should be installed according to the proposed borehole construction details proposed by the specialist or in terms of similar provisions.
- » Once drilled, the boreholes should be allowed to stabilize before being thoroughly purged to remove any sediments/rock flour and contaminants introduced during the drilling process.
- » The boreholes should then be allowed to recover, prior to recording the static groundwater levels and collection of groundwater samples utilizing a dedicated sampling pump
- » If the groundwater and/or surface water monitoring programme indicate that accelerated contamination is occurring from this new facility, then remediation and rehabilitation measures will need to be discussed and implemented.
- » As no detailed Geohydrological Assessments have been carried out at the site of the proposed LPG Storage Tanks on Lot 1795, Richards Bay given that it is fully developed, additional investigations to fulfil the EIA submission requirements will be required.

8.4.4 Potential Impacts on Surface Features

The following potential impacts were identified to be associated with the operation of the 450MW RMPP and associated infrastructure on the surface water features present (**Appendix G**):

- » During the Operational Phase, chemical pollutants (hydrocarbons from operational equipment, vehicles and plant, cleaning fluids, emergency backup generators, maintenance equipment, etc), LPG or naphtha and other chemical storage areas or pipelines associated with the operation of the facility could be washed down and migrate offsite to surrounding surface water bodies. Appropriate ablution facilities should be provided for the workers during the Operational Phase of the 450MW RMPPP Power Plant.

Impact			
Impact on localised Surface Water Quality during Operational Phase			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Surface water quality	» Contamination of the surface water located within the area of the project site	Local	29 m wetland buffer zone
Description of expected significance of impact			
Chemical pollutants (hydrocarbons from operational equipment, vehicles and plant, cleaning fluids, emergency backup generators, maintenance equipment, etc), LPG and			

other chemical storage areas or pipelines associated with the operation of the facility could be washed down and migrate offsite to surrounding surface water bodies.
<p>Gaps in knowledge & recommendations for further study</p> <ul style="list-style-type: none"> » It is recommended that a surface water monitoring programme be undertaken both up-gradient and down-gradient of the natural surface water drainage feature along the eastern boundary of the site, initially on quarterly basis. This may need to be reviewed to monthly if there is a dramatic increase in reported surface water contamination. » The surface water monitoring programme will be provided during the EIA phase for inclusion into the EMPr. » The collected samples should be sent to an independent SANAS accredited laboratory for the full SANS 241: 2015 Standards for Drinking Water analysis. » As no detailed Surface Water Assessments have been carried out at the site of the proposed LPG Storage Tanks on Lot 1795, Richards Bay given that it is fully developed, additional investigations to fulfil the EIA submission requirements will be required.

8.4.6 Impacts on ambient air quality

The potential impacts on air quality associated with the development of the 450MW RMPP and associated infrastructure include (**Appendix J**):

- » During the operation phase, the proposed RMPP is likely to contribute NO_x, CO, and VOCs to the existing baseline concentrations.
- » The combustion of natural gas, LPG or naphtha at the RMPP will produce greenhouse gas emissions which will contribute to the global phenomenon of anthropogenic climate change.

Impact			
Elevated ambient concentrations of gaseous atmospheric pollutants as a result of 450 MW RMPPP operational activities (gas combustion in turbine units or reciprocal engines).			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Gaseous pollutant emissions	During the operation phase, the proposed 450 MW RMPPP is likely to contribute NO _x , CO, SO _x and VOCs to the existing baseline concentrations. Operational activities are not likely to result in a significant change from current levels.	Regional	None identified at this stage
Contribution to Climate Change	The combustion of natural gas, LPG or naphtha at the RMPP will produce greenhouse gas emissions which will contribute to the global phenomenon of anthropogenic climate change.	International	None identified at this stage
Description of expected significance of impact			
During the operation phase, the proposed 450 MW RMPPP is likely to contribute NO _x , CO, SO _x and VOCs to the exiting baseline concentrations. Operational activities, when using LPG, naphtha or natural gas are not likely to result in a significant change from current levels. Operational activities, when using naphtha, could increase VOC, SO _x and NO _x relative to the baseline. However, cumulative impacts of SO ₂ and PM emissions, although small in contribution from the 450 MW RMPPP, may contribute to non-compliance with the NAAQS due to already elevated baseline concentrations. The impacts are likely to be regional.			

The combustion of LPG or Naphtha and LNG during the operational phase will result in the production of Greenhouse Gases that will contribute on an international level to climate change.

Gaps in knowledge & recommendations for further study

- » There are likely to be NOX emissions from the gas combustion during the operation phase. Ambient NOX and NO2 are not currently monitored by the RBCAA, only at the uMhlathuze AQMSs during 2019. Atmospheric dispersion modelling will be used during the EIA phase to assess the extent of the impact of the proposed facility and the cumulative impact, of the pollutants of concern, including NOX and SOX .
- » Climate Change impact assessment will be undertaken during the EIA phase to determine the impact of the 450MW RMPP development on the climate and appropriate mitigation measures to be developed.

8.4.7 Impacts on ambient noise levels

The operation activities associated with the development of the 450MW RMPP and associated infrastructure will increase the ambient noise levels in the area (**Appendix K**).

Impact			
Increases in noise levels at closest receptors during the operational phase of the 450MW RMPP.			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Increase in noise level at receptors. Potential disturbing noise levels	» Increased noises or disturbing noises may increase annoyance levels with project	Multiple night-time operational activities taking place simultaneously may impact an area within 2,000m from the activities	None identified at this stage
Description of expected significance of impact			
The impact of ambient noise levels from the development of the 450MW RMPP and associated infrastructure will be local in extent and will be of a low significance.			
Gaps in knowledge & recommendations for further study			
Noise modelling will calculate potential noise levels considering topography, ground surface constants and potential noise-emitting activities.			

8.4.8 Visual Impacts

The following potential visual impacts have been identified for the operation of the 450MW RMPP and associated infrastructure (**Appendix L**):

- » The visibility of the facility from, and potential visual impact on observers travelling along the R34 arterial road or residing within a 1 – 3km radius of the plant.
- » Cumulative visual impacts

<p>Impact Visual impact of the power plant on observers in close proximity to the proposed infrastructure and activities. Potential sensitive visual receptors may include:</p> <ul style="list-style-type: none"> » Observers travelling along the R34 arterial road » Residents of homesteads and farm dwellings (if present in close proximity to the facility). 			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
The viewing of the power plant and ancillary infrastructure and activities	The potential negative experience of viewing the power plant and ancillary infrastructure and activities	Primarily observers situated within a 1-3km radius of the power plant	None identified at this stage
<p>Description of expected significance of impact</p> <ul style="list-style-type: none"> » Extent: Local » Duration: Long term » Magnitude: Moderate » Probability: Probable » Significance: Moderate » Status (positive, neutral or negative): Negative » Reversibility: Recoverable » Irreplaceable loss of resources: No » Can impacts be mitigated: Yes 			
<p>Gaps in knowledge & recommendations for further study</p> <ul style="list-style-type: none"> » A finalised layout of the power plant and ancillary infrastructure are required for further analysis. This includes the provision of the dimensions of structures and equipment. » Additional spatial analyses are required in order to create a visual impact index that will include the following criteria: <ul style="list-style-type: none"> • Visual exposure (including the effect of existing structures and vegetation) • Visual distance/observer proximity to the structures/activities • Viewer incidence/viewer perception (sensitive visual receptors) • Visual absorption capacity of the environment surrounding the power plant infrastructure and activities 			

Additional activities:

- » Identify potential cumulative visual impacts (or consolidation of visual impacts)
- » Undertake a site visit
- » Recommend mitigation measures and/or infrastructure placement alternatives

8.4.9 Impacts on the socio-economic environment

The development of the 450MW RMPP and associated infrastructure will have both positive and negative impacts on the social environment during the operation phase (**Appendix M**). The potential positive impacts which could arise as a result of the operation activities include the following:

- » Increased Production
- » Impact on GDP
- » Employment Creation
- » Positive Impact on Skills Development
- » Positive impact on household income and improved standard of living
- » Increased Government Revenue
- » Improvement in Energy Sector Generation
- » Economic and Social Upliftment
- » Impacts on daily living and movement patterns due to traffic associated with fuel delivery

The potential negative impacts which could arise as a result of the operation activities include the following:

- » Visual and Sense of Place Impacts

Impact: Expenditure associated with the operation of the proposed development will have a positive impact on production			
Issue	Nature	Extent of Impact	No-Go Areas
Once operational, it is estimated that the proposed RMPP will stimulate production.	Positive – The operational spend on the project will inject significant business sales/ production for the local and regional economy	The impact will occur at a local and regional level.	None identified at this stage
Description of expected significance of impact			

The operational expenditure will provide a significant injection into the local and regional economies with an annual operating budget of R3.34 billion. The power plant will have to acquire inputs from a variety of sectors such as fuel (LPG or naphtha initially and then natural gas once available), trade and accommodation, transport and storage, and government services. Considering that the 450MW RMPP will be located in the City of uMhlathuze Municipality and assuming that the entire production value will be accounted as part of the output of the municipality, the size of the City of uMhlathuze Municipality's economy is expected to increase significantly. The impact will be positive, long term, local and regional in extent with a medium significance

Gaps in knowledge & recommendations for further study

» Information on the exact direct and indirect employment impact on business output / production will be determined during the EIA phase of the impact assessment.

Impact: Positive impact on GDP due to operating expenditure during operations			
Issue	Nature	Extent of Impact	No-Go Areas
The primary method of expanding GDP levels is through investment into infrastructure and enterprises that generate goods and services. Industries that will experience the largest growth in value added, as a result of this, will include the transport, storage and manufacturing sectors.	Positive – The operational spend on the project will create significant value added for the local and regional economy	The impact will occur at a local and regional level	None identified at this stage
Description of expected significance of impact The operational expenditure of the power plant will create significant value added to the local and regional economy. The exact value of that impact will be determined during the EIA phase of the impact assessment. The impact will be positive, long term, local and regional in extent with a medium significance.			
Gaps in knowledge & recommendations for further study Information on the exact direct and indirect value added will be determined during the EIA phase when the economic modelling is done			

Impact: The operation of the 450MW RMPP will positively impact on the community and beyond by creating a number of job opportunities			
Issue	Nature	Extent of Impact	No-Go Areas
The unemployment rate in the City of uMhlathuze is 30% and the	Positive – The operations of the power plant will create a significant number of employment opportunities for the local economy	The impact will occur at a local, regional.	None identified at this stage

<p>number of employed individuals has been increasing in the past six years (Urban Econ Calculations based on Quantec). The operation of this power plant will create significant employment opportunities during the operational period.</p>			
<p>Description of expected significance of impact The estimated job creation during operations is estimated at around 40 (excluding contractors) - 4 highly skilled, 35 skilled positions and 10+ semi-skilled or unskilled positions (mainly contractors). The impact will be positive, local to regional extent with a high significance</p>			
<p>Gaps in knowledge & recommendations for further study Information on the exact number of job opportunities will be determined during the EIA phase when the economic modelling is done.</p>			

<p>Impact: Employees will develop and enhance skills thereby increasing experience and knowledge</p>			
Issue	Nature	Extent of Impact	No-Go Areas
<p>Skills are imperative for satisfying job requirements and adequately performing tasks that ultimately boost the economy. The specialty of the RMPP requires and creates scarce skills that will be imperative in the long run if other RMPPs are developed as envisaged in policy</p>	<p>Positive – The transfer of skills to the workers, especially the semi-skilled workers will create a more capable workforce.</p>	<p>The impact will occur at a local level</p>	<p>None identified at this stage</p>
<p>Description of expected significance of impact The employment opportunities are for a long-term period of 20 years and are thus sustainable and will have a positive impact on skills for benefitting employees. Furthermore, as production and consumption effects filter through the economy creating a demand for more labour, human resources will be trained and skilled within aligned industries. Ultimately, the plant's construction will lead to enhanced skills through training and experience in the wider national economy. Impact will be positive, long term, with a local to regional extent and high significance.</p>			
<p>Gaps in knowledge & recommendations for further study » Information on the exact number of job opportunities will be determined during the EIA phase when the economic modelling is done</p>			

Impact: Employed individuals will increase the income of their respective households and therefore improve their standard of living			
Issue	Nature	Extent of Impact	No-Go Areas
Over a third of the population of the City of uMhlatuze Municipality are classified as low-income earners. The employment creation during the operational period will increase affected households' income for 20 years.	Positive – The increased income earned during the operational phase for workers will improve their standard of living as well as those of their households.	The impact will occur at a local and regional level	None identified at this stage
Description of expected significance of impact For a period of 20 years, 40 people will be employed at the power plant. As a result, the benefitting individuals and their respective households will incur an improvement in their standard of living due to the income earned. The income earned also results in increased purchasing power in the local community, given that a proportion of the employed will be based in the municipality. Therefore, the local businesses will experience increased business activity and the local economy will experience a boost. Impact will be positive, long term, local to regional extent with a medium significance.			
Gaps in knowledge & recommendations for further study » Based on the number of job opportunities, this will be investigated further within the EIA Phase.			

Impact: Government revenue will be derived from the proposed development			
Issue	Nature	Extent of Impact	No-Go Areas
The proposed development will provide a sustainable and increased revenue to the local government in the form of property rates and taxes. It will further supplement the revenue derived from national government. Moreover, national government will derive tax-related revenue such as Value-Added Tax	Positive – The operational phase of the power plant will create tax related revenue for government.	The impact will occur at a local and regional level.	None identified at this stage

(VAT), payroll and income taxes. This is as a result of the employment that will be created and the resultant income that will be earned, thus increasing spending power.			
Description of expected significance of impact The increased revenue from the proposed project may assist the municipality whereby constituencies may utilise it for public services. Overall, the allocation of government revenue should improve socio-economic conditions of the population. The impact will be positive, long term, with regional and local extent and a high significance.			
Gaps in knowledge & recommendations for further study » No further recommendations.			

Impact: Improved energy security and energy sector will result due to the development of the 450MW RMPP			
Issue	Nature	Extent of Impact	No-Go Areas
The 450MW RMPP will provide the important national service of providing new electricity capacity into the national grid. Strategically, the proposed project will assist in improving electricity security and reducing transmission losses in the national grid and assist in alleviating load shedding.	Positive – The operational phase of the power plant will improve energy and grid security and assist in alleviating load shedding	The impact will occur at a local and regional and national level.	None identified at this stage
Description of expected significance of impact The 450MW RMPP has the ability and operational flexibility to be turned on or off or be ramped up or down to suit the system demand on an intra-hourly basis on any day of the week, and will additionally increase efficiency. The proposed development, initially utilising LPG or naphtha, will create additional demand for natural gas to help accelerate government and Transnet's medium term planning of importing LNG into Richards Bay, by providing a mid-merit natural gas offtake in Richards Bay that will assist in financially supporting the establishment of gas infrastructure. The introduction of natural gas into Richards Bay will enhance South Africa's gas energy security by establishing a second source of natural gas supply into South Africa in mitigation of Sasol's declining gas reserves in Mozambique, thereby helping to alleviate the gas supply challenges facing the industry. The impact will be positive, long term, local to regional extent and of high significance.			
Gaps in knowledge & recommendations for further study » No further recommendations			

Impact: Contribution to local economic development and social upliftment			
Issue	Nature	Extent of Impact	No-Go Areas
Benefits to the local area from Socio-Economic Development (SED) / Enterprise Development (ED) programmes and corporate social investment (CSI) initiatives through their social responsibility programmes.	Positive – The creation of employment opportunities, skills development, and the proposed projects contributions to local economic development will assist to an extent in both alleviating unemployment levels within the area and improving the quality of life	The impact will occur at local and regional level.	None identified at this stage
Description of expected significance of impact These types of capital projects are required to spend a certain amount of their generated revenue (as defined in the agreement with DoE) on Socio-Economic Development (SED) and Enterprise Development (ED) and share ownership in the project company with local communities. The impact is likely to be positive, local-to-national in extent, long-term, and of medium significance.			
Gaps in knowledge & recommendations for further study Information on the project's proposed contributions.			

Impact: Visual and sense of place impacts			
Issue	Nature	Extent of Impact	No-Go Areas
Sense of place impacts from a social perspective associated with the operation phase of the 450MW RMPP facility and associated infrastructure.	Negative – The project could alter the areas sense of place which could negatively impact on sensitive receptors	The impact will occur at a local level	None identified at this stage
Description of expected significance of impact The presence of the 450MW RMPP facility could impact the “sense of place” for the local community. The impact is likely to be negative, local in extent, long-term, and of low significance considering it is located within an industrial dominated area with other general and noxious industries.			
Gaps in knowledge & recommendations for further study » No further recommendations as the proposed development is located within the an industrial area that allocated and zoned industrial development of the nature.			

Impact: Impacts on daily and living movement patterns associated with fuel delivery			
Issue	Nature	Extent of Impact	No-Go Areas
Traffic Congestion	Traffic congestion due to an increase in traffic caused by the LPG deliveries, staff trips and trips for maintenance requirements	The impact will occur at a local level	N/A
Noise Pollution	Construction traffic on roads will generate noise i.e. Noise pollution due to increased traffic	The impact will occur at a local level	N/A
Description of expected significance of impact Traffic congestion and noise impacts caused by an increase in LPG deliveries, staff trips and trips for maintenance is likely to be negative, local in extent, long-term, and of low significance with the implementation of mitigation measures and duration of operation of the 450MW RMPP.			
Gaps in knowledge & recommendations for further study » A detailed traffic impact assessment will be undertaken for the EIA phase of the project to assess the impacts a result of construction and operational activities.			

8.5 Cumulative Impacts

Approach to Cumulative Effects Assessment

Cumulative impacts, in relation to an activity, refer to the impact of an activity that in-itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area. For cumulative effects analysis to help the decision-maker and inform interested parties, it must be limited to effects that can be evaluated meaningfully. Boundaries must be set so analysts are not attempting to measure effects on everything. Therefore, the cumulative impacts associated with the 450MW RMPP and associated infrastructure have been viewed from two perspectives within this report:

- » Cumulative impacts associated with the location and nature of the project, i.e. a 450MW RMPP and associated infrastructure located within Alton, Richards Bay on the Remainder of Erf 1854 and Portion 2 of Erf 1854 for the 450MW RMPP and on Remainder of Erf 1795 and Portion 1 of Erf 1795 for the proposed LPG site.
- » Cumulative impacts associated with other relevant approved or existing and proposed similar developments within the surrounding area of the proposed 450MW RMPP and associated infrastructure including the proposed LPG project sites.

Refer to **Figure 8.1** for an illustration of other existing industrial developments located within the surrounding areas of the project site.

Cumulative impacts, in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably

foreseeable impacts eventuating from similar or diverse activities (NEMA, 2017). The complicating factor is that the projects that need to be considered are from past, present and reasonably foreseeable future development. Cumulative effects can be characterised according to the pathway they follow. One pathway could be the persistent additions from one process. Another pathway could be the compounding effect from one or more processes. Cumulative effects can therefore occur when impacts are:

- » additive (incremental);
- » interactive;
- » sequential; or
- » synergistic.

Canter and Sadler (1997) describe a three step process for addressing cumulative effects in an EIA:

- » delineating potential sources of cumulative change (i.e. GIS to map the relevant industrial development in close proximity to one another).
- » identifying the pathways of possible change (direct impacts)
- » indirect, non-linear or synergistic processes; and
- » Classification of resultant cumulative changes.

The 450MW RMPP and associated infrastructure is proposed to be located in Alton, Richards Bay, approximately 8km south west of Richards Bay which falls within the jurisdiction of the City of uMhlatuze Local Municipality and the King Cetshwayo District Municipality, KwaZulu-Natal Province.

The project site and in particular the Alton Industrial area has been identified by City of uMhlatuze Local Municipality as an area of focus for the development of industrial development. As such, it can be expected that various industrial developments will take place in addition to the already industrial nature of the area. The closest existing industrial development located near the project site is Mondi Richards Bay, which is located directly adjacent to the north east of the site.

Cumulative impacts associated with the proposed project could relate to:

- » Ecological Impacts;
- » Aquatic Impacts;
- » Geohydrological and surface water impacts;
- » Visual and social impacts due to a more industrialised area;
- » Air quality impacts;
- » Noise impacts;
- » Traffic impacts; and
- » Socio-economic impacts.

From a cumulative perspective it is anticipated at this stage that the development of the 450MW RMPP and its associated infrastructure will not result in

unacceptable risk or loss to the environment. This is supported by the following:

- » The transformed nature of the vegetation within a large portion of the site.
- » The avoidance of direct impacts on wetlands identified in the surrounding areas.
- » The fact that the site is located within the Alton Industrial area and is boarded by the Richards Bay Industrial Development Zone, and can therefore be considered as a site which would have been developed for some type of industry or entity at some stage in the future.
- » The limited potential of the site for agricultural purposes due to its location within the Alton Industrial area, the current land zoning of the site and low agricultural potential of the soils on the site.
- » The location of the site in relation to residential areas and sensitive social receptors.

The cumulative impacts associated with the development of the 450MW RMPP and associated infrastructure will be assessed in detail as part of the EIA Phase specialist reports and the EIA report.

Summary of the nature, significance, consequence, extent, duration and probability of cumulative impacts

- » The positive cumulative impacts include creation of employment, skills development and training opportunities, and downstream business opportunities. Benefits to the local, regional and national economy through employment and procurement of services could be substantial. People from the City of uMhlatuze Local Municipality and nearby towns are most likely to benefit from job opportunities and economic benefits. These positive cumulative impacts will be of a medium significance.
- » The potential negative cumulative impacts are considered to be probable, although the extent, duration, and magnitude of these impacts can be minimised to levels where this impact can be regarded as low significance through implementation of appropriate mitigation measures.
- » The duration of the project is expected to be long-term and subsequently the impact is also expected to be long-term.
- » The impact associated with the proposed development is expected to be local, affecting mainly the immediate environment and the surrounding areas. Positive impacts including job creation and economic development are considered to be regional in extent.
- » Critical and much needed energy enhancement of South Africa's energy security, through the establishment of additional electricity generation capacity to alleviate load shedding and provide much need efficient and flexible generation capacity necessary to support the variability and expansion of South Africa's renewable generation capacity

Gaps in knowledge & recommendations for further study:

- » Each specialist study to be undertaken within the EIA Phase of the process will consider and assess the cumulative impacts of proposed, approved and authorised industrial developments within the area.

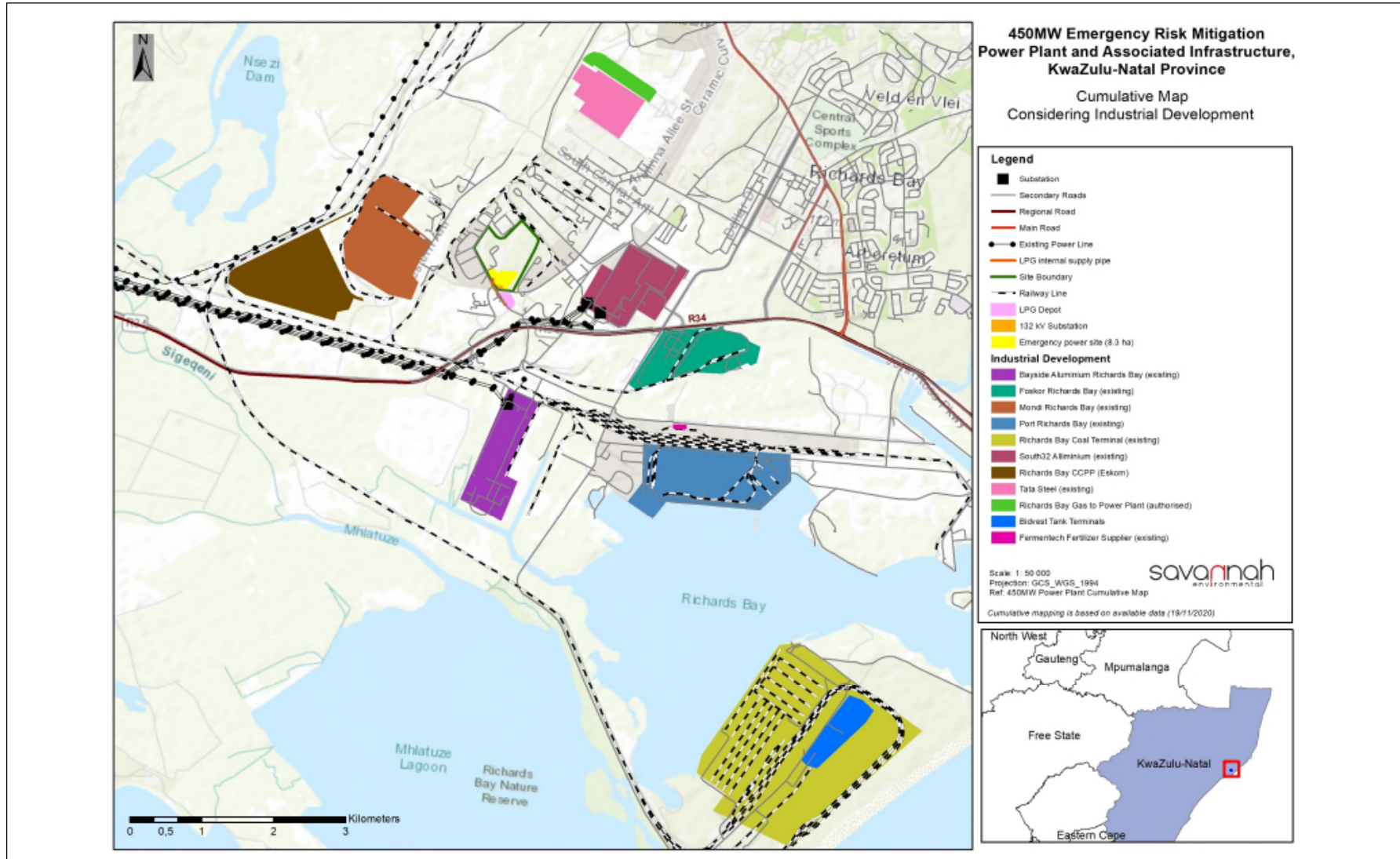


Figure 8.1: Cumulative map illustrating other industrial developments located within the vicinity of the 450MW RMPP and associated infrastructure project sites, as determined from existing data available at the time of compiling this report (**Appendix B2**)

CHAPTER 9: CONCLUSION

Phinda Power Producers (Pty) Ltd (Phinda) proposes to develop an Emergency Risk Mitigation Power Plant (RMPP) and associated infrastructures, with a generating capacity of up to 450MW. The proposed project is to be known as the 450MW RMPP. The Project site is located in the Alton core industrial area adjacent to Richards Bay Industrial Development Zone (IDZ), and approximately 8km south west of Richards Bay centre which falls within the jurisdiction of the City of uMhlathuze Local Municipality and the King Cetshwayo District Municipality, KwaZulu-Natal Province. The facility will be operated with liquified petroleum gas comprising up to 100% propane (LPG) or naphtha as an initial fuel source and will convert to utilising natural gas once this is available in Richards Bay.

This Scoping Study has been undertaken in accordance with the 2014 EIA Regulations, as amended in April 2017, published in Government Notice 40772, in terms of Section 24(5) of the National Environmental Management Act (NEMA; Act No 107 of 1998). This Scoping Report is aimed at detailing the nature and extent of the 450MW RMPP and associated infrastructure, identifying potential issues associated with the development and defining the extent of studies required within the EIA phase. This was achieved through an evaluation of the 450MW RMPP, involving the project proponent, specialist consultants, and a consultation process with key stakeholders (including relevant government authorities) and interested and affected parties (I&APs). The public consultation process is being undertaken in accordance with the approved public participation plan, and every effort is being made to include representatives of all stakeholder groupings in the communities surrounding the project site and the Province.

During this Scoping phase issues associated with the proposed project were identified and investigated through the review of existing information and desk-top evaluations of impacts and specialist inputs.

This chapter concludes the Scoping Report and provides an evaluation of the identified potential environmental risks and impacts associated with the construction and operation phases of the 450MW RMPP and associated infrastructure. Recommendations regarding investigations required to be undertaken within the EIA Phase of the process are provided within the Plan of Study for EIA, contained within Chapter 10 of this Scoping Report.

9.1. Legal Requirements as per the EIA Regulations for the undertaking of a Scoping Report, 2014 (as amended)

This chapter of the scoping report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
(h)(xi) A concluding statement indicating the preferred alternatives, including the preferred location of the activity.	A concluding statement regarding the Scoping Phase of the 450MW RMPP is included within this chapter as a whole.

9.2 Conclusion drawn from the Evaluation of the Proposed Project

Potential impacts associated with the development of the 450MW RMPP and associated infrastructure are expected to occur during both the construction and operation phases. The conclusion of the findings of the Scoping Study is that the potential impacts identified to be associated with the construction and operation of the 450MW RMPP and associated infrastructure are anticipated to be at a site or localised level, with few impacts extending from a local to national extent which includes both positive and negative impacts. The primary impact arising at a national level will be the positive impact of critical additional energy generation. The issue of Climate change arises from an international perspective.

The following provides a summary of the findings of the specialist studies undertaken:

- » **Ecology:** The construction of the 450MW RMPP and associated infrastructure will impact on ecological features located within the project site. The main potential impacts expected during the construction phase include the loss of vegetation, loss of faunal species, possible loss of species of special concern (although none at this stage have been identified on site) potential habitat fragmentation and potential infestation of alien species. Potential impacts associated with the operation of the 450MW RMPP include habitat fragmentation and infestation of alien species. As a result of the largely disturbed nature of the site and the avoidance of sensitive features such as the identified wetlands, it is expected that the development would not result in any irreplaceable loss of ecological features and the consequences of the impacts are expected to be limited. Impacts can be minimised through the implementation of appropriate mitigation measures. The power plant site zoned for industrial activities and is ear-marked for development in the City of uMhlatuze's Environmental Services Management Plan and SDF. A detailed assessment of impacts on ecology is recommended to be undertaken as part of the EIA Phase of the process.
- » **Wetland and Aquatic Features:** Wetland features are located outside the footprint of the 450MW RMPP project site. However, the development of the 450MW RMPP could potentially result in indirect impacts such as altered hydrology, impaired water quality and impeded ecological services. Wetlands identified are channelled valley bottom wetlands. Sections of the wetland located on the boundary of the site have undergone changes due to encroachment of the Eucalyptus Plantations developed on the site historically, infestation of alien and invasive species and subsistence farming within the active channels and along the banks, and industrial activities. The project footprint is located outside of the recommended 29m buffer of this wetland and thus the loss of this system has been avoided. However, any changes to the status and functioning of this system resulting from indirect impacts are considered to be negative impacts as a result of the project. The significance is expected to be medium. Impacts can be minimised through the implementation of appropriate mitigation measures. The wetlands identified and their associated 29m buffer are considered to be no-go areas for development. A detailed assessment of impacts on aquatic ecology is recommended to be undertaken as part of the EIA Phase of the process.
- » **Geo-hydrological features and surface waterbodies:** During the construction phase groundwater and surface water waterbodies can be affected as a result of on-site accidental spills and leaks due to the presence of construction vehicles and/or fuel storage areas, and migration of the spilled liquids to the surrounding surface water bodies. During the operation phase groundwater and surface water waterbodies), could be impacted due to possible leakage of diesel and/or chemicals from fuel storage facilities and/or pipelines and from emergency backup generators leaks (sources). The

significance of the construction and operation impacts is expected to be low, subject to the implementation of appropriate mitigation measures. No no-go areas for development were identified. As no detailed Geohydrological and Surface Water Assessments have been carried out at the site of the proposed LPG Storage Tanks on Lot 1795, Richards Bay, additional investigations to fulfil the EIA submission requirements will be required. Monitoring programmes for inclusion into the EMPr for the will be undertaken as part of EIA phase of the project.

- » **Soils and Agricultural Potential:** The development of the 450MW RMPP and associated infrastructure will not impact on the soils and agricultural potential of the project site. Of the 6 soil profiles that were examined, all consisted of non-arable land (LCCVI and LCCVIII) / DEA Agricultural Sensitivity Theme 1 to 3, probably 1 to 2). The proposed development will have no effect on the physical or chemical properties of the soils. Although the proposed development will permanently transform the site, the significance is minimal as it is currently vacant and unused land with a severely limited crop potential. No no-go areas for development were identified. As a result of the low impact expected, no further assessment if required.
- » **Palaeontological and Archaeological Resources:** The construction phase of the 450MW RMPP may impact on potential subsurface human graves as human settlements occur in the general area and have been noted on historical maps although no settlements were identified within the project footprint. The impacts identified on palaeontological and archaeological resources were due to the construction activities which include excavation. The impacts of the construction activities on the archaeological resources include potential damage to and destruction of archaeological sites is expected to be of a low significance. No no-go areas for development were identified. No impacts on archaeological and palaeontological resources is expected in this project study area. The findings of the Heritage Assessment (Appendix I) were considered to be sufficient and no further Heritage Studies are required for the EIA Phase.
- » **Air Quality and climate change:** The construction of the 450MW RMPP has the potential to impact on the ambient air quality of the area through elevated daily PM₁₀ concentrations due to background PM₁₀ and the proximity of the project site to other particulate emission sources. During the operation phase, the 450MW RMPP is likely to contribute NO_x, CO, SOX and VOCs to the existing baseline concentrations (including greenhouse gasses). The impact is expected to be of a medium-low significance. A detailed Air Quality Impact Assessment is recommended to assess the potential impacts on air quality as a result of the project. Climate change impacts associated with the development of the 450MW RMPP relate to the combustion of fuel (naphtha or LPG initially and natural gas once available) at the 450MW RMPP plant which will produce greenhouse gas emissions that will contribute to the global phenomenon of anthropogenic climate change. Climate change is projected to effect many environmental changes across the globe. It is expected that the 450MW RMPP will contribute to South Africa's national emissions inventory. The significance of this impact must be quantified in the impact assessment phase of the project.
- » **Noise:** The construction and operation of the 450MW RMPP will increase the noise levels in the vicinity of the plant. The site visit identified potential noise-sensitive receptors within 2000m to the project site. It is therefore determined that the significant impacts on noise sensitive receptors could be of medium-low significance. No no-go areas for development were identified. It is recommended that the noise impact be investigated in more detail during the EIA phase, including further ambient sound measurements.

- » **Visual:** Impacts from a visual perspective are expected to occur during the construction and operation phases of the 450MW RMPP on observers in close proximity to the proposed infrastructure and activities. The project site is located adjacent to existing heavy industrial development and the Richards Bay IDZ. It is therefore possible that the development could intensify existing industrial impacts. It is however highly unlikely to significantly add to the current area of industrial influence within the surrounding landscape. It is also likely to be possible to partly mitigate any additional influence by ensuring that the development occurs in as close a proximity to existing heavy industry as possible. Analysis has also indicated that affected surrounding landscapes are not likely to be highly sensitive to possible change associated with the proposed development. The significance of the development of the 450MW RMPP on the visual aspects is expected to be moderate. No no-go areas for development were identified. Potential visual impacts must be assessed in detail within the EIA Phase of the process.

- » **Socio-economic aspects:** The construction of the 450MW RMPP will result in both positive and negative impacts on the social environment. During the construction phase the positive impacts will include an increase in the production and GDP-R of the national and local economies, temporary employment opportunities, skills development and household income leading to improved standard of living. These impacts are expected to be of medium significance. Negative impacts expected during the construction phase include a change in the demographics of the area due to an influx of jobseekers, increased pressure on basic services and social and economic infrastructure, an increased demand in housing within the broader area, and impacts on daily living and movement patterns as a result of increases in traffic. These impacts are expected to be of low significance. Positive and negative impacts are expected to occur with the operation of the 450MW RMPP. Positive impacts include a sustainable increase in the production and GDP-R of the national and local economies, long-term employment opportunities, skills development, household income that will improve the standard of living within the area, increased government revenue streams and improved electricity security. These impacts are expected to be of medium-high significance. The negative impact expected during operation is the potential impacts on air quality from the operating RMPP, traffic and visual impacts. The expected significance of the negative impact is medium. From the above identified potential impacts it is concluded that the positive impacts outweigh the negative impacts from a social perspective. The significance of socio-economic impacts must be quantified through a detailed assessment in the EIA Phase of the process.

- » **Cumulative Impacts:** The project site is located within an existing industrial area and adjacent to the Richards Bay IDZ, an area where further heavy industry is planned. Due to the development plans for the site and its location within the Alton Industrial area and its unsuitable soil conditions it is considered unlikely that it would be used for agricultural purposes. Other similar facilities within the area include the Mondi Richards Bay Facility located directly west of the project site. Other authorised gas to power projects have been permitted within the Richards Bay area, although none have yet commenced construction. As a result, there is the potential for cumulative impacts to occur. The significance of these impacts must be assessed within the impact assessment phase of the EIA process.

No environmental fatal flaws or impacts of very high significance were identified to be associated with the development of the 450MW RMPP and associated infrastructure on the identified project site at this stage in the process. This conclusion must however be confirmed through a detailed investigation of the development footprint within the EIA Phase of the process.

9.3 Scoping Phase Sensitivity Analysis

Through the Scoping Phase a number of sensitive features within the project site have been identified which could be affected by the development of the 450MW RMPP (refer to **Figure 9.1**). These include wetland features the associated 29 m buffer and areas of critical biodiversity within the project site. The identified wetlands and associated buffer area are avoided by the proposed development. The indirect impacts on the wetland features and the direct and indirect impacts on biodiversity on the site must be assessed in detail during the EIA phase.

9.4 Recommendations

The findings of this Scoping Report were based primarily on desktop assessments and site visits. Based on this assessment, no environmental fatal flaws have been identified to be associated with the project at this stage. Therefore, there is no reason why the project cannot be evaluated further in a detailed EIA study.

During the EIA phase more detailed environmental studies will be conducted in line with the Plan of Study contained in Chapter 10 of this report. These studies will consider the detailed layouts produced by Phinda and make recommendations for the implementation of avoidance strategies (if required), mitigation and management measures to ensure that the final assessed layout retains an acceptable environmental impact.

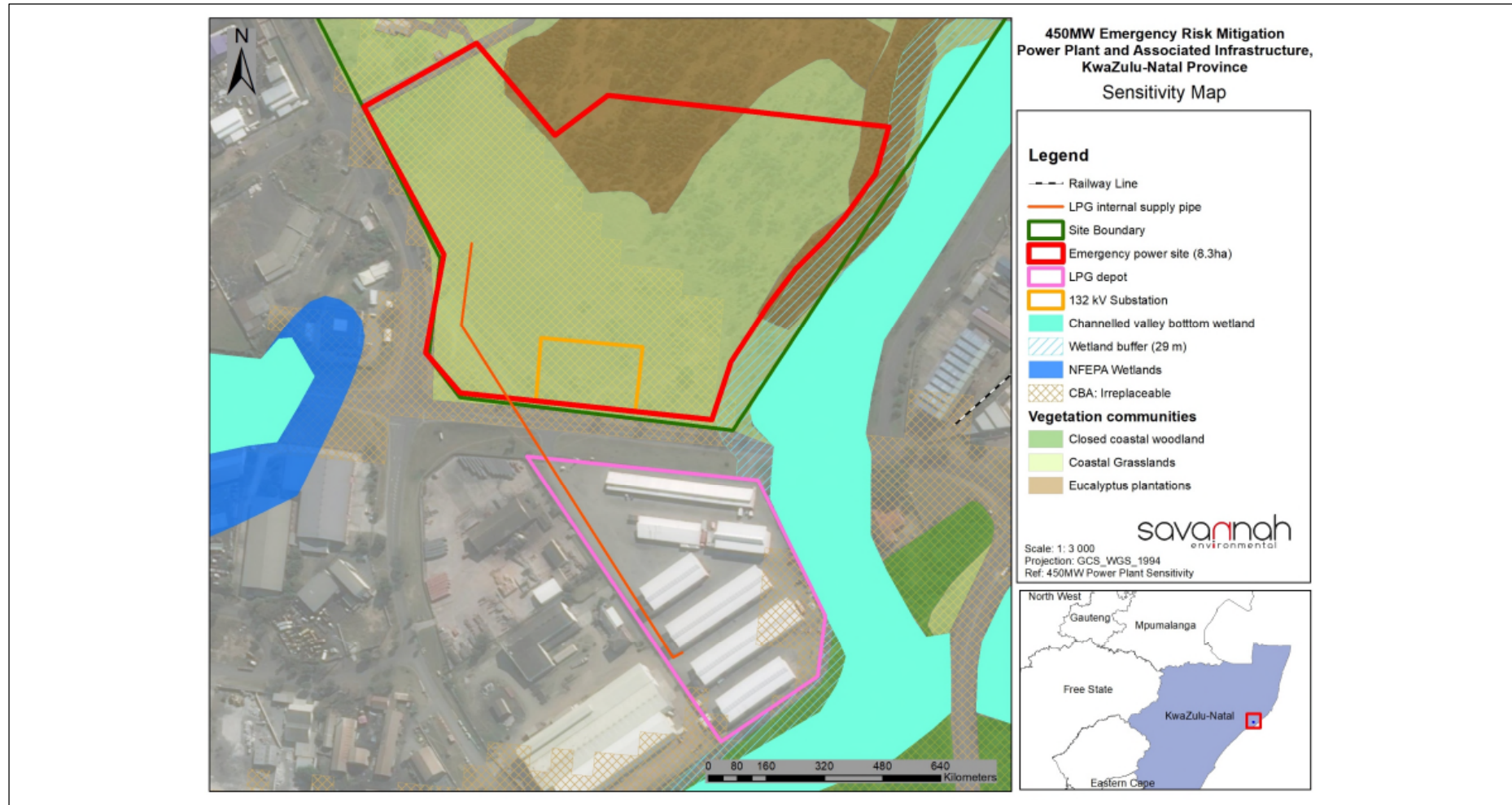


Figure 9.1: Sensitivity map illustrating the sensitive environmental features located within the 450MW RMPP and associated infrastructure project sites (**Appendix B3**)

CHAPTER 10: PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT

This Scoping Report includes a description of the nature and extent of the 450MW RMPP and associated infrastructure located on sites within the Alton Industrial area, details of the Scoping Study undertaken, and the issues identified, described and evaluated. This chapter provides the Plan of Study for the Environmental Impact Assessment (EIA) based on the outcomes of the Scoping Study and associated specialist investigations.

The EIA Phase of the study will include detailed specialist studies for those impacts recorded to be of potential significance, as well as on-going public consultation. The key findings of the Scoping Phase (which includes inputs from authorities, stakeholders, the public, the proponent and the EIA specialist team), together with the requirements of the NEMA EIA Regulations and applicable guidelines, are used to inform the Plan of Study for the EIA.

10.1. Legal Requirements as per the EIA Regulations for the undertaking of a Scoping Report, 2014 (as amended)

This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
(h) a plan of study for the undertaking of the environmental impact assessment process to be undertaken	A plan of study for the undertaking of the EIA phase for the 450MW RMPP and associated infrastructure is included within Sections 10.2 to 10.8 of this chapter.

10.2 Aims of the EIA Phase

The EIA Study to be undertaken for the 450MW RMPP and associated infrastructure will aim to achieve the following:

- » Provide a description of all components of the project, including identified feasible alternative.
- » Provide an overall description of the economic, social and biophysical environment affected by the development of the proposed project.
- » Provide a description of the positive and negative impacts that 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;
- » Assess potentially significant impacts (direct, indirect and cumulative, where required) Identify and recommend appropriate measures to avoid, manage and mitigate potentially significant environmental impacts.
- » Undertake a fully inclusive public involvement process to ensure that I&APs are afforded the opportunity to participate, and that their issues and concerns are recorded. This process will include consultation with I&APs, the public review of the EIA report for a 30-day period and the undertaking of focus group meetings and public meetings.

The EIA will address potential environmental impacts and benefits (direct, indirect and cumulative impacts) associated with each life-cycle stage of the development including design, construction, operation and decommissioning; and will aim to provide the environmental authorities with sufficient information to make an informed decision regarding the proposed 450MW RMPP. A detailed facility layout will be assessed through detailed specialist studies. As required in terms of the EIA Regulations the assessment will include the consideration of the 'do nothing' alternative.

10.3 Authority Consultation

Consultation with the regulating authorities has been undertaken in the Scoping Phase and will continue throughout the EIA process. On-going consultation will include the following:

- » Submission of a Final Scoping Report following a 30-day review period which will include all comments and issues raised during the review period as well as appropriate responses to the comments.
- » Submission of an EIA Report and EMPr for review and comment. The report will be made available for a 30-day review period.
- » Submission of a Final EIA Report and EMPr following a 30-day review period which will include all comments and issues raised during the review period as well as appropriate responses to the comments received.
- » Consultation and an authority site visit (if required) in order to discuss the findings and conclusions of the EIA Report.

10.4 Consideration of Alternatives

The following project alternatives will be investigated in the EIA Phase:

- » **The 'do nothing' alternative:** Phinda does not establish the 450MW RMPP and fuel storage infrastructure on the proposed project sites, i.e. Remainder of Erf 1854 and Portion 2 of Erf 1854 (for the 450MW RMPP and naphtha storage) and Remainder of Erf 1795 and Portion 1 of Erf 1795 (for the LPG Storage Terminal).
- » **Site-specific layout/design alternatives:** In terms of the position of the 450MW RMPP and associated infrastructure within the project site, and layout and/or design of the facility development footprint, particularly the layout of the turbines /engines and corridors/servitudes for associated infrastructure such as the access roads and the LPG or naphtha supply pipelines and future natural gas pipeline.
- » **Technology alternatives:** Two technology alternatives are being considered for the 450MW RMPP, namely gas engine technology and gas turbine technology.
- » **Fuel alternatives:** The 450MW RMPP is proposed to operate using Liquefied Petroleum Gas, comprising principally of propane (LPG) or Naphtha initially, with conversion to regassified imported Liquefied Natural Gas (LNG) once piped supply is available in Richards Bay.
- » **Cooling technology alternatives:** Two cooling technology alternatives are being considered for the 450MW RMPP namely gas engine cooling and gas turbine cooling technology (both consisting of different dry cooling technologies) that will be selected based on the technology selected for the development.
 - » **Water supply alternatives:** Water is to be sourced from either the uMhlathuze Municipality or Mhlathuze Water.

10.5 Assessment of Potential Impacts and Recommendations regarding Mitigation Measures

A summary of the issues which require further investigation within the EIA phase, as well as the proposed activities to be undertaken in order to assess and ground-truth the significance of these potential impacts is provided within **Table 10.1**. The specialists responsible for these studies are also reflected within this table. These specialist studies will consider the development footprint proposed for the 450MW RMPP and all associated infrastructure, as well as feasible and reasonable alternatives identified for the development.

Based on the findings of the Scoping assessment, the following issues were identified as not requiring further investigation within the EIA, and no further or detailed assessment is required:

- » **Impacts on soils and agricultural potential** – Of the 6 soil profiles that were examined, all consisted of non-arable land (LCCVI and LCCVIII) / DEA Agricultural Sensitivity Theme 1 to 5, probably 1 to 2. As the land parcel proposed for the development is made up of vacant, unused non-arable land in the heart of a fully transformed major industrial hub, impacts to soil and agricultural potential were determined to be of low significance. Therefore, the findings of the Soils and Agricultural Assessment (**Appendix H**) are considered to be sufficient and no further impact assessment is required for the EIA Phase.
- » **Impacts on archaeological and palaeontological resources:** The desktop study indicated that several human settlements occurred in the general study area; however, none occurred within the project study areas. The study area consists of old agricultural fields. Isolated stone tools will occur in the study area, however these are of low significance and do not require any mitigation. The general area is of low palaeontological sensitivity. As such, it is very unlikely that the proposed development will negatively impact on significant palaeontological heritage and as such, it is recommended that no further palaeontological studies are required. The surveys undertaken in the area adequately captured the heritage resources. There are no known sites which require mitigation or management plans. No further heritage work is recommended for the proposed development. Therefore, the findings of the Heritage Assessment (**Appendix I**) are considered to be sufficient and no further Heritage Studies are required for the EIA Phase.
- » **Impacts of ground and surface water resources** – The Geohydrological and Surface Water Scoping Impact Assessments (**Appendix F and Appendix G**) determined that the risks of impact from the development of the 450MW Power Plant Facility from chemical pollutants are considered low provided that the mitigation measures proposed are strictly implemented. As the proposed LPG Storage Tanks on Lot 1795, Richards Bay is a fully hard surfaced developed site, no detailed Geohydrological and Surface Water Assessments were carried out, it was recommended that these be included in the EIA Phase of the project, in consideration of the engineering design to be provided together with a ground and surface water monitoring programmes for inclusion within the EMPr.

Table 10.1: Issues requiring further investigation during the EIA Phase and activities to be undertaken in order to assess the significance of potential impacts relevant to the 450MW RMPP and associated infrastructure

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
<p>Ecological Assessment (terrestrial ecology including fauna and flora)</p>	<p>Sensitivity Analysis and EIA assessment</p> <p>The site investigations indicate that the site is located within the Maputaland Wooded Grassland albeit the natural woody layer has been greatly reduced. According to the Ecosystem Threat Status of the National Biodiversity Assessment (NBA, SANBI 2018) and EKZNW (2011) the Maputaland Wooded Grassland is classified as Endangered. The NBA document is a large scale provincial data base.</p> <p>Results from the scoping assessment found that the vegetation on site was broadly classified into two vegetation communities, namely <i>Helichrysum - Chrysanthemoides</i> coastal grasslands and a small portion of the site consisted of Eucalyptus plantations. A Phragmites - Typha channelled valley bottom wetland community was observed on the eastern border of the site, and the Closed coastal woodland vegetation community was identified south of the proposed LPG Storage Terminal, but does also not impede into the site.</p> <p>The Umhlathuze Environmental Services Management plan earmarks the development footprint as a development zone with the Phragmites - Typha channelled valley bottom wetland community the eastern border of the site being conservation.</p> <p>No protected species were found to be on site during the visit. Further searches during the EIA phase will be undertaken</p> <p>As a means to determine the significance of the impacts on fauna and flora on the project site, the following activities will be undertaken:</p> <p><i>Vegetation assessments</i></p> <ul style="list-style-type: none"> » A follow-up site visit is planned prior to the submission of the Terrestrial Biodiversity Impact Assessment Report during the EIA phase of the project. 	<p>Charleen Smuts and Jacolette Adam of Exigent Engineering Consultants cc.</p>

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<ul style="list-style-type: none"> » All Red and Orange, as well as endemic plant species, will be identified and accurately mapped out with a GPS (WGS84 datum; geographic coordinate system). Protective buffer zone widths, consistent with the Red List Plant Species Guidelines will be designated as sensitive on a sensitivity map; » <u>Inclusion of offset receiving areas in the vicinity of the site.</u> » An assessment of the current state of the vegetation types found on the site <p><i>Mammal assessments</i></p> <ul style="list-style-type: none"> » Surveys for small mammals will be conducted from 07:00 – 11:00 and 16:00 – 19:00 daily for 3 days as part of the detailed EIA investigations. » Traps will be spatially representing the development site. » A list of all mammal species observed in the project site will be provided. » The location of red list, protected and endemic mammal species/populations observed in the project site will be mapped as well as all suitable and predicted habitats for these animals in the project site and within a 500 m radius of the project site. » Species specific mitigation measures for identified species of conservation concern will be provided. » Details on the status/condition of habitats identified during the survey will be included in the report. <p><i>Herpetofauna assessments</i></p> <ul style="list-style-type: none"> » Diurnal surveys for reptiles and frogs will include upturning of rocks, stones, toppled trees and other retreats such as wooded and moist areas. An assessment of the status and condition of potential and available habitat for reptile species will be conducted. Potential dispersal connections between habitats will be investigated during random transect walks. » For frog assessments, focal habitats such as wetlands, drainage lines and grasslands will be searched. Searches will be conducted by slow wading or walking on adjacent banks 	

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>while visually searching for adults. In addition to visual confirmation, frog calls will be recorded and compared with pre-recorded calls from du Preez & Carruthers (2009) as an additional means to identify frog species.</p> <p>From the above, an assessment of impacts will be undertaken and recommendations regarding mitigation measures will be made for inclusion in the EMPr. A reasoned opinion regarding the acceptability of the project, and whether the proposed project should be authorised, will be provided.</p> <p>Assessment of Impacts for the EIA</p> <p>The methodology described above will assist in the assessment of the overall effect of the proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described, and refer to the causes of the effect, what will be affected and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p>Environmental Management Programme</p> <p>For each overarching anticipated impact, management recommendations for the design, construction, and operational phase will be drafted for inclusion in the project EMPr.</p>	
<p>Wetland and Aquatic Impact Assessment</p>	<p>Sensitivity Analysis and EIA assessment</p> <p>The impact assessment for the consideration of wetlands and aquatic features will include the following:</p> <ul style="list-style-type: none"> » The description of the current state of identified wetland on the boundary of the project site, specifically focusing on Present Ecological State (PES), Ecological Importance and Sensitivity (EIS) as well as the Ecosystem Regulating and Supporting Services that this 	<p>Charleen Smuts and Jacolette Adam of Exigent Engineering Consultants cc.</p>

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>wetland system provides will be presented in the Aquatic Biodiversity Impact Assessment Report during the EIA phase of the project;</p> <ul style="list-style-type: none"> » In-situ water quality testing is planned during the follow-up site visit and the results will be presented and interpretation thereof presented in the Aquatic Biodiversity Impact Assessment Report which will be submitted during the EIA phase of the project; » The results obtained will form the baseline survey from which changes to both upstream and downstream water quality as a result of the project can be measured during the construction and operation phases of the proposed development and will inform monitoring requirements for the project Environmental Management Programme (EMPr). » The recorded values will be compared to the acceptable ranges as indicated in the South African Water Quality Guidelines compiled by the Department of Water Affairs and Forestry (DWAF, 1998) for Aquatic Ecosystems and presented and discussed in the Aquatic Biodiversity Impact Assessment Report during the EIA phase of the project. » Recommendations for rehabilitation of any disturbed wetland areas identified will be provided. » Provide a reasoned opinion regarding the acceptability of the project, and whether the proposed project should be authorised. <p>Assessment of Impacts for the EIA</p> <p>The methodology described above will assist in the assessment of the overall effect of the proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described, and refer to the causes of the effect, what will be affected and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p>	

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>Environmental Management Programme For each overarching anticipated impact, management recommendations for the design, construction, and operational phase will be drafted for inclusion in the project EMPr.</p>	
<p>Geo-hydrological Impact Assessment</p>	<p>Sensitivity Analysis and EIA assessment The impact assessment of the project site from a geo-hydrological perspective will include:</p> <ul style="list-style-type: none"> » In order to determine the baseline or ambient groundwater quality in the vicinity of Lot 1795, Richards Bay, two (2) additional dual-purpose Geotechnical and Geohydrological boreholes will be drilled and sampled to determine baseline quality data. » The piezometers installed in the boreholes will also permit groundwater samples to be removed, when required, for baseline geochemistry data, i.e. groundwater entering and leaving the site. » Provide details of a monitoring programme to be implemented for the project. » Provide a reasoned opinion regarding the acceptability of the project, and whether the proposed project should be authorised. <p>Assessment of Impacts for the EIA The methodology described above will assist in the assessment of the overall effect of the proposed activity on the environment. It will include an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described, and refer to the causes of the effect, what will be affected and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p>Environmental Management Programme For each overarching anticipated impact, management recommendations for the design,</p>	<p>Andrew Greet of Davies Lynn and Partners</p>

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	construction, and operational phase will be drafted for inclusion in the project EMPr.	
<p>Surface water Impact Assessment</p>	<p>Sensitivity Analysis and EIA assessment</p> <p>As no detailed Surface Water Assessments have been carried out at the site of the proposed LPG Storage Tanks on Lot 1795, Richards Bay, additional investigations to fulfil the EIA submission requirements will be required.</p> <ul style="list-style-type: none"> » In order to determine the baseline or ambient surface water quality in the vicinity of Lot 1795, Richards Bay, two (2No.) additional dual-purpose Geotechnical and Geohydrological boreholes will be required, allowing firstly for the preliminary determination of the pile founding levels (in the vicinity of the boreholes) for different pile types (i.e. DCIP and CFA piles), for a range of pile diameters at differing compressive load carrying capacities (when preliminary foundation costs are required in the future), this provides the necessary information related to the direction of movement for the required Surface water Investigations and Reporting. » The piezometers installed in the boreholes will also permit groundwater samples to be removed, when required, for baseline geochemistry data to determine contamination levels if applicable and recommend mitigation measures. » Provide details of a monitoring programme to be implemented for the project. » Provide a reasoned opinion regarding the acceptability of the project, and whether the proposed project should be authorised. <p>Assessment of Impacts for the EIA</p> <p>The methodology described above will assist in the assessment of the overall effect of the proposed activity on the environment. It will include an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described, and refer to the causes of the effect,</p>	<p>Andrew Greet of Davies Lynn and Partners</p>

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>what will be affected and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p>Environmental Management Programme For each overarching anticipated impact, management recommendations for the design, construction, and operational phase will be drafted for inclusion in the project EMPr.</p>	
<p>Air Quality Impact Assessment</p>	<p>Sensitivity Analysis and EIA assessment The impact assessment for air quality will include the following:</p> <ul style="list-style-type: none"> » The establishment of an emissions inventory by referring to NMES and emission factors for combustion processes, fuel storage and fugitive dust (construction). » Atmospheric dispersion simulations for the baseline, incremental, and cumulative scenarios using the CALPUFF atmospheric dispersion model. » <u>Modelling of hourly averages for all pollutants and scenarios.</u> » <u>Modelling of daily averages for all pollutants and scenarios.</u> » <u>Modelling of Worst-Case Scenario.</u> » <u>Assessment of Fugitive Emissions.</u> » A human health risk and nuisance impact screening assessment based on dispersion simulation results. » A comprehensive air quality impact assessment report in the format prescribed by the Department of Environment, Forestry and Fisheries (DEFF) in support of the Atmospheric Emission License (AEL) application. » Impact Significance rating according to the method provided by Savannah Environmental (Pty) Ltd. » Recommendations regarding mitigation and monitoring for inclusion in the project EMPr. <p>Provide a reasoned opinion regarding the acceptability of the project, and whether the proposed project should be authorised.</p> <p>Assessment of Impacts for the EIA The methodology described above assist in the assessment of the overall effect of the</p>	<p>Terri Bird of AirShed Planning Professionals</p>

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described, and refer to the causes of the effect, what will be affected and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p>Environmental Management Programme For each overarching anticipated impact, management recommendations for the design, construction, and operational phase will be drafted for inclusion in the project EMPr.</p>	
<p>Climate Change Impact Assessment</p>	<p>Sensitivity Analysis and EIA assessment The undertaking of the climate change impact assessment will include the following:</p> <ul style="list-style-type: none"> * Analysis of the project; * Determine the project boundaries; * Calculate the carbon footprint of the project with respect to: <ol style="list-style-type: none"> 1. Direct emissions. 2. Upstream indirect emissions. * Setting the performance benchmark using the national GHG Emissions trajectory. * Analysis of alternatives: * Review of alternatives for technology (gas engine, gas turbine, etc); * Review of alternative cooling technologies; * Review of alternative fuels; * Review of alternative mitigation options (carbon capture and storage (CCS),etc); and * Deploying a range of economic instruments to support the system of Desired Emissions Reduction Outcomes. * Impact assessment: * Impact assessment, including energy demand, against the identified alternatives. 	<p>Karien Erasmus of Promethium Carbon</p>

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<ul style="list-style-type: none"> * Emission management during operations: * Emission management plan for the operations phase. * Provide a reasoned opinion regarding the acceptability of the project, and whether the proposed project should be authorised. <p>Assessment of Impacts for the EIA The methodology described above assists in the assessment of the overall effect of the proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described, and refer to the causes of the effect, what will be affected and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p>Environmental Management Programme For each overarching anticipated impact, management recommendations for the design, construction, and operational phase will be drafted for inclusion in the project EMPr.</p>	
Noise Impact Assessment	<p>Sensitivity Analysis and EIA assessment</p> <p>A key impact to be assessed comprises the noise impact that the 450MW RMPP and associated infrastructure will have on surrounding areas. The noise impact assessment for the EIA phase will consider the following:</p> <ul style="list-style-type: none"> * Project design and layout; * Topography and intervening buildings between the proposed activity and identified NSD; * A more accurate description of equipment to be used in and around the proposed power plant. This would include data such as the type of equipment, but also the 	Morné de Jager

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>number of that equipment to be used.</p> <p>Assessment of Impacts for the EIA The methodology described above assists in the assessment of the overall effect of the proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described, and refer to the causes of the effect, what will be affected and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p>Environmental Management Programme For each overarching anticipated impact, management recommendations for the design, construction, and operational phase will be drafted for inclusion in the project EMPr.</p>	
<p>Visual Impact Assessment</p>	<p>Sensitivity Analysis and EIA assessment A key impact to be assessed comprises the visual impact that the 450MW RMPP and associated infrastructure will have on surrounding areas. The visual impact assessment will include the following:</p> <ul style="list-style-type: none"> * Undertake site visit * Determination of potential visual exposure * Determination of visual distance/observer proximity to the facility * Determination of viewer incidence/viewer perception (sensitive visual receptors) * Determination of the visual absorption capacity of the landscape * Calculate the visual impact index * Determine impact significance * Propose mitigation measures 	<p>Lourens du Plessis of LOGIS</p>

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>* Provide a reasoned opinion regarding the acceptability of the project, and whether the proposed project should be authorised.</p> <p>Assessment of Impacts for the EIA The methodology described above assists in the assessment of the overall effect of the proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described, and refer to the causes of the effect, what will be affected and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p>Environmental Management Programme For each overarching anticipated impact, management recommendations for the design, construction, and operational phase will be drafted for inclusion in the project EMP.</p>	
<p>Socio-economic Impact Assessment</p>	<p>Sensitivity Analysis and EIA assessment It is recommended that a full EIA level Socio-Economic Impact Assessment be conducted as part of the EIA phase. The following activities should be undertaken as part of this process:</p> <ul style="list-style-type: none"> » Review comments pertaining to social impacts received from members of the key stakeholders, and any organ of state during the public review of the Scoping Report. Where applicable, comments received from DEFF on <u>this</u> Final Scoping Report, which may pertain to socio-economic impact assessment, will also be reviewed. » Collect primary data. Interview key stakeholders to obtain primary information related to the project site, socio-economic environment, and to gain their inputs on the proposed project and its perceived impact (positive and /or negative). » Update the baseline information with information received during the data collection, as well as any additional information received from the client, or updates to the project 	<p>Eugene de Beer of Urban Econ Development Economists</p>

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>description.</p> <ul style="list-style-type: none"> » Assess impacts identified for the project in terms of their nature, extent, duration, magnitude, probability, status, and significance; including energy demand, as well as the degree to which the impact can be reversed, may cause irreplaceable loss of resources, and can be mitigated. » Identify mitigation measures with which to reduce negative impacts and enhance positive impacts for inclusion in the Environmental Management Programme (EMPr). » Provide a reasoned opinion regarding the acceptability of the project, and whether the proposed project should be authorised. <p>Assessment of Impacts for the EIA</p> <p>The methodology described above assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described, and refer to the causes of the effect, what will be affected and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p>Environmental Management Programme</p> <p>For each overarching anticipated impact, management recommendations for the design, construction, and operational phase will be drafted for inclusion in the project EMPr.</p>	
Traffic Impact Assessment	<p>Sensitivity Analysis and EIA assessment</p> <p>The undertaking of the traffic impact assessment will include the following:</p> <ul style="list-style-type: none"> » An assessment of the facility layout; » A site visit to the area (if required); » A site access and access road assessment; 	Iris Wink of JG Afrika

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>» Trip generation for both the construction and operation phases; » One 12 hour / peak hour traffic counts; » Trip distribution and trip assignment; and » Intersection or access analysis.</p> <p>From the above, an assessment of impacts will be undertaken and recommendations regarding mitigation measures will be made for inclusion in the EMPr. A reasoned opinion regarding the acceptability of the project, and whether the proposed project should be authorised will be provided.</p> <p>Assessment of Impacts for the EIA The methodology described above assists in the assessment of the overall effect of the proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described, and refer to the causes of the effect, what will be affected and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p>Environmental Management Programme For each overarching anticipated impact, management recommendations for the design, construction, and operational phase will be drafted for inclusion in the project EMPr.</p>	
Risk Assessment	<p>EIA Assessment The undertaking of the risk assessment will include the following:</p> <p>» The identification of potential NEMA Section 30 incidents' » The determination of whether the proposed project likely to be considered an MHI » If found to be an MHI, the determination of whether the proposed project would meet the</p>	Mike Oberholzer of RISCOM

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>requirements of the MHI regulations and whether the risks could be engineered or managed to an acceptable level</p> <ul style="list-style-type: none"> » The determination of whether there any factors that will prevent the project from proceeding to the next phase of construction or alternatively whether the project could continue under certain conditions or with mitigation » The determination of whether there are any special requirements that the local authorities should be aware of when evaluating the proposal » <u>Include the assessment of the City's Disaster Management capacity.</u> <p>From the above, an assessment of impacts will be undertaken and recommendations regarding mitigation measures will be made for inclusion in the EMPr. A reasoned opinion regarding the acceptability of the project, and whether the proposed project should be authorised will be provided.</p> <p>Assessment of Impacts for the EIA</p> <p>Generally, at the EIA phase there is insufficient detailed information to complete an MHI risk assessment in full accordance with the MHI regulations. For example, emergency plans have not been developed and final designs have not been completed. Under the circumstances a risk assessment would be conducted generally in accordance with the prescribed topics of the MHI regulations. The proposed risk assessment will assess the consequence of major events with the extent of the impact. Risks will be calculated based on the detail available and some assumptions. Excessive risks (as per international criteria) will be highlighted with some mitigation suggestions to reduce risks to international criteria. By definition, an EIA proposes mitigation that must be addressed in the final designs. Thus, the final designs are expected to be different from the designs presented during the EIA. Similarly, the risk assessment done at the EIA phase cannot be submitted as a MHI risk assessment as the designs and layouts are subject to change after the EIA.</p> <p>Environmental Management Programme</p>	

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	For each overarching anticipated impact, management recommendations for the design, construction, and operational phase will be drafted for inclusion in the project EMPr.	

10.6 Methodology for the Assessment of Potential Impacts

Direct, indirect and cumulative impacts of the above issues identified through this Scoping Study will be assessed in terms of the following criteria:

- » The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- » The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional:
 - * local extending only as far as the development site area – assigned a score of 1;
 - * limited to the site and its immediate surroundings (up to 10 km) – assigned a score of 2;
 - * will have an impact on the region – assigned a score of 3;
 - * will have an impact on a national scale – assigned a score of 4; or
 - * will have an impact across international borders – assigned a score of 5.
- » The **duration**, wherein it will be indicated whether:
 - * the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
 - * the lifetime of the impact will be of a short duration (2–5 years) - assigned a score of 2;
 - * medium-term (5–15 years) – assigned a score of 3;
 - * long term (> 15 years) - assigned a score of 4; or
 - * permanent - assigned a score of 5.
- » The **magnitude**, quantified on a scale from 0–10, where a score is assigned:
 - * 0 is small and will have no effect on the environment;
 - * 2 is minor and will not result in an impact on processes;
 - * 4 is low and will cause a slight impact on processes;
 - * 6 is moderate and will result in processes continuing but in a modified way;
 - * 8 is high (processes are altered to the extent that they temporarily cease); and
 - * 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale, and a score assigned:
 - * Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
 - * Assigned a score of 2 is improbable (some possibility, but low likelihood);
 - * Assigned a score of 3 is probable (distinct possibility);
 - * Assigned a score of 4 is highly probable (most likely); and
 - * Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- » the **significance**, which shall be determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- » the **status**, which will be described as either positive, negative or neutral.
- » the degree to which the impact can be reversed.
- » the degree to which the impact may cause irreplaceable loss of resources.
- » the degree to which the impact can be *mitigated*.

The **significance** is determined by combining the criteria in the following formula:

S = (E+D+M) P; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- » 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

As the developer has the responsibility to avoid and/or minimise impacts as well as plan for their management (in terms of the EIA Regulations), the mitigation of significant impacts will be discussed. Assessment of mitigated impacts will demonstrate the effectiveness of the proposed mitigation measures.

The results of the specialist studies and other available information will be integrated and synthesised by the Savannah Environmental project team into the EIA Report for the project. The EIA Report will be compiled in terms of the requirements of the EIA Regulations and will include:

- » The details and expertise of the **EAP** who prepared the report.
- » The **location** of the activity and a locality map illustrating the location of the proposed activity.
- » A **description** of the scope of the proposed activity including all listed activities triggered and a description of associated structures and infrastructure.
- » The **policy and legislative** context within which the development is located and an explanation of how the development complies and responds to the legislation and policy context.
- » The **need and desirability** of the proposed development of the activity in the context of the preferred location.
- » A motivation for the **preferred development footprint** within the approved site.
- » A description of the **process** followed to reach the proposed development footprint within the approved site, including:
 - * details of the development footprint considered;
 - * details of the public participation process undertaken in terms of Regulation 41 of the 2014 EIA Regulations, including copies of supporting documents;
 - * a summary of issues raised by interested and affected parties and the manner in which the issues were incorporated;
 - * the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
 - * the impacts and risks identified including the nature, significance, consequence extent, duration and probability of the impacts, including the degree to which these impacts can be reversed, may cause irreplaceable loss of resources and can be avoided, managed or mitigated;
 - * the methodology used for determining and ranking the nature, significance, consequence, extent, duration and probability of potential environmental impacts and risks;
 - * positive and negative impacts that the activity and alternatives will have on the environment and the community;

- * possible mitigation measures to be applied and the level of residual risk;
 - * a motivation for not considering alternative development locations (if applicable);
 - * a concluding statement indicating the preferred alternative development location; and
 - * a full description of the process followed to identify, assess and rank impacts of the activity and associated infrastructure on the preferred location including all environmental issues and risks that have been identified and an assessment of the significance of each issue and risk and the extent to which the issue/risk can be avoided or mitigated.
- » An **assessment** of the identified potentially significant impacts and risks.
 - » A summary of the **findings and recommendations** of any specialist report and an indication as to how these findings and recommendations have been included.
 - » An **environmental impact assessment** containing a summary of key findings, an environmental sensitivity map and a summary of the positive and negative impacts and risks of the proposed activity.
 - » **Recommendations** from specialist, the recording of proposed impact management **objectives** and the impact management **outcomes** for inclusion in the **EMPr** as well as inclusion as conditions of authorisation.
 - » The final **alternatives** which respond to the impact management measures, avoidance and mitigation measures identified.
 - » Any aspects which were **conditional** to the findings of the assessment.
 - » Description of the assumptions, uncertainties and gaps in knowledge relating to the assessment and mitigation measures proposed.
 - » An **opinion** as to whether the proposed activity should or should not be authorised and the conditions thereof.
 - » An undertaking under **affirmation** by the EAP in relation to the correctness of the information, the inclusion of comments and inputs from stakeholders and Interested and affected parties, the inclusion of inputs and recommendations from the specialists and any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties.
 - » Any specific information that may be required by the competent authority.

The EIA Report will be released to the public and relevant Organs of State for a 30-day review period. The comments received from I&APs will be captured within a Comments and Response Report, which will be included within the Final EIA Report, for submission to the competent authority for decision-making.

8.7 Public Participation Process

A public participation process will be undertaken by Savannah Environmental during the EIA phase in accordance with the approved Public Participation Plan. Consultation with affected and adjacent landowners, key stakeholders and I&APs will be on-going throughout the EIA Phase. Through this consultation process, stakeholders and I&APs will be encouraged to verify that their issues were recorded in the Scoping Phase and to identify additional issues of concern or highlight positive aspects of the 450MW RMPP and associated infrastructure, and to comment on the findings of the EIA Phase. In order to accommodate the varying needs of stakeholders and I&APs within the broader area surrounding the project site, as well as capture their inputs, various opportunities will be provided for stakeholders and I&APs to be involved in the EIA Phase of the process, through the following means:

- » Focus group or public meetings will be held (pre-arranged and I&APs invited to attend) using the most suitable virtual platform.

- » One-on-one consultation meetings will be held via an appropriate forum (for example with directly affected and surrounding landowners).
- » Telephonic consultation sessions (consultation with various parties from the EIA project team, including the public participation consultant, lead EIA consultant as well as specialist consultants).
- » Written, faxed, or e-mail correspondence received via the Savannah Environmental online stakeholder engagement platform or in writing.

The EIA Report will be made available for a 30-day review period prior to finalisation and submission to the DEFF for decision-making.

8.8 Key Milestones of the Programme for the EIA

The envisaged key milestones of the programme for the EIA Phase are outlined in the following table (and include indicative dates):

Key Milestone Activities	Anticipated timeframe
Make Scoping Report available to the public, stakeholders and authorities for review and comment	02 October 2020 – 02 November 2020
Finalisation of Scoping Report, and submission of the Final Scoping Report to DEFF	November 2020
Authority acceptance of the Final Scoping Report and Plan of Study to undertake the EIA	December 2020
Undertake specialist studies	October to December 2020
Make EIA Report and EMPr available to the public, stakeholders and authorities for review and comment	December 2020/January 2021 (taking into consideration days of reckoning)
Finalisation of EIA Report, and submission of the Final EIA Report to DEFF	February 2021
Authority review period and decision-making (107 calendar days)	April 2021

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