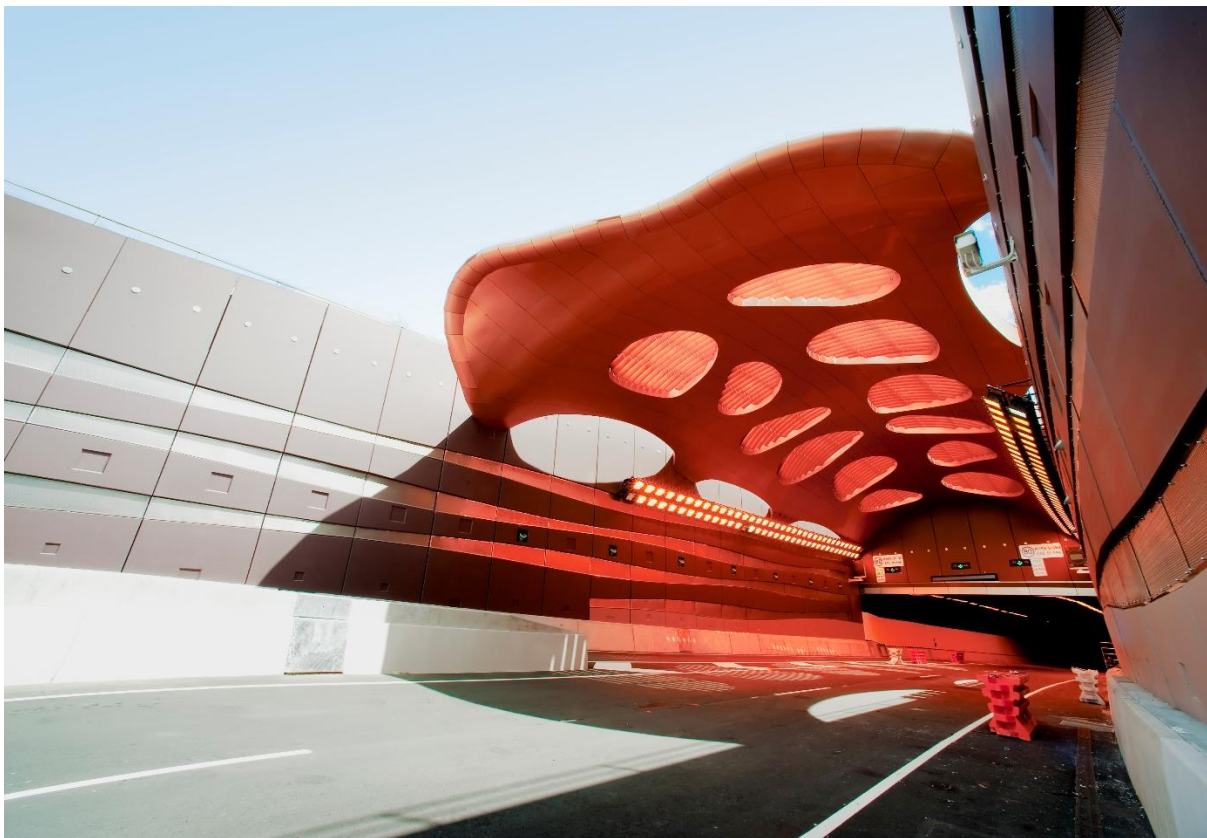


RICHARDS BAY COAL TERMINAL (PTY) LTD

# RICHARDS BAY COAL TERMINAL PROPOSED REPEATER MAST BASIC ASSESSMENT REPORT

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RICHARDS BAY COAL TERMINAL (PTY) LTD

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# SIGNATURES

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Director**

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# PRODUCTION TEAM

## RICHARDS BAY COAL TERMINAL

HSE Manager Sihle Shezi

Project Engineer Sanjeev Harrilall

Project Manager Reshal Mohan

## WSP

Project Lead Mpendulo Dlamini

Project Director Nigel Seed









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- A** CURRICULUM VITAE
- B** STAKEHOLDER ENGAGEMENT REPORT
- C** SITE LAYOUT
- D** SPECIALIST REPORT: AVIFAUNA
- E** ENVIRONMENTAL MANAGEMENT PLAN

# 1 INTRODUCTION

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## 1.1 BACKGROUND

Richards Bay Coal Terminal (Pty) Ltd (RBCT) is one of the leading coal export terminals in the world. It was opened in 1976 with an original capacity of 12 million tons per annum, it has grown into an advanced 24-hour operation with a design capacity of 91 million tons per annum.

RBCT is positioned at the Richards Bay deep sea ports. It is able to handle large ships and subsequent large volumes. As such, it has gained a reputation for operating efficiently and reliably. RBCT shares a strong cooperative relationship with South Africa's national utility, Transnet, which provides the railway services linking the coal mines to the port.

In order to provide stringent collision prevention support for the rail locomotives that move the coal, RBCT has identified a need to improve the radio-based navigation system through the installation of an additional radio repeater. A radio repeater is a combination of a radio receiver and a radio transmitter that receives a signal and retransmits it, so that two-way radio signals can cover longer distances. The repeater will be sited on a mast in order for it to have enough elevation to have line of sight with the RBCT central tower and the locomotives.

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## 1.2 TERMS OF REFERENCE

The environmental impact assessment (EIA) Regulations (Government Notice Regulation (GNR) 326 of 2017), promulgated under the National Environmental Management Act (No. 107 of 1998), as amended (NEMA), identifies the project's activity as being subject to a basic assessment (BA) process due to the applicability of the EIA Listing Notice GN R.324 (07 April 2017). In order for the proposed project to proceed it will require an Environmental Authorisation (EA) from the KwaZulu Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA).

WSP Environmental (Pty) Ltd (WSP) has been appointed by RBCT to undertake the function of independent Environmental Assessment Practitioner (EAP) to facilitate the basic assessment (BA) process in accordance with the EIA Regulations (Government Notice Regulation (GNR) 326 of 2017).

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## 1.3 PROJECT PROPONENT

**Table 1: Details of the Project Proponent**

<b>Proponent:</b>	Richards Bay Coal Terminals
<b>Contact Person:</b>	Mr. Sihle Shezi
<b>Postal Address:</b>	PO Box 56 Richards Bay 3900
<b>Telephone:</b>	+27 (0) 35 904 4102
<b>Fax:</b>	+27 (0) 35 904 4038
<b>E-mail:</b>	sshezi@rbct.co.za

## 1.4 COMPETENT AUTHORITY

**Table 2: Competent Authorities**

Aspect	Competent Authority	Contact Details
<b>Environmental Authorisation</b>	KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA)	Assessing Officer King Cetshwayo District Municipality Tel: 035 780 0313 Muziwandile Mdamba Muziwandile.Mdamba@kznedtea.gov.za

## 1.5 ENVIRONMENTAL ASSESSMENT PRACTITIONER AND PROJECT TEAM

Table 3 outlines the details of the EAP and their expertise.

**Table 3: Details of the Environmental Assessment Practitioner**

<b>Name of Consultant:</b>	WSP Environmental (Pty.) Ltd.
<b>Contact Person:</b>	Nigel Seed
<b>Postal Address:</b>	Block A, 1 on Langford Langford Road Westville Durban 3629 South Africa
<b>Telephone:</b>	031 240 8860
<b>Fax:</b>	031 240 8861
<b>E-mail:</b>	nigel.seed@wsp.com
<b>Expertise to conduct this EIA</b>	Nigel has 15 years' environmental and social consulting experience. He is a Technical Director as well as the Africa lead for the environmental and social impact assessment (ESIA) service and Power in Africa. Nigel has led complex ESIA and transaction related due diligence assessments across a range of sectors including aerospace, agro-processing, chemicals, healthcare, infrastructure (ports, roads, waste management), manufacturing, mining and beneficiation, oil & gas, pulp & paper, power generation (thermal & renewables), and property development. Nigel has extensive experience working with South African and international laws as well as international best practice standards and guidelines including Equator Principles III, the IFC Performance Standards on Environmental and Social Sustainability (2012) and related policies, and the World Bank Group EHS and Industry Sector guidelines.

Details of the project team are shown in **Table 4**. Curricula Vitae are attached in **Appendix E**.

**Table 4: Project Team**

Name	Role	Qualifications	Experience (years)
<b>Mpendulo Dlamini</b>	Project Manager	BSc Hons. (Environmental Science)	2
<b>Nigel Seed</b>	Project Director	B.Soc.	15



## 1.6 SPECIALISTS

Specialist input was required in support of this EA application. The details of the specialist is shown in **Table 5**.

**Table 5: Details of specialist**

Assessment:	Name of Specialist	Company	Section in report	Appendix
<b>Avifauna Impact Assessment</b>	Prof. Digby Cyrus	CRUZ-Environmental cc	Section 6.6	Appendix E

## 1.7 STRUCTURE OF THIS REPORT

For the purposes of demonstrating legal compliance, **Table 6** cross-references the sections within the BA Report with the requirements as per Appendix 4 of GNR 326 of 2017.

**Table 6 : Legislation Requirements as detailed in Appendix 4 of GNR 326**

Appendix 1 of GNR 326	Legislated requirements as per the NEMA GNR 326	relevant report Section
<b>3 (1) (a)</b>	Details of-	
	(i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Section 1.5 Appendix A
<b>3 (1) (b)</b>	the location of the activity, including;	Section 5.1
	(i) the 21 digit Surveyor General code of each cadastral land parcel;	Section 5.1
	(ii) where available, the physical address and farm name;	<b>Error! Reference source not found.</b>
	(iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	N/A
<b>3 (1) (c)</b>	a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is—	<b>Error! Reference source not found.  Error! Reference source not found.</b>
	(i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or	N/A
	(ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	N/A
<b>3 (1) (d)</b>	a description of the scope of the proposed activity, including— (i) all listed and specified activities triggered and being applied for; and	Table 7

	(ii) a description of the activities to be undertaken including associated structures and infrastructure;	
	(i) planning and design;	Section 5 (Project Description)
	(ii) pre-construction activities;	
	(iii) construction activities;	
	(iv) rehabilitation of the environment after construction and where applicable post closure; and	
	(v) where relevant, operation activities;	
<b>(e)</b>	(e) a description of the policy and legislative context within which the development is proposed including—	Section 2 (policy and legislative context)
	(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; and	
	(ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	
<b>(f)</b>	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;	Section 5.3 (need and desirability)
<b>(g)</b>	a motivation for the preferred site, activity and technology alternative;	Section 4 (alternatives)
<b>(h)</b>	a full description of the process followed to reach the proposed preferred alternative within the site, including —	
	(i) details of all the alternatives considered;	
	(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Appendix B – Stakeholder Engagement Report
	(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Appendix B – Stakeholder Engagement Report.  No comments included in draft Basic Assessment Report. To be included in final.
	(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 6 (description of environmental attributes)

	(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts— (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Section 7 (environmental aspects)  Section 7 (impact assessment)
	(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Section 3 (impact assessment / methodology)
	(viii) the possible mitigation measures that could be applied and level of residual risk;	Section 7 (impact assessment / impact assessment results)
	(ix) the outcome of the site selection matrix;	No alternatives
	(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	Section 4.1 (site alternatives)
	(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;	Section 7 (impact assessment) / (environmental impact assessment – no project option)
<b>(i)</b>	a full description of the process undertaken to identify, assess and rank the impacts of the activity will impose on the preferred location through the life of the activity, including—	Section 7 (impact assessment / methodology)
	(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and	Section 7 (environmental aspects)
	(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Section 7 (impact assessment)

## 2 LEGAL FRAMEWORK

The project will be carried out with due regard to local and international applicable legal and other environmental requirements.

Table 7 identifies of all legislation applicable to the project.

**Table 7: Summary of National Legislation Applicable to the Project**

Title of legislation, policy or guideline	Applicability to Project								
<p><b>National Environmental Management Act (107 of 1998)</b></p> <p><b>NEMA (No. 107 of 1998)</b></p>	<p>GN. R.983 (2014) as amended: Listing Notice 3: List of Activities and Competent Authorities Identified in terms of Sections 24(2) and 24d (as amended by GN. R324 (2017)</p> <p>GN. R323 (Listing Notice 3) (3): The development of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast or tower—</p> <p>(a) is to be placed on a site not previously used for this purpose; and</p> <p>(b) will exceed 15 metres in height—</p> <p>but excluding attachments to existing buildings and masts on rooftops in KwaZulu-Natal.</p> <p>xiii. Inside urban areas:</p> <p>(dd) Areas within 1 kilometre from terrestrial protected areas identified in terms of NEMPAA.</p> <p>The table below lists possible environmental triggers listed in Listing Notices 3(3) as well as other terminology listed in other legislation with environmental considerations.</p> <table border="1" data-bbox="472 1200 1461 1977"> <thead> <tr> <th data-bbox="472 1200 751 1263">Area</th> <th data-bbox="758 1200 1461 1263">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="472 1272 751 1585"> <p><b>A protected area identified in terms of NEMPAA, excluding conservancies</b></p> </td> <td data-bbox="758 1272 1461 1585"> <p>Applicable - A protected area is any one of the protected areas referred to in section 9 of NEMPAA which includes national parks and marine protected areas managed by the national government, public nature reserves managed by provincial and local governments, and private nature reserves managed by private landowners. The proposed site is not within the Richard Bay Nature Reserve which a protected area, but is within 1 km, and it triggers activity part xiii (dd) of Listing Notice 3 (3) as stated above. (Figure 7).</p> </td> </tr> <tr> <td data-bbox="472 1594 751 1886"> <p><b>An estuarine functional zone</b></p> </td> <td data-bbox="758 1594 1461 1886"> <p>Not Applicable - This is the area in and around an estuary which includes the open water area, estuarine habitat (such as sand and mudflats, rock and plant communities) and the surrounding floodplain area, as defined by the area below the 5 m topographical contour (referenced from the indicative mean sea level). The proposed site is approximately 247m away from the estuary and above the 5m topographical contour (Figure 7).</p> </td> </tr> <tr> <td data-bbox="472 1895 751 1977"> <p><b>Areas designated for conservation use in Spatial</b></p> </td> <td data-bbox="758 1895 1461 1977"> <p>Not Applicable - The Richards Bay Nature Reserve is a designated conservation area listed as a protected area in the NEMPAA and included in the City of uMhlatuze</p> </td> </tr> </tbody> </table>	Area	Applicability	<p><b>A protected area identified in terms of NEMPAA, excluding conservancies</b></p>	<p>Applicable - A protected area is any one of the protected areas referred to in section 9 of NEMPAA which includes national parks and marine protected areas managed by the national government, public nature reserves managed by provincial and local governments, and private nature reserves managed by private landowners. The proposed site is not within the Richard Bay Nature Reserve which a protected area, but is within 1 km, and it triggers activity part xiii (dd) of Listing Notice 3 (3) as stated above. (Figure 7).</p>	<p><b>An estuarine functional zone</b></p>	<p>Not Applicable - This is the area in and around an estuary which includes the open water area, estuarine habitat (such as sand and mudflats, rock and plant communities) and the surrounding floodplain area, as defined by the area below the 5 m topographical contour (referenced from the indicative mean sea level). The proposed site is approximately 247m away from the estuary and above the 5m topographical contour (Figure 7).</p>	<p><b>Areas designated for conservation use in Spatial</b></p>	<p>Not Applicable - The Richards Bay Nature Reserve is a designated conservation area listed as a protected area in the NEMPAA and included in the City of uMhlatuze</p>
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<p><b>An estuarine functional zone</b></p>	<p>Not Applicable - This is the area in and around an estuary which includes the open water area, estuarine habitat (such as sand and mudflats, rock and plant communities) and the surrounding floodplain area, as defined by the area below the 5 m topographical contour (referenced from the indicative mean sea level). The proposed site is approximately 247m away from the estuary and above the 5m topographical contour (Figure 7).</p>								
<p><b>Areas designated for conservation use in Spatial</b></p>	<p>Not Applicable - The Richards Bay Nature Reserve is a designated conservation area listed as a protected area in the NEMPAA and included in the City of uMhlatuze</p>								

	<p><b>Development Frameworks (SDF) adopted by the competent authority or zoned for a conservation purpose</b></p>	<p>SDF. However, the proposed site is not within the designated Protected Area (Figure 7)</p>
	<p><b>Threatened ecosystem</b></p>	<p>Not Applicable – Threatened ecosystems are those areas that have undergone degradation as a result of human intervention. The National List of Threatened Ecosystems promulgated in 2011 state that the spatial data of such areas can be accessed from the South African National Biodiversity Institute (SANBI). According to the SANBI map (Figure 7) the proposed site is not within the designated “threatened ecosystem” area.</p>
	<p><b>Indigenous Forest</b></p>	<p>Not Applicable – According to the National Forests Act (84 of 1998) as amended by National Forest and Fire Laws Amendment Act 35 of 2005 , indigenous means indigenous to South Africa; and forest includes-</p> <p>(a) a natural forest, a woodland and a plantation;</p> <p>(b) the forest produce in it; and</p> <p>(c) the ecosystems which it makes up;</p> <p>This area is also spatially captured on the SANBI maps. According to Figure 7 in this report, the proposed site is not within an area designated as “Indigenous Forests”.</p>
<p><b>National Environmental Management : Integrated Coastal Zone Management Act (24 of 2008) as amended by National Environmental Management: Integrated Coastal Management Amendment Act, No. 36 of 2014 (NEM:ICZM)</b></p>	<p>Activity 3 of Listing Notice 3 is Applicable to the proposed project because it is proposing the erection of a steel lattice mast where a repeater using radio frequency will be installed. The proposed site has never been used for this purpose and the tower will be 31.2 metres tall erected from the ground. The project area is also in an urban area within 1 kilometre from terrestrial protected areas identified in terms of NEMPAA, therefore it is applicable in terms of part xiii (dd) of Listing Notice 3, Activity 3. (Figure 7).</p> <p>NEM:ICZM as published in the Government Gazette 39657 in 5 February 2016 Chapter 7: Protection of Coastal Environment , Part 3- Environmental Authorisations 63. Environmental Authorisation for coastal activities –</p> <p>Not applicable – the condition is not applicable because none of the conditions contained Clause 16 in Part 2 of Chapter 2 (Coastal zone) of the NEM:ICZM are applicable to the proposed development which is 237m away from the high water mark of the estuary which is considered to be within a coastal zone.</p> <p>Conditions contained Clause 16 in Part 2 of Chapter 2 (Coastal zone) of the NEM:ICZM state that;</p> <p>land falling within an area declared in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), as a sensitive coastal area within which activities identified in terms of section 21 (l) of that Act may not be undertaken without an authorisation;</p> <p>any part of the littoral active zone that is not coastal public property;</p> <p>any coastal protected area, or part of such area, which is not coastal public property;</p> <p>any land unit situated wholly or partially within one kilometre of the high-water mark which, when this Act came into force-</p>	

	<p>was zoned for agricultural or undetermined use; or</p> <p>was not zoned and was not part of a lawfully established township, urban area or other human settlement;</p> <p>any land unit not referred to in paragraph (d) that is situated wholly or partially within 100 metres of the high-water mark;</p> <p>any coastal wetland, lake, lagoon or dam which is situated wholly or partially within a land unit referred to in paragraph (d) (i) or (e);</p> <p>the part of a river which is situated within a land unit referred to in paragraph (d) (i) or (e);</p> <p>any part of the seashore which is not coastal public property, including all privately owned land below the high-water mark;</p> <p>any admiralty reserve which is not coastal public property; or</p> <p>any land adjacent to an area referred to in paragraphs (a) to (h) that would be inundated by a 1:100 year flood or storm event.</p> <p>An area forming part of the coastal protection zone, except an area referred to in subsection (1) (g) or (h), may be excised from the coastal protection zone in terms of section 26.</p>
<p><b>National Forests Act (84 of 1998) as amended by National Forest and Fire Laws Amendment Act 35 of 2005</b></p> <p><b>(NFA)</b></p>	<p>NFA as published in GNR 1251 on 6 December 2006</p> <p>No condition of this Act is applicable to the project as the proposed site location falls outside the Richards Bay Harbour's "Indigenous Forests" zone legally recognised in the South African NFA Legislation.</p>
<p><b>National Environmental Management: Biodiversity Act (10 of 2004)</b></p> <p><b>(NEM:BA)</b></p>	<p>Notice 1002 of 2011 - National List of Threatened Ecosystems That Are Threatened and In Need of Protection</p> <p>No condition of this Act is applicable to the project as the proposed site location falls outside the Richards Bay Harbour's "Threatened Ecosystems" zone legally recognised in the South African NEM:BA Legislation.</p>
<p><b>National Environmental Management: Protected Areas Act (57 of 2003)</b></p> <p><b>(NEMPAA)</b></p>	<p>NEMPAA as published in GNR 181 of 1 November 2004</p> <p>No condition of this Act is applicable to the project as the proposed site location falls outside the Richards Bay Game Reserve which is a legally recognised Protected Area in terms of the South African NEM:PAA Legislation.</p>
<p><b>South African Civil Aviation Regulations Part 139.01.33 [As amended by GNR 1026 of 30 October 2015.]</b></p>	<p>Obstacle limitation and marking outside aerodrome or heliport</p> <p>(1) All objects, whether temporary or permanent, which project above the horizontal surface within a specified radius of 8 kilometre as measured from the aerodrome reference point should be marked as specified in Document SA-CATS-AH.</p> <p>Not Applicable - The proposed project site is located approximately 11 kilometres from the airport. Therefore it does not fall within the specified radius.</p>

(2) Any other object which projects the horizontal surface beyond these radii or above the conical surface and which constitutes a potential hazard to aircraft shall be marked as specified in Document SA-CATS-AH.

Applicable - The mast will be 30 m above ground level and the airport is approximately 11 kilometres away from the proposed site. Due to bearing, it is perceived that the structure will possibly be slightly off the line of aircrafts' descent as it is a few degrees to the south-east from being directly south of the runway of Richards Bay Airport. The mast will be marked by an alternating red and white colour every 4.5m and will have two aviation LED flashing lights at the highest point of the mast which is according to the South African Civil Aviation General Technical Standards SA-CATS 139.01.30 (SA-CATS 139 amended by the Director of Civil Aviation by SACATS 2016/5 on 14 November 2016 with effect from 1 December 2016)

(3) Buildings or other objects which will constitute an obstruction or potential hazard to aircraft moving in the navigable air space in the vicinity of an aerodrome, or navigation aid, or which will adversely affect the performance of the radio navigation or instrument landing systems, shall not be erected or allowed to come into existence without the prior approval of the Commissioner for Civil Aviation.

Not Applicable -It is understood that by meeting the requirements stipulated regulation number (2) of part 139.01.33 of these regulations, the structure is not deemed to cause an obstruction or potential hazard to aircraft moving in the navigable air space in the vicinity of an aerodrome. However, confirmation of the applicability of this item will be obtained from the comments by the South African Civil Aviation Authority.

(4) No buildings or objects higher than 45 metres above the mean level of the landing area, or, in the case of a water aerodrome or heliport, the normal level of the water, shall without the approval of the Commissioner be erected within a distance of 8 kilometre measured from the nearest point on the boundary of an aerodrome or heliport.

Not Applicable - the proposed mast structure is 30m high. Therefore, it does not exceed the specified height of 45m above the mean level of the landing area.

(5) No building, structure or object which projects above a slope of 1 in 20 and which is within 3000 metres measured from the nearest point on the boundary of an aerodrome or heliport shall, without the prior approval of the Commissioner be erected or be allowed to come into existence.

Not Applicable - the proposed mast structure is not within the specified distance of 3000 metres from the nearest point on the boundary of an aerodrome.

(6) No building, structure or other object which will project above the approach, transitional or horizontal surfaces of an aerodrome or heliport shall, without the prior approval of the Commissioner, be erected or allowed to come into existence.

Not Applicable - the South African Civil Aviation Regulation specify that between 8000m and 15000m (8km and 15 km), there should be approximately 150m clearway above lowest approach end. The bearing proposed project is slightly south-

	<p>east off the Richards Bay Airport. However, the height of the proposed mast structure is 30m.</p> <p>(7) In cases where special circumstances do not permit the requirements of these Regulations to be met, the Commissioner may in public interest grant exemption from compliance with any or all the provisions of this Chapter in terms of Part 11 of the Regulations.</p> <p>Not Applicable - requirements of these regulations will be met by the proposed project.</p>
<p><b>uMhlathuze Local Municipality Spatial Development Framework</b></p> <p><b>2017/2018 - 2021/2022</b></p> <p><b>Final May 2017</b></p>	<p>The proposed project does not cause a diversion from the goals set in the uMhlathuze Local Municipality SDF. The project was also assessed against the City of uMhlathuze By-Laws, Environmental Legislation as well as Civil Aviation Legislation, and it can be confirmed that the project will not infringe legislation set in the By-Laws. In terms of spatial land use, the project will occur in an area already classified as an Industrial Area, outside of environmentally sensitive areas. Therefore, it is deemed to be in line with the uMhlathuze SDF.</p>
<p><b>uMhlathuze Local Municipality Integrated Development Plan</b></p> <p><b>Five year IDP</b></p> <p><b>2017/2018-2021/2022</b></p> <p><b>“Fourth Generation IDP”</b></p>	<p>The proposed project does not cause a diversion from the goals set in the IDP. Within the IDP, there are the SDF goals as well which the project does not divert from too.</p> <p>According to the IDP, ail infrastructure links the port with the hinterland to ensure the flow of resources. The National Infrastructure Plan makes provision for expansion and upgrades of transport networks.</p> <p>In the IDP, the port and its infrastructure are said to be the main economic attraction of the area, and the overarching priority for stimulating the local economy. It is also a Strategic Important Development Zone which the project is also aligned to as with its implementation rail traffic and movement planning will be efficient.</p>



# 3 SCOPE OF WORK AND METHODOLOGY

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## 3.1 OBJECTIVES OF THE BASIC ASSESSMENT PROCESS

The BA process has been undertaken in accordance with Appendix 1 of GNR 326 of the NEMA 2014 EIA Regulations (amended 2017), culminating in the compilation of the Draft BAR (this document). The objectives of the BA process are as follows:

- To determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
  - To identify the alternatives considered, including the activity, location and technology alternatives;
  - To describe the need and desirability of the proposed alternatives;
  - Through the undertaking of an impact and risk assessment process, inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the aspects to determine:
    - The nature, significance, consequence, extent duration, and probability of the impacts occurring to; and
    - The degree to which these impacts-
      - Can be reversed;
      - May cause irreplaceable loss of resources; and
      - Can be avoided, managed or mitigated.
  - Through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to:
    - Identify and motivate a preferred site, activity and technology alternative
    - Identify suitable measures to avoid, manage or mitigate identified impacts; and
    - Identify residual risks that need to be managed and monitored.
  - To determine the nature, significance, consequence, extent, duration and probability of the impacts occurring;
  - To determine the degree to which these impacts can be reversed, may cause irreplaceable loss of resources and can be avoided, managed or mitigated;
  - To identify and motivate a preferred site, activity and technology alternative;
  - To identify suitable measures to avoid, manage or mitigate identified impacts; and,
  - To identify residual risks which need to be managed and monitored.
- 

## 3.2 STAKEHOLDER ENGAGEMENT PROCESS

Stakeholder engagement is a fundamental part of the BA process and aims to include interested and affected parties (IAPs) in the process by notifying them of the proposed project. The stakeholder engagement process was initiated in November 2017. The process employed a number of techniques to establish contact and raise awareness amongst stakeholders with reference to the application. The objectives of the stakeholder engagement process are to:

- Ensure an open and transparent BA and consultation process;

- Enable stakeholders to register their interest and provide input into the BA process and share information; and,
- Ensure that all relevant issues are addressed as part of the BA process.

A Stakeholder Engagement Report (SER) is included in **Appendix B** of this report, detailing the project's compliance with Chapter 6 of the NEMA 2014 EIA Regulations (amended 2017).



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## 4.1.2 LAYOUT ALTERNATIVES

The layout (**Appendix D**) of the proposed structure consists of a square 6m x 6m concrete foundation base on which the mast structure will rest on. There is no scope for alternatives.

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## 4.1.3 TECHNOLOGY ALTERNATIVES

Alternative navigation technology systems were not considered as the repeater system is already in-place at RBCT, and the proposed project is for the improvement of the existing system.

Alternative mast types were considered including a concrete pole mast and a steel lattice structure. The relative advantages and disadvantages of each of the considered structure type are outlined in **Table 8**.

**Table 8: Relative Advantages and Disadvantages Mast Structure Types**

Design Consideration	Steel Lattice Structure	Concrete Pole
<b>Access</b>	Advantageous - climbing access to the top of the mast when required, and includes a platform for a person servicing the equipment to stand on  It provides great strength, low weight and wind resistance, and economy in the use of materials	Disadvantageous - requires the use of a crane to lift the worker to the repeater.
<b>Bird impacts</b>	Advantageous - The structure will provide a resting platform at different levels for the birds	Disadvantageous - No resting platform for the birds at different level. The only place available will be on the repeater device, and this might cause interference and damage to the device.
<b>Cost</b>	Advantageous - Steel lattice structure are cheaper to build and maintain.	Disadvantageous - Reinforced concrete towers are relatively expensive to build

Based on the above, RBCT has selected the steel lattice structure option due to it being of lower costs than the concrete structure, as well as practicality in climbing for the maintenance of the repeater device.

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## 4.1.4 NO-PROJECT ALTERNATIVE

The no-go alternative refers to the option of not undertaking the proposed activity. In the event that the proposed project does not go ahead, the status quo will remain. This would limit the future throughput capacity of the terminal as well as potentially increase the risk of failure and collision of the rail locomotives.

The no-project alternative would mean that the inherent efficiencies that ought to be obtained from installing the repeater mast as a collision prevention measure would not be realised. Therefore, the no project alternative is not considered a reasonable option.

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## 4.1.5 JUSTIFICATION FOR THE SELECTION OF THE PREFERRED ALTERNATIVE

Based on the information provided in the preceding sections, the technology selected for the project (the preferred option) and assessed in this BA Report is considered to be appropriate to the technical and economic objectives of the project, and having considered environmental aspects by virtue of consideration of Best Practicable Environmental Option (BPEO).

## 4.2 ENVIRONMENTAL IMPACT ASSESSMENT

### 4.2.1 RISK ASSESSMENT METHODOLOGY

The key objectives of the risk assessment methodology are to validate impacts identified through a matrix, identify any additional potential environmental issues and associated impacts likely to arise from the proposed project, and to propose a significance ranking. Issues / aspects will be reviewed and ranked against a series of significance criteria to identify and record interactions between activities and aspects, and resources and receptors to provide a detailed discussion of impacts.

The Hackings risk assessment methodology was used for the ranking of the identified environmental impacts (Hacking, 2001b). The significance of environmental aspects was determined and ranked by considering the criteria presented in **Table 9**

**Table 9 : Criteria Used to Determine the Significance of Environmental Aspects**

Significance Ranking	Negative Aspects	Positive Aspects
<b>H (High)</b>	Will always/often exceed legislation or standards. Has characteristics that could cause significant negative impacts.	Compliance with all legislation and standards. Has characteristics that could cause significant positive impacts.
<b>M (Moderate)</b>	Has characteristics that could cause negative impacts.	Has characteristics that could cause positive impacts.
<b>L (Low)</b>	Will never exceed legislation or standards. Unlikely to cause significant negative impacts.	Will always comply with all legislation and standards. Unlikely to cause significant positive impacts.

Where significant environmental aspects are present (“high” or “moderate”), significant environmental impacts may result. The significance of the impacts associated with the significant aspects was determined by considering the risk:

**Significance of Environmental Impact (Risk) = Probability x Consequence**

The consequence of impacts were described by considering the severity, spatial extent and duration of the impact.

### 4.2.2 SEVERITY OF IMPACTS

**Table 100** presents the ranking criteria used to determine the severity of impacts on the bio-physical and socio-economic environment. **Table 11** provides additional ranking criteria for determining the severity of negative impacts on the bio-physical environment.

**Table 10: Criteria for Ranking the Severity of Environmental Impacts**

Criteria	Negative			Positive		
	High-	Medium-	Low-	Low+	Medium+	High+
Qualitative	Substantial deterioration. Death, illness or injury.	Moderate deterioration. Discomfort.	Minor deterioration. Nuisance or minor irritation.	Minor improvement.	Moderate improvement.	Substantial improvement.
Quantitative	Measurable deterioration.		Change not measurable i.e. will remain within current range.		Measurable improvement.	
	Recommended level will often be violated.	Recommended level will occasionally be violated.	Recommended level will never be violated.		Will be within or better than recommended level.	

Community Response	Vigorous community action.	Widespread complaints.	Sporadic complaints.	No observed reaction.	Favourable publicity
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**Table 11: Criteria for Ranking the Severity of Negative Impacts on the Bio-physical Environment**

Ranking Criteria			
-	Low (L-)	Medium (M-)	High (H-)
Soils and land capability	Minor deterioration in land capability. Soil alteration resulting in a low negative impact on one of the other environments (e.g. ecology).	Partial loss of land capability. Soil alteration resulting in a moderate negative impact on one of the other environments (e.g. ecology).	Complete loss of land capability. Soil alteration resulting in a high negative impact on one of the other environments (e.g. ecology).
Ecology (Plant and animal life)	Disturbance of areas that are degraded, have little conservation value or are unimportant to humans as a resource. Minor change in species variety or prevalence.	Disturbance of areas that have some conservation value or are of some potential use to humans. Complete change in species variety or prevalence.	Disturbance of areas that are pristine, have conservation value or are an important resource to humans. Destruction of rare or endangered species.
Surface and Groundwater	Quality deterioration resulting in a low negative impact on one of the other environments (ecology, community health etc.)	Quality deterioration resulting in a moderate negative impact on one of the other environments (ecology, community health etc.).	Quality deterioration resulting in a high negative impact on one of the other environments (ecology, community health etc.).

#### 4.2.3 SPATIAL EXTENT AND DURATION OF IMPACTS

The duration and spatial scale of impacts can be ranked using the criteria in **Table 122**.

**Table 12 : Ranking the Duration and Spatial Scale of Impacts**

Ranking Criteria			
-	Low (L-)	Medium (M-)	High (H-)
Duration	Quickly reversible Less than the project life Short-term	Reversible over time Life of the project Medium-term	Permanent Beyond closure Long-term
Spatial Scale	Localised Within site boundary Site	Fairly widespread Beyond site boundary Local	Widespread Far beyond site boundary Regional/national

Where the severity of an impact varies with distance, the severity was determined at the point of compliance or the point at which sensitive receptors will be encountered. This position corresponds to the spatial extent of the impact.

#### 4.2.4 CONSEQUENCE OF IMPACTS

Having ranked the severity, duration and spatial extent, the overall consequence of impacts was determined using the following qualitative guidelines (**Table 133**):

**Table 13: Ranking the Consequence of an Impact**

Severity = Low (L)

SPATIAL SCALE		Low	Medium	High
		Localised - within site boundary	Beyond site boundary	Far beyond site boundary
DURATION	Long Term	High	Medium	Medium

	Medium Term	Medium	Low	Low	Medium
	Short Term	Low	Low	Low	Medium

Severity = Medium (M)

SPATIAL SCALE			Low Localised - within site boundary	Medium Beyond site boundary	High Far beyond site boundary
DURATION	Long Term	High	Medium	High	High
	Medium Term	Medium	Medium	Medium	High
	Short Term	Low	Low	Medium	Medium

Severity = High (H)

SPATIAL SCALE			Low Localised - within site boundary	Medium Beyond site boundary	High Far beyond site boundary
DURATION	Long Term	High	High	High	High
	Medium Term	Medium	Medium	Medium	High
	Short Term	Low	Medium	Medium	High

To determine overall significance (**Table 14**) one of the three “layers” based on the severity ranking was used. Thereafter the consequence ranking was determined by locating the intersection of the appropriate duration and spatial scale rankings.

#### 4.2.5 OVERALL SIGNIFICANCE OF IMPACTS

Combining the consequence of the impact and the probability of occurrence, as shown by **Table 14**, was used to provide the overall significance (risk) of impacts.

**Table 14: Ranking the Overall Significance of Impacts**

CONSEQUENCE (from Table 6-5)			Low	Medium	High
PROBABILITY	Definite Continuous	High	Medium	Medium	High
	Possible Frequent	Medium	Medium	Medium	High
	Unlikely Seldom	Low	Low	Low	Medium

The overall significance ranking of the negative environmental impacts provides the following guidelines for decision-making (**Table 15**):

**Table 15: Guidelines for decision-making**

Significance of Impact	Nature of Impact	Decision Guideline
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High	Unacceptable impacts.	Likely to be a fatal flaw.
Moderate	Noticeable impact.	These are unavoidable consequence, which will need to be accepted if the project is allowed to proceed.
Low	Minor impacts.	These impacts are not likely to affect the project decision.



# 5 PROJECT DESCRIPTION

## 5.1 SITE LOCALITY AND PROJECT LOCATION

RBCT is located in the uMhlathuze Municipality which is within the King Cetshwayo District Municipality (formerly known as the uThungulu District Municipality), along the east coast of KwaZulu-Natal, South Africa.

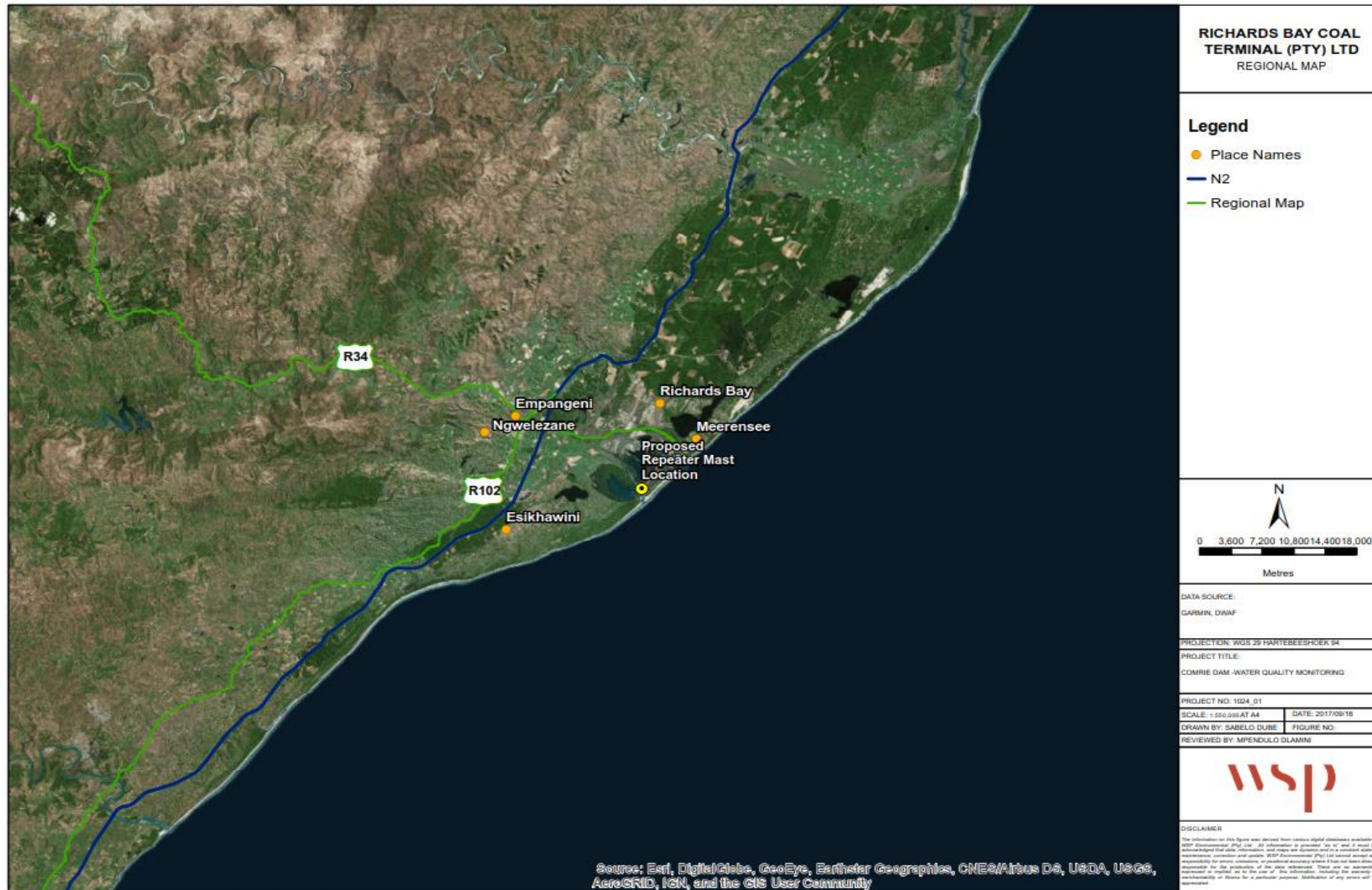
RBCT is located within the Richards Bay Harbour, east to the N2. The Alton industrial area is approximately 10km's to the north-west of RBCT as well as Richards Bay CBD. The location of RBCT is illustrated in **Figures 2 and 3**.

The proposed site for the repeater mast is approximately 0.5km southwest of the main RBCT entrance. It is located on slightly elevated ground in relation to the rail network alongside an access road off the Harbour Arterial Road.

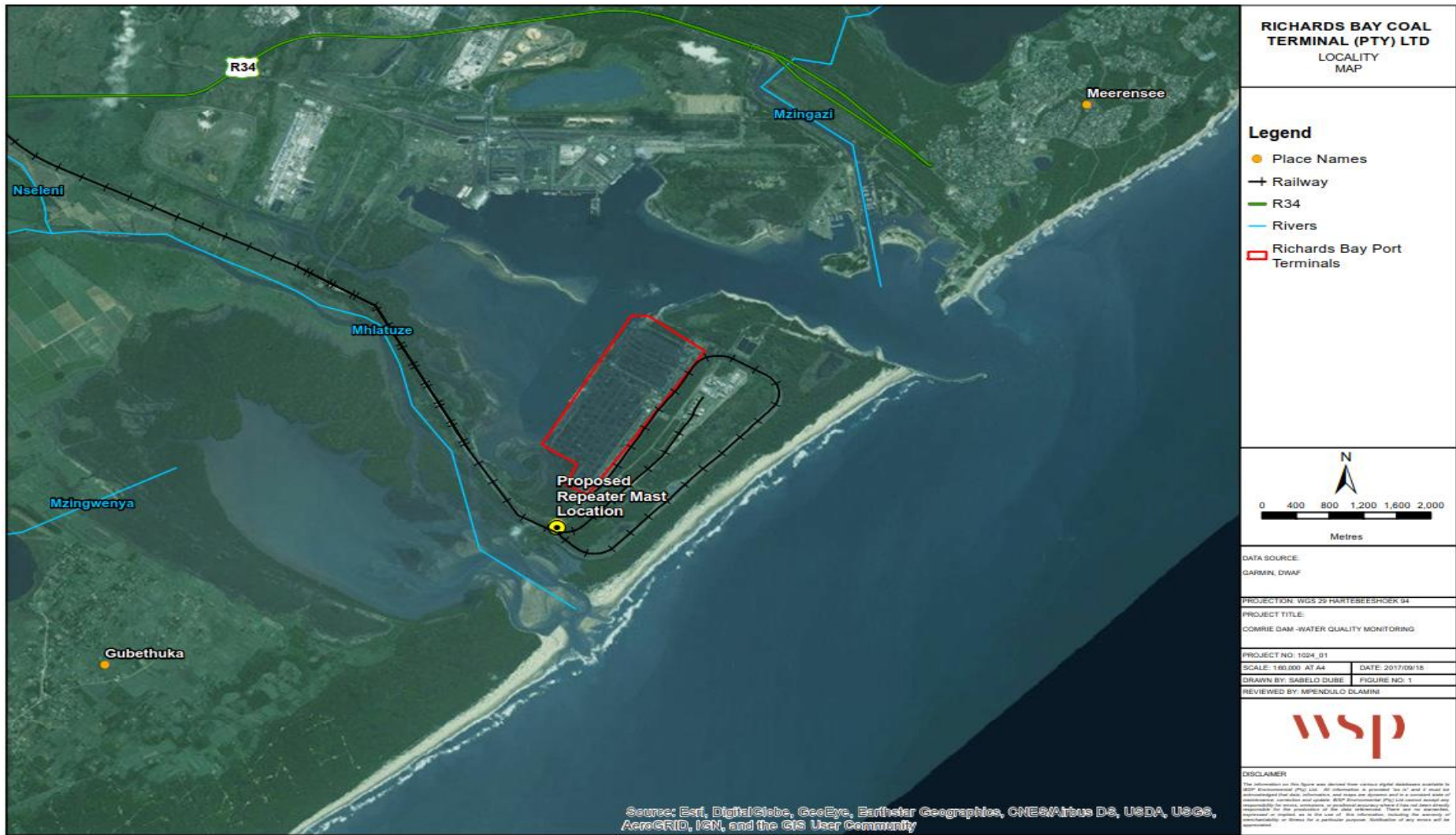
**Table 16** below provides the required cadastral information for the proposed project site, in terms of Annexure 1(3) of GN.R326.

**Table 16** Cadastral Information

site location details ss per GN.r326 annex 1 (3)	
<b>(i) 21 digit Surveyor General code of each cadastral land parcel:</b>	NOGV04210001147800003
<b>(ii) Physical address and farm name:</b>	South Dunes Richards Bay Harbour Richards Bay 3900
<b>(iii) Coordinates</b>	Latitude: 28° 50' 7.59" S Longitude: 32° 2' 47.01" E



**Figure 2: Regional map indicating the location of the project in KwaZulu-Natal (WSP, 2017)**



**Figure 3: Locality map indicating the location of the RBCT site (WSP, 2017)**

Richards Bay Coal Terminal Proposed Repeater Mast  
Project No. OUR REF. NO. 1024  
Richards Bay Coal Terminal (Pty) Ltd

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## 5.2 RBCT OPERATIONS

RBCT is equipped with state-of-the-art machinery. It is able to handle large ships and subsequently large volumes, and is reputable for operating efficiently and reliably to prevent demurrages. The terminal has a 2.2 kilometres long quay with 6 berths and four ship-loaders. Two of the largest ship loaders load at 10 000 and 12 000 tons per hour.

The central control tower uses shipment details from users or exporters to plan and schedule train movement to the terminal from any one of the more than 49 load out points in KwaZulu-Natal or Mpumalanga.

For effective rail traffic planning, RBCT has a cooperative relationship that exists between it and Transnet Freight Rail, which owns and operates the railway line linking the coal fields to the port. On arrival, RBCT utilises one of five tandem tippers to offload the wagons at a rate of 5,500 tons per hour. At this rate 100 wagons are offloaded in less than two hours.

Up to 14% of coal arriving at RBCT is bypassed directly onto waiting ships, while the rest is conveyed directly onto stockpiles. The stock yard has a capacity of 8.2 million tons with 36 grades of coal stacked in more than 92 stock piles.

RBCT's centralised control system is housed in a 42m high control tower manned by highly trained staff, which co-ordinate and control the movement of coal and stock yard machines. The control room activates the optimum conveyor belt route from the tippler to the designated stock pile area.

Coal is reclaimed from the stock piles at up to 6000 tons per hour into one of four silos and then onto the ship via one to four ship loaders servicing the six berths. Ship loaders 1 and 2 load up to 8 500 tons per hour; ship loader 3 loads up to 10 000 tons per hour while ship loader 4 can reach a load rate of 12 000 tons per hour. Once loaded the ship and its cargo is placed in the hands of Transnet National Ports Authority which coordinates the arrival and departure of over 700 ships per year.

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## 5.3 LOCOMOTIVE NAVIGATION SYSTEM

### 5.3.1 DESCRIPTION OF THE EXISTING SYSTEM

A repeater is a communication device which acts as a link between two operators to cover a large area. Some repeaters are used to amplify a signal so that it can travel greater distances from the transmitters. Repeaters provide suitable service to companies that need communication over long distance between its staff, equipment or operating devices.

A repeater device can use a two-way radio frequency communication system which receives frequency from two-way sources, and re-transmit it at another frequency in real-time. This mechanism allows repeaters to broadcast to a much wider reception spectrum since it is capable of both transmitting and receiving at the same time.

At RBCT the repeater system is already in use with a repeater device placed on a bridge. The height on which the existing repeater is placed on is not sufficient for the transmission of signal at greater distances. The existing system is connected to the central control tower from which communication exchange occurs.

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### 5.3.2 MOTIVATION FOR THE PROJECT (NEED AND DESIRABILITY)

The positioning of the existing repeater, on a bridge (low elevation area), and the high utilisation of locomotives at the RBCT premises has required RBCT to increase support for the communication between the locomotives and central control tower by installing an additional repeater sited on a mast (high elevation) for a clearer signal to allow a two-way exchange of information between the locomotives and central control tower. This will ensure that collisions are prevented on-site as the mast will amplify the signal to allow clearer information exchange and receipt in the central control tower.

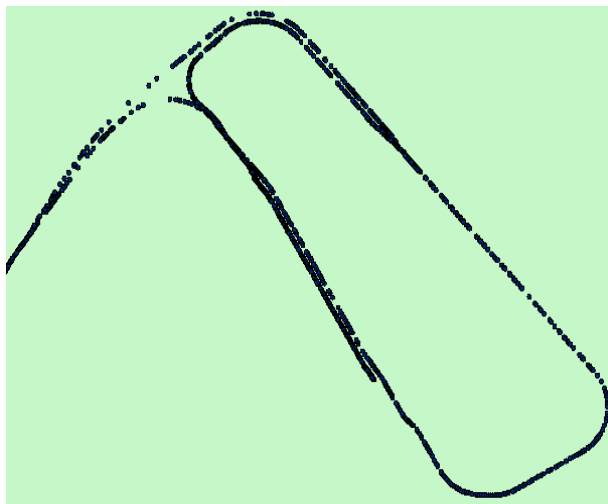
Installation of the additional repeater will indirectly enhance the operational and economic benefits of RBCT such as;

- Allowing operations to run smoothly without down-time that may be caused by a collision accident.

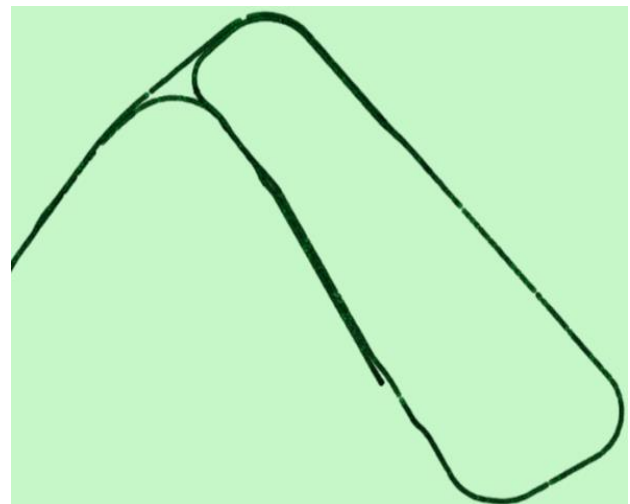
- Efficient rail traffic planning and control for quick turn-around time for locomotives that bring coal from the mines

Furthermore, the Richards Bay Port is the primary priority for stimulating the local, provincial and national economies. The expansion of the port and improvement of infrastructure forms a strategic part of the uMhlathuze IDP and SDF, as well as the uMhlathuze Local Economic Development Strategy. The port remains a strategic investment and development point on a national level. The ongoing operation of the rail network and facilities plays a key role in the development of export markets for breakbulk cargoes from Richards Bay, supporting the inland mining sector and contributing to national and provincial Gross Domestic Product (GDP).

The figures below show the radio surveys on the proposed site. The surveys were done with without a repeater (**Figure 4**) and with a temporary repeater (**Figure 5**). **Figure 4** shows that without a repeater there is a lot of packet loss in frequency data (signal) between the rail infrastructure and the Central Tower. When the temporary repeater is used, there is minimal packet loss of frequency data, and the rail network within RBCT is covered in its entirety.



**Figure 4: Radio survey of RBCT rail layout without a temporary repeater**



**Figure 5: Radio survey of RBCT rail layout with a temporary repeater**

### 5.3.3 PROPOSED IMPROVEMENT OF THE LOCOMOTIVE NAVIGATION SYSTEM

At RBCT, the repeater system is used as it can double the range of radio remote control of rail locomotives. The proposed repeater will be placed where the signal starts dropping out as discovered in the radio surveys. The repeater device will pick it up and retransmit it at full power. This device will be used as a device for the rail locomotives to communicate at greater distances with the central control providing it with its location as well as its proximity to other locomotives as a collision prevention measure.

## 5.4 TECHNICAL DESCRIPTION

The device that will be installed on the mast consists of a high-speed radio modem and radio transceiver within a metal enclosure. The device will be installed onto a 4.62m steel rod at the top of the 31.75m steel lattice mast structure. The lattice will be erected on a 6m x 6m concrete foundation (**Appendix C**). Power connection to the repeater mast will be from an underground cable connection which will source power from Transnet's power supply infrastructure within the Richards Bay Harbour.

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### 5.4.1 OPERATION DESCRIPTION

The frequency of the radio transceiver will be controlled by the RBCT staff at the Central Control Tower. The signal path and strength is monitored using a lock detect signal from the radio transceiver. The transmission power output (TPO) of the device is measured in “watts of radio frequency energy” and will be adjustable from 0.1 up to a maximum of 5 watts. The maximum value that this circuit can be set for is configured when the unit is tuned up. This prevents the user from setting the output power higher than the maximum allowed, as doing so will damage the equipment because it will not be operated as per the optimal desired specifications set by the manufacturer.

RBCT has been issued a Provisional Equipment Authorisation by the Independent Communications Authority of South Africa (ICASA). This authorisation allows RBCT to operate their receiver on a designated frequency. **Table 17** below shows the details of the frequency spectrum licence.

**Table 17: Frequency spectrum licence details for the repeater station**

Licence Criterion	Approved for Use
Card mobile service	General Class (Base/mobile)
Purpose of communication	Telemetry System
Height above sea level	53 metres
Frequency	440.4625 MHZ
Equipment	Radio Modem, Type TS 4000-5B of M/s Teledesign Systems Inc., USA
Number of units	1
Channel spacing	12.500 KHz
Emission	11K2FID (FCC Authorisation)
Maximum Power output	5.0 W
Receiver sensitivity	-103 dBm
Receiver noise figure	0 dBm
Type of antenna	3 dBi, omni-directional
Polarization	Vertical
Antenna Height	30 M
Antenna direction	Omni Directional
Antenna gain	3 dBi

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### 5.4.2 ELECTROMAGNETIC FIELDS - HEALTH AND SAFETY CONSIDERATIONS

Electric and magnetic fields (EMF) are invisible lines of force emitted by and surrounding any electrical device, such as power lines and electrical equipment. Electric fields are produced by voltage and increase in strength as the voltage increases. Magnetic fields result from the flow of electric current and increase in strength as the current increases. The radio waves emitted by transmitting antennas such as the proposed repeater equipment at the RBCT is form of electromagnetic energy. Radio wave strength is generally much greater from radio and television broadcast stations than from cellular phone communication base transceiver stations. Base stations (which is the general category that the RBCT mast falls within) range in TPO from a few watts to several hundred watts; it is therefore evident that the maximum TPO of the proposed RBCT mast is on the lower end of the TPO spectrum for base stations.

Although there is public and scientific concern over the potential health effects associated with exposure to EMF (not only high-voltage power lines and substations or radio frequency transmissions systems, but also from everyday household uses of electricity), there is no empirical data demonstrating adverse health effects from exposure to typical

EMF levels from power transmissions lines and equipment.<sup>1</sup> However, while the evidence of adverse health risks is weak, it is still sufficient to warrant limited concern.<sup>2</sup>

Whilst the TPO of the proposed RBCT mast is on the lower end of the spectrum for base stations, it is the recommendation of the EAP that the precautionary approach must be adopted. To this end steps must be taken by RBCT to ensure the management of EMF exposures are as follows:

- 1) Undertake EMF measurements pre-and post-installation of the mast to ensure that exposure limits for exposure limits for general public exposure to electric and magnetic fields published in the World Bank Group Environmental, Health and Safety (EHS) Guidelines for Telecommunications (2007) / sub-reference: the International Commission on Non-Ionizing Radiation Protection (ICNIRP) (Table 18) are not exceeded.

**Table 18: ICNIRP exposure guidelines for general public exposure to electric and magnetic fields**

Frequency	Electric Field (v/m)	Magnetic Field (µT)
<b>3 – 150 kHz</b>	87	6.25
<b>10 – 400 MHz</b>	28	0.092
<b>2 – 300 GHz</b>	61	0.20

- 2) Undertake measurements within the secure area to determine how occupational exposure to workers and maintenance staff compare with World Bank Group Environmental, Health and Safety (EHS) Guidelines for Telecommunications (2007) / sub-reference ICNIRP exposure limits for occupational exposure to electric and magnetic fields (Table 19).

**Table 19: ICNIRP exposure guidelines for occupational exposure to electric and magnetic fields**

Frequency	Electric Field (v/m)	Magnetic Field (µT)
<b>3 – 150 kHz</b>	610	30.7
<b>10 – 400 MHz</b>	61	0.2
<b>2 – 300 GHz</b>	137	0.45

- 3) Subject to the completion of the above surveys, develop an EMF safety programme including the following components (as required):
  - Training of workers in the identification of occupational EMF levels and hazards;
  - Establishment and identification of safety zones to differentiate between work areas with expected elevated EMF levels compared to those acceptable for public exposure, limiting access to properly trained workers.
  - Implementation of action plans to address potential or confirmed exposure levels that exceed reference occupational exposure levels developed by international organizations such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and any other relevant guideline values which may be set by the survey specialist.
  - Personal exposure monitoring equipment should be set warn of exposure levels that are below occupational exposure reference levels (e.g. 50 percent).
  - Action plans to address occupational exposure may include deactivation of transmission equipment during maintenance activities, limiting exposure time through work rotation, increasing the distance between the source and the worker, when feasible, use of shielding materials; or installation of ladders or other climbing devices inside the mast or towers, and behind the transmission beams.

## 5.5 PROJECT IMPLEMENTATION PHASES

The construction, operational and decommissioning phases of the project are described in the following sections:

<sup>1</sup> International Commission on Non-Ionizing Radiation Protection (ICNIRP) (2001); International Agency for Research on Cancer (2002); US National Institute of Health (2002); Advisory Group to the United Kingdom National Radiation Protection Board (2001), and US National Institute of Environmental Health Sciences (1999)

<sup>2</sup> US National Institute of Environmental Health Sciences (2002)

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### 5.5.1 CONSTRUCTION PHASE

The construction process is expected to take approximately 4 weeks to 8 weeks to complete and will include:

- Earthworks and excavations for the construction of the foundation and infrastructure;
- Laying of foundations concrete slab to support infrastructure;
- Erection of the lattice structure;
- Laying and connecting of the power cable that will run in the ground on the road reserve; and,
- Installation of the repeater equipment and antenna.

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### 5.5.2 OPERATIONAL PHASE

The operational phase will commence immediately upon the completion of the construction phase. The repeater system will be commissioned and set to an operational frequency spectrum that has been granted by ICASA. The frequency will be aligned with the central tower as well as the mobile locomotives to allow the communication exchange amongst the systems.

Servicing of the repeater device will occur as per manufacturers specifications or as and when required should an unforeseen event that will disrupt the operation of the system occur.

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### 5.5.3 DECOMMISSIONING PHASE

At the end of the repeaters lifespan RBCT may decommission the repeater, the mast and associated infrastructure if no further use is requested by the landowner (Transnet) or other neighbouring industries that utilise the same systems.

The decommissioning phase would aim to rehabilitate the site and surrounding area where the activity was taking place. The decommissioning of the repeater would entail the dismantling of the lattice structure and infrastructure. Equipment and other materials will be reused; recycled and non-usable materials will be disposed at a permitted landfill site. Below is a summary of key actions associated with future decommissioning:

- Dismantling of the lattice structure;
- Removal of concrete surfaces, foundations;
- Exposed excavated areas will be filled and levelled; and
- Top soiling and revegetation.

## 6 DESCRIPTION OF ENVIRONMENTAL ATTRIBUTES

The following section contains descriptions of the environmental attributes of the project area, which have the potential to be impacted on by the proposed project or have an influence on potential impacts.

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### 6.1 CLIMATE

The climate along the east coast and adjacent interior of South Africa is influenced predominantly by subtropical high pressure with temporary disruptions by low pressure cells or fronts. This high pressure zone is centred at approximately 30°S latitude and is associated with strong divergence at the surface and convergence in the upper atmosphere.

The Richards Bay region is characterised by a warm to hot tropical climate. In summer, the daily average temperatures range from 29°C, while in winter the average maximum is 23°C. Richards Bay normally receives higher levels of rainfall



during the summer months, with an annual average of approximately 970 mm. The prevailing winds in this region are the north-easterly and south-westerly (Preston-Whyte and Tyson, 2004).

The highest monthly average temperatures at the Richards Bay Airport Station occur during summer (24.6°C during January 2013, 25.0°C during February 2014 and 25.0°C during January 2015) and the lowest monthly average temperatures occur during winter (17.7°C during June and July 2013, 17.5°C during July 2014 and 18.6°C during June and July 2015). The total rainfall received was 1021 mm during 2013, 637.2 mm during 2014 and 611.6 mm during 2015.

At site level, there are no site specific considerations. Conditions experienced in Richards Bay and surrounding areas are also applicable to the site.

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## 6.2 AIR QUALITY

Air quality in Richards Bay is impacted due to a prevalence of heavy industries including two aluminium smelters, chemical fertilizer plants, several woodchip plants, a paper mill, coal handling industries (including the RBCT operations), and numerous other smaller scale industries.

The Richards Bay Clean Air Association (RBCAA) formed in 1997 in response to ongoing concerns over the levels of air pollution in Richards Bay. One of the organisation's aims is to ensure that local ambient concentrations of airborne pollutants remain below the National Ambient Air Quality Standards (NAAQS). The RBCAA runs an independent air quality monitoring network and retains a register of community complaints regarding air quality, and conducts investigations in response to these. The organisation does not possess any regulatory powers but maintains pressure on the Municipality to fulfil its enforcement role.

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## 6.3 ENVIRONMENTAL NOISE

Richards Bay is an industrially intensive area with a variety of industrial activities which include mining, manufacturing as well as transportation.

At site level, ambient noise levels are affected by the movement of long haul trucks, trains, loading vessels, tipplers as well as other equipment from surrounding industries. During the site visit the EAP noted that the abovementioned noise sources were not particularly audible and that the site noise levels could qualitatively be described as being fairly low (noise dominated by the wind blowing through the trees, birdcalls etc.).

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## 6.4 GEOLOGY AND SOILS

Richards Bay is located within a large coastal plain which varies in altitude from 0 metres above mean sea level (mamsl) (i.e. sea level) at the coast to approximately 200 mamsl 20 km inland from the coast at Empangeni. The coastline is characterized by a steep sandstone ridge and a strip of 1 to 4 dune ridges up to approximately 1 km wide which run parallel to the coast, and reach a height of approximately 100 m. The entrances to the Richards Bay Harbour and Richards Bay Estuary constitute the only breaks within the coastal dune ridge.

The Department of Mineral and Energy, Geological Map Sheet 27432 (St Lucia) 1:250,000 scale (Steyn, 1985) specifies the area to be typically underlain by Quaternary yellowish redistributed sand which likely overlies siltstone and sandstone of the St Lucia Formation. The geographical topography is mainly plains and relatively flat. The soils are closely related to the geology and landforms.

At a regional level, Richards Bay lies atop the unconsolidated Cenozoic Era sediments of the Maputaland Lithological Group that stretches along the Maputaland coastal plain and into Mozambique. The sedimentary sequence of the Maputaland Group, overlying the Cretaceous mudstone, forms the main stratigraphic features of the primary coastal aquifer.

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## 6.5 HYDROLOGY

At a regional level, Richards Bay forms part of the Mhlathuze catchment. The site is located in the Usutu to Mhlathuze Water Management Area.

The Mhlathuze River is the largest river system in Richards Bay and is characterised by a large flood plain that is exposed to intense exploitation and impacts upstream. The Mhlathuze River and its catchment have been substantially modified over the last couple of decades. The river's significance in terms of environmental service supply has been rated as high. The project-site is located approximately 250m from the uMhlathuze River mouth.

In terms of groundwater, the aquifer underlying the Richards Bay Region was formed by the layers of unconsolidated marine, aeolian and alluvial deposits. It is a shallow aquifer and water levels are strongly influenced by topography. The aquifer forms extensive lakes and wetlands where the water table is at or immediately (<1m) below the surface.

The Port of Richards Bay falls within quaternary catchment W12F and is associated with the marine waters of the Indian Ocean. Surface water runoff generated on site is anticipated to eventually flow towards the port. The natural flow of the ground water is towards the estuaries and Indian Ocean. Groundwater in the region has strong linkages to all the other water resources that function as drainage boundaries.

RBCT is located at the lower reaches of the W12F quaternary catchment (Usuthu to uMhlathuze Catchment), on the north-west facing harbour quay. The natural geology is considered to represent a major aquifer, with high vulnerability and high susceptibility to contamination. The mean annual recharge is between 50mm and 75mm, and annual base flow contributions range from 10mm to 25mm.

The natural groundwater flow is towards the estuaries and ultimately, the Indian Ocean. Groundwater levels mimic the topography of the region. The Rivers, lakes and drainage features are considered part of the groundwater system with the Indian Ocean and the estuaries considered groundwater flow boundaries.

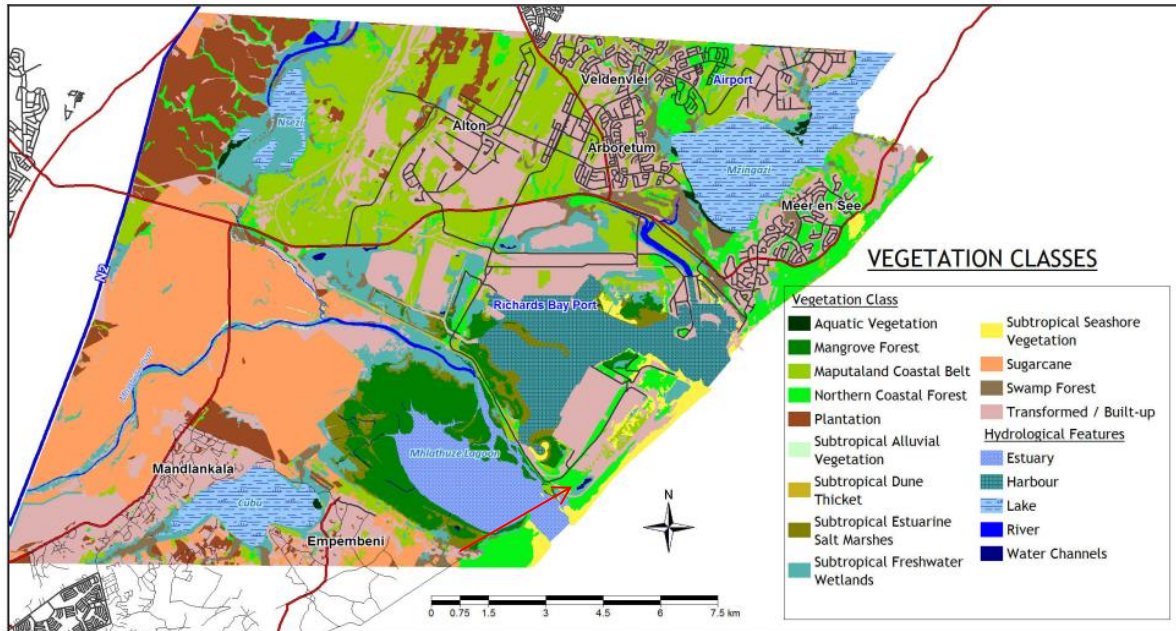
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## 6.6 ECOLOGY

### FLORA

At a regional level, Richards Bay falls within the 'Maputaland-Pondoland-Albany Biodiversity Hotspot' which is recognised as the "second richest floristic region in Africa" containing approximately 80% of South Africa's remaining forests, rich bird life and many other significant flora and fauna species. Umhlathuze supports a total of 174 Red Data Species which has been reported as one of the highest in country (uMhlathuze IDP, 2014). A large proportion of this hotspot is being transformed and degraded by human activities, resulting in many vegetation types being vulnerable to further disturbances.

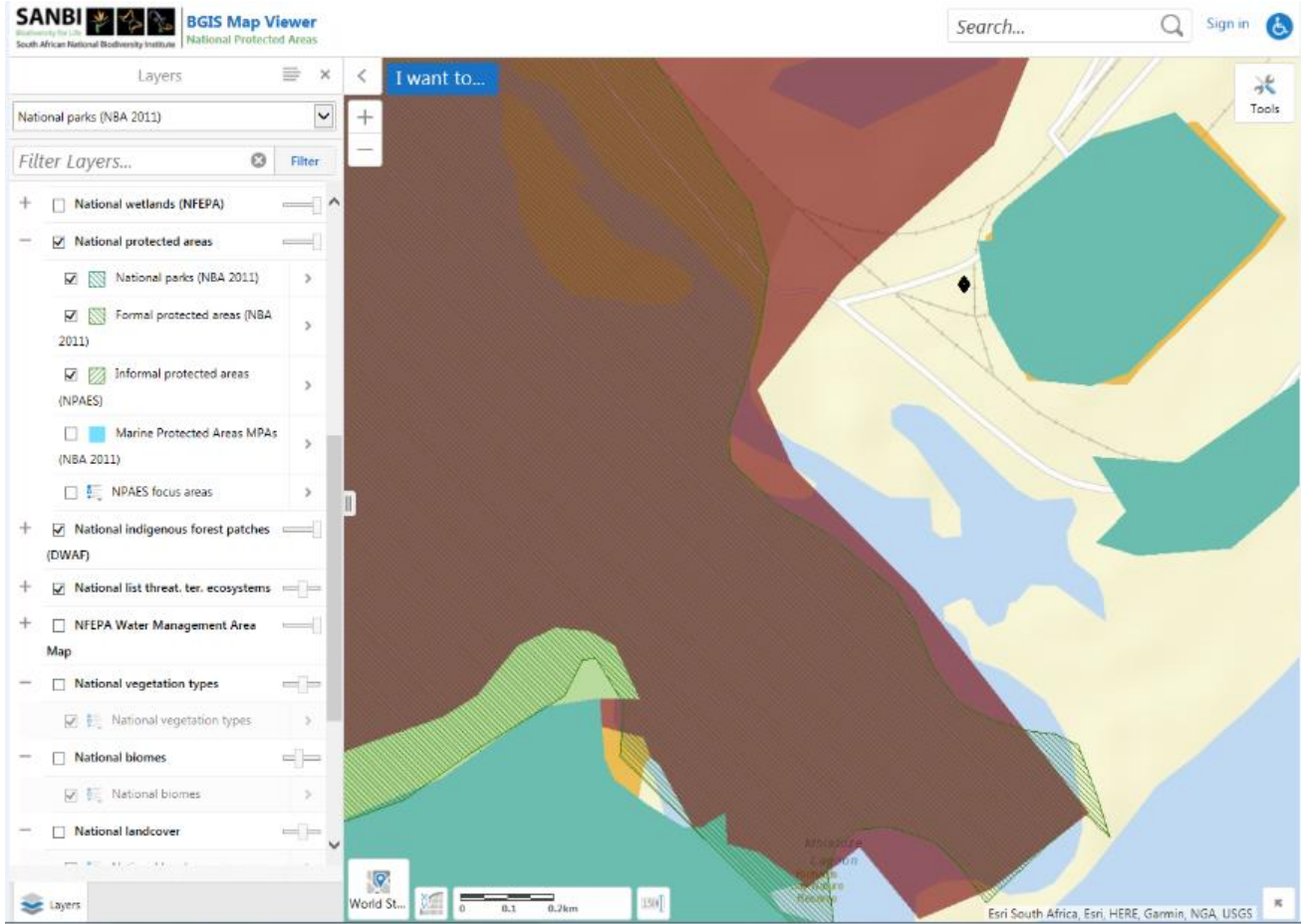
The portion of land on which the facility is proposed to be developed overlays vegetation classes categorised as Northern Coastal Belt as defined by SANBI and based on the Mucina and Rutherford (See **Figure 6**).



**Figure 6: Vegetation Classes (Richards Bay EMF, 2009)**

The Northern Coastal Forest vegetation unit (known as FOz7) includes the terrestrial vegetation of the coastal plain, originally densely forested, but including dry grassland, palmveld, hygrophilous grassland and thicket. Now a large portion has been transformed for industrial purposes and had rail tracks going through it. According to the SANBI BGIS, proposed site (black dot) is close proximity to a threatened ecosystem (red shading), protected areas (green-hatched area), indigenous vegetation (green solid shading) as well as the uMhlathuze River mouth (estuary) and its associated riverine vegetation (**Figure 7**). This area has one endemic species, 15 biogeographically important species and 49 important species. No species was categorised as being endangered (Mucina & Rutherford 2006).

Within the development site (approximately 70m<sup>2</sup>) no species were noted by the EAP as being species are protected in terms of the National Forestry Act (84 of 1998) (GN R908, 2014) (NFA). Tree species that were observed by the EAP include Acacia, dune False Currant (*Allophylus natalensis*) (**Figure 8**) and the Veld fig (*Ficus burtt-davyi*) (**Figure 9**). These will be removed during the construction phase to make way for the lattice mast and its foundation. None of these species are protected in terms of the National Forestry Act (84 of 1998) (GN R908, 2014) (NFA). According to the South African National Biodiversity Institute, both of the dominant flora species mentioned above are classified as Least Concern species.



**Figure 7: Map of Protected Areas and Indigenous Forests (SANBI, 2017)**



**Figure 8: The dune False Currant (*Allophylus natalensis*) tree on-site**



**Figure 9: The Veld fig (*Ficus burtt-davyi*) tree on-site**

## FAUNA

The site is likely to form host to a number of insects, small mammals and birds occurring within the general area. The site is located adjacent to a bird hive and due to concern about the potential obstruction hazard that could be caused by the mast, a professional opinion on the potential impact of the project on avifauna was commissioned (**Appendix D**).

According to the avifauna study, 12 terrestrial woodland species identified, as well as cormorants, pelicans, terns, gulls, herons, egrets and a wide range of intertidal 'wader' species. The avifauna identified onsite was dominated by aquatic species, and the bulk of movements undertaken by these birds within Richards Bay Harbour and the Mhlathuze Estuary. The flight of the avifauna is associated with the water bodies present. Typically, the birds fly in small groups or flocks and if moving from areas in the harbour to the estuary.

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## 6.7 THE SOCIO-ECONOMIC ENVIRONMENT

UMhlatuze Local Municipality (KZN282) has a population of 334, 459 people and a population density of 422 persons per km<sup>2</sup>. The service levels within uMhlatuze are reasonably good with the municipality providing 53.5% of households with waste removal, 50.3% with piped water inside dwellings and 93.5% with electricity for lighting (93.5%). Thirty-eight percent of the population has a form of primary education and 18.8% has completed secondary education (Statistics South Africa, 2012).

Thirty-eight percent of the municipality's population is located within formal urban areas, 27% in rural nodes and 35% in the remaining rural areas of the municipality. The highest population densities are observed in rural settlement areas such as Nseleni and Esikhawini. The lowest population densities are found in the non-tribal rural areas of the municipality. Although population growth has been decreasing in the District Municipal Area, the opposite seems to be true for the uMhlatuze Local Municipal Area. The unemployment level in the area is high at 36.28% whilst that of the province lies at 47.4%. Manufacturing is the dominant economic sector in the area. Most industries are capital intensive with low employment opportunities.

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## 6.8 HERITAGE AND CULTURAL ASPECTS

During the Cenozoic sea-level began to fall from the high levels experienced during the Cretaceous period. A series of large coast-parallel dune complexes developed along most of the KwaZulu-Natal coastline. In Durban these now form the Berea and Bluff Ridges. In most areas deep weathering of old dunes has produced a dark red coloured sand called the Berea Red Sand. In more recent times, fluctuations in sea-level have continued to shape the KwaZulu-Natal coastline. Recent coastal dunes contain economic concentrations of minerals such as ilmenite, rutile and zircon, which are mined near Richards Bay.

The proposed site is next to a road, with surrounding areas being semi-transformed with hard surfaces and a railway lines that are used by locomotives moving in and out of the harbour. The semi-transformed nature of the environment implies that the occurrence of heritage resources of any significance is highly unlikely overall, and none have been reported, observed or found to date within the proposed area.

It is nevertheless possible that a resource may be encountered during excavation activities, and therefore a “chance find” protocol should be included within the EMPr for the project.

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## 6.9 LAND USES AND ZONING

The urban areas of the uMhlathuze Municipality are dominated by residential and industrial land uses. The proposed site is zoned as “Harbour/Industrial”. The area has a well-developed road and stormwater network, and there are tracts of undeveloped areas which comprise indigenous shrubs, wetland and riparian habitats.

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## 6.10 AESTHETICS

The mast will be located within an existing industrialised area which already includes structures with a similar height. The aesthetic impacts have been identified to be insignificant. **Figure 10 to Figure 13** below shows the other tall structure in close proximity to the proposed site for the repeater mast.



**Figure 10: An existing mast next to Bidvest tanks**



**Figure 11: Existing Tall structures within RBCT**



**Figure 12: Existing high rising lights within RBCT**



**Figure 13: Existing high rise structures within the vicinity of the site**

# 7 ENVIRONMENTAL IMPACT ASSESSMENT

This section describes the environmental aspects as well as impacts associated with the project, as well as mitigation measures. The impacts are assessed pre- and post-mitigation using the methodology described in **Section 4.2** of this report.



ASPECT CATEGORY	ASPECT SUMMARY	IMPACT DESCRIPTION	PHASE	RECEPTOR	IMPACT ASSESSMENT (PRE-MITIGATION)					MITIGATION MEASURES	IMPACT ASSESSMENT POST-MITIGATION				
					Cons.	Prob.	Conf.	Nature	Signif.		Cons.	Prob.	Conf.	Nature	Signif.
Air Quality	Deterioration of ambient air quality in the immediate construction area.	The use of vehicles and equipment in the work area has the potential to generate dust emissions. During excavation of the repeater mast's foundation, dust may also be emitted but it will not be enough to cause a significant nuisance. With the exception of very windy conditions these emissions are likely to be confined to the immediate area.	Construction	Air quality and social	Low	Medium	Medium	Negative	Medium	<ul style="list-style-type: none"> <li>– Implement measures specified in the EMP, including <i>inter alia</i>:</li> <li>– Avoid dust-generating activities (i.e. grading and moving of soil) during windy periods.</li> <li>– Cover and / or maintain appropriate freeboard on trucks hauling any loose material that could produce dust when travelling.</li> <li>– Re-vegetate or hard surface disturbed areas as soon as possible</li> <li>– Dust suppression methods to active areas and stockpiles</li> </ul>	Low	Low	High	Negative	Low
Fauna and flora: Land Transformation	Disturbance of flora and fauna on the proposed site.	<p><b>FAUNA</b></p> <p>The presence of construction vehicles, personnel and construction activities may disturb fauna present in the area. Due to the presence of a bird hive close to the proposed site, an avifauna specialist has compiled a professional opinion on the impact of the proposed repeater mast on the avifauna. According to the specialist report the project may provide a risk for avian collision as it will be approximately 10m higher than surrounding structures. However, the specialist further stated that the dominant species is one with very good eyesight and fast-flying capabilities making the likelihood of collision low. A collision risk was identified for the Trumpeter Hornbill, but it is considered to be low because the observed flying pattern is mainly away from the proposed site towards Lake Mzingazi.</p> <p><b>FLORA</b></p> <p>Approximately 70 square metres of vegetation will be cleared to allow for construction activities to take place. This will lead to the removal of plant species thus reducing their presence in the area.</p>	Construction	Ecology	Low	Medium	Medium	Negative	Medium	<ul style="list-style-type: none"> <li>– Take precautionary measures prior to site clearance to ensure that there are no animal refuges/sanctuaries.</li> <li>– Limit the area to be cleared to the specified area of 70m<sup>2</sup></li> <li>– Upon completion of construction activities, the area outside of the 6m x 6m mast foundation area must be rehabilitated and vegetation be replanted.</li> </ul>	Low	Low	High	Negative	Low

ASPECT CATEGORY	ASPECT SUMMARY	IMPACT DESCRIPTION	PHASE	RECEPTOR	IMPACT ASSESSMENT (PRE-MITIGATION)					MITIGATION MEASURES	IMPACT ASSESSMENT POST-MITIGATION				
					Cons.	Prob.	Conf.	Nature	Signif.		Cons.	Prob.	Conf.	Nature	Signif.
Noise	Public disturbance due to construction activities	<p>The presence of construction vehicles, personnel and activities may disturb fauna present in the area. Excessive noise from construction equipment and machinery may also cause a disturbance to the surrounding users. However, construction activities will not be continuous in nature, with only some equipment active at a given time.</p> <p>On an indicative basis, the following noise sources have been identified during the construction phase: earth moving equipment; Tractor-Loader-Backhoe (TLB), front end loaders, etc.); material handling equipment (concrete mixers, cranes, etc.); power units (generators, compressors, etc.).</p> <p>The noise emissions from the proposed project are not anticipated to be of public nuisance as the proposed site is already in heavily industrialised area which also contributes to the noise profile of the area. At site level, ambient noise levels are affected by the movement of long haul trucks, trains, loading vessels, tippers as well as other equipment from surrounding industries. The abovementioned noise sources are not particularly audible and that the site noise levels could qualitatively be described as being fairly low (noise dominated by the wind blowing through the trees, birdcalls etc.).</p>	construction	Human health and Ecology	Low	Low	High	Negative	Low	<ul style="list-style-type: none"> <li>Switch off construction equipment and machinery when not in use.</li> <li>Utilise machinery with lower noise emissions.</li> <li>Avoid undertaking construction activities between 18h00 and 07h00.</li> </ul>	Low	Low	High	Negative	Low
Soil and Stormwater and Groundwater Contamination	Contamination of soil and groundwater	During the construction phase, the improper storage and handling of hazardous substances (such as fuel and oil) can result in accidental or negligent small scale spills. This has the potential to lead to localised soil and groundwater contamination.	Construction	Soil, surface and groundwater	Low	Medium	Medium	Negative	Medium	<ul style="list-style-type: none"> <li>Ensure that hazardous materials are stored in a bunded area or on a drip tray that can contain 110% volume of the containers contents stored on it.</li> <li>Align the site's stormwater management system to that of the existing road reserve.</li> <li>Ensure that proper signage is installed at the hazardous material storage area</li> </ul>	Low	Low	High	Negative	Low
Soils and Stability	Localised soil erosion	Construction activities, including excavation and stockpiling of materials, have the potential to increase localised soil erosion. This may lead to the displacement of soils and inability for the soil to support ecosystems and fulfil its ecological functions.	Construction	Soil	Low	Medium	Medium	Negative	Medium	<ul style="list-style-type: none"> <li>Undertake work according the engineers specifications.</li> <li>Implement erosion protection measures if necessary.</li> </ul>	Low	Low	High	Negative	Low
Stormwater	Increased volume and velocity of storm water	The creation of the hardstanding foundation area for the proposed repeater mast will increase the volume of stormwater runoff generated at the site. This may lead to localised soil erosion.	Operational	Soil, surface and groundwater	Medium	Medium	Medium	Negative	Medium	<ul style="list-style-type: none"> <li>Stormwater management infrastructure should be integrated to the existing road reserve stormwater infrastructure. If this is not possible then it must be designed to prevent erosion by way of channelling and the inclusion of stormwater flow dissipaters at the discharge.</li> </ul>	Low	Low	High	Negative	Low

ASPECT CATEGORY	ASPECT SUMMARY	IMPACT DESCRIPTION	PHASE	RECEPTOR	IMPACT ASSESSMENT (PRE-MITIGATION)					MITIGATION MEASURES	IMPACT ASSESSMENT POST-MITIGATION				
					Cons.	Prob.	Conf.	Nature	Signif.		Cons.	Prob.	Conf.	Nature	Signif.
Solid Waste Generation	Solid waste generation	The construction period is anticipated to generate general and hazardous waste streams including paper and plastic packaging, can, oils and greases. The generate waste may cause public litter and may cause pose a threat to the fauna of the area.	Construction	Soil, surface and groundwater	Low	Medium	Medium	Negative	Medium	<ul style="list-style-type: none"> <li>Provide adequate waste receptacles in terms of design and quantity.</li> <li>Implement the waste management hierarchy measures in order to achieve efficient waste management</li> </ul>	Low	Low	High	Negative	Low
Electromagnetic Fields (EMF)	General Public and Occupational Exposure to EMF	With reference to Section 5.4.2, there is no empirical data demonstrating adverse health effects from exposure to typical EMF levels from power transmissions lines and equipment. However, while the evidence of adverse health risks is weak, it is still sufficient to warrant limited concern.	Operational	Human Health	Low	Low	Low	Negative	Low	<ul style="list-style-type: none"> <li>Undertake EMF measurements pre-and post-installation of the mast to ensure that exposure limits for exposure limits for general public exposure to electric and magnetic fields published in the World Bank Group Environmental, Health and Safety (EHS) Guidelines for Telecommunications (2007) / sub-reference: the International Commission on Non-ionizing Radiation Protection (ICNIRP) (Table 18) are not exceeded.</li> <li>Undertake measurements within the secure area to determine how occupational exposure to workers and maintenance staff compare with World Bank Group Environmental, Health and Safety (EHS) Guidelines for Telecommunications (2007) / sub-reference ICNIRP exposure limits for occupational exposure to electric and magnetic fields (Table 19).</li> <li>Subject to the completion of the above surveys, develop an EMF safety programme including the following components (as required): <ul style="list-style-type: none"> <li>Training of workers in the identification of occupational EMF levels and hazards;</li> <li>Establishment and identification of safety zones to differentiate between work areas with expected elevated EMF levels compared to those acceptable for public exposure, limiting access to properly trained workers.</li> <li>Implementation of action plans to address potential or confirmed exposure levels that exceed reference occupational exposure levels developed by international organizations such as the International Commission on Non-ionizing Radiation Protection (ICNIRP) and any other relevant guideline values which may be set by the survey specialist.</li> <li>Personal exposure monitoring equipment should be set warn of exposure levels that are below occupational exposure reference levels (e.g. 50 percent).</li> <li>Action plans to address occupational exposure may include deactivation of transmission equipment during maintenance activities, limiting exposure time through work rotation, increasing the distance between the source and the worker, when feasible, use of shielding materials; or installation of ladders or other climbing devices inside the mast or towers, and behind the transmission beams.</li> </ul> </li> </ul>	Low	Low	High	Negative	Low

ASPECT CATEGORY	ASPECT SUMMARY	IMPACT DESCRIPTION	PHASE	RECEPTOR	IMPACT ASSESSMENT (PRE-MITIGATION)					MITIGATION MEASURES	IMPACT ASSESSMENT POST-MITIGATION				
					Cons.	Prob.	Conf.	Nature	Signif.		Cons.	Prob.	Conf.	Nature	Signif.
Road Traffic	Increase in road traffic	Increased vehicular traffic is likely to be associated only with the delivery of equipment and supplies. This may disrupt the regular traffic flow of within the Richard Bay Harbour premises and on public roads leading to the Richards Bay Harbour.	Construction	Community safety/ Road users	Medium	Medium	Medium	Negative	Medium	<ul style="list-style-type: none"> <li>Notify the Richards Bay Port authority of any road disturbance/inconveniences if road blockages are anticipated</li> <li>Utilise flagmen on the road adjacent to the site</li> </ul>	Low	Low	High	Negative	Low
Aesthetics	Changing the of the landscape by adding a tall structure	<p>The repeater mast will be erected in an area where there is vegetation. It will be located within an existing industrialised area which already includes structures with a similar height.</p> <p>The ground foundation area that will be utilised by the structure is 6m x 6m. Aesthetics of this immediate area will be changed.</p>	Operational	Ecological and social	Low	Medium	Medium	Negative	Low	<ul style="list-style-type: none"> <li>Where possible, outside of the 6m x 6m foundation area, vegetation has to be replanted and be allowed to grow.</li> </ul>	Low	Medium	High	Negative	Low
Socio-Economics	Employment creation	The construction phase of the project may indirectly contribute to employment opportunities by contractors appointed to undertake the work.	Construction	Social	Medium	Low	Low	Positive	Low	<ul style="list-style-type: none"> <li>If possible, a portion of the skilled and/or unskilled labour should be sourced from the Richards bay area.</li> </ul>	Medium	Low	Low	Positive	Low

# 8 CONCLUSION AND RECOMMENDATIONS

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## 8.1 SUMMARY OF IMPACT ASSESSMENT

The EIA process has found that both construction and operational phases of the project will result in direct and indirect impacts (negative and positive) on the biophysical and socio-economic environment.

Both the initial and residual (post-mitigation) significance of impacts have been presented in **Section 7** so as to obtain an indication of the effectiveness of the mitigation measures. A summary of the environmental impact assessment is provided below:

### Air Quality

The use of vehicles and equipment in the work area has the potential to generate dust emissions. During excavation of the repeater mast's foundation, dust may also be emitted but it will not be enough to cause a significant nuisance. With the exception of very windy conditions these emissions are likely to be confined to the immediate area. Considering the proposed mitigation measures the residual impact is of **LOW SIGNIFICANCE (-)**.

### Fauna and Flora

The presence of construction vehicles, personnel and construction activities may disturb fauna present in the area. Due to the presence of a bird hive close to the proposed site, an avifauna specialist has compiled a professional opinion on the impact of the proposed repeater mast on the avifauna. According to the specialist report the project may provide a risk for avian collision as it will be approximately 10m higher than surrounding structures. However, the specialist further stated that the dominant species is one with very good eyesight and fast-flying capabilities, making the likelihood of collision low. A collision risk was identified for the Trumpeter Hornbill, but it is considered to be low because the observed flying pattern is mainly away from the proposed site towards Lake Mzingazi.

Approximately 70 square metres of vegetation will be cleared to allow for construction activities to take place. This will lead to the removal of plant species thus reducing their presence in the area. Considering the proposed mitigation measures the residual impact is of **LOW SIGNIFICANCE (-)**.

### Soil and Groundwater

During the construction phase, the improper storage and handling of hazardous substances (such as fuel and oil) can result in accidental or negligent small scale spills. This has the potential to lead to localised soil and groundwater contamination. Considering the relatively small quantities of hazardous substances involved and the proposed mitigation measures the residual impact is of **LOW SIGNIFICANCE (-)**.

### Soil Stability

Construction activities, including excavation and stockpiling of materials, have the potential to increase localised soil erosion. This may lead to the displacement of soils and inability for the soil to support ecosystems and fulfil its ecological functions. Considering the small scale of the project area and the proposed mitigation measures the residual impact is of **LOW SIGNIFICANCE (-)**.

### Stormwater

During the construction phase, the creation of the hardstanding foundation area for the proposed repeater mast will increase the volume of stormwater runoff generated at the site. This may lead to localised soil erosion. Provided that the stormwater management infrastructure is either integrated into the existing road reserve stormwater infrastructure; or, designed appropriately, the residual impact is of **LOW SIGNIFICANCE (-)**.

### Electromagnetic Fields

With reference to Section 5.4.2, there is no empirical data demonstrating adverse health effects from exposure to typical EMF levels from power transmissions lines and equipment. However, while the evidence of adverse health risks is weak, it is still sufficient to warrant limited concern. Considering the uncertainty of health issues caused by EMF levels from

the project, the mitigation measures proposed will maximise human health protection efforts. Therefore, residual impact is of **LOW SIGNIFICANCE (-)**.

### **Road Traffic**

Increased vehicular traffic is likely to be associated only with the delivery of equipment and supplies. This may disrupt the regular traffic flow of within the Richard Bay Harbour premises and on public roads leading to the Richards Bay Harbour. Provided that the Port Authority is notified of any disruptions and that flagmen are used, the residual impact is of **LOW SIGNIFICANCE (-)**.

### **Aesthetics**

The repeater mast will be erected in an area where there is vegetation. It will be located within an existing industrialised area which already includes structures with a similar height. The ground foundation area that will be utilised by the structure is 6m x 6m. Aesthetics of this immediate area will be changed. The residual impact is of the aesthetic impacts is of **LOW SIGNIFICANCE (-)**.

### **Socio-economics**

The construction phase of the project may indirectly contribute to employment opportunities by contractors appointed to undertake the work. Due to the relatively low intensity of the construction activities, the indirect nature of the employment opportunities, and the low confidence, the residual impact is of **LOW SIGNIFICANCE (+)**.

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## **8.2 IMPACT STATEMENT AND RECOMMENDATIONS**

The overall objective of the EIA is to provide sufficient information to enable informed decision-making by the authorities. This was undertaken through consideration of the proposed project components, identification of the aspects and sources of potential impacts and subsequent provision of mitigation measures.

It is the opinion of WSP that the information contained in this document is sufficient for the EDTEA to make an informed decision for the Environmental Authorisation being applied for in respect of this project.

Mitigation measures have been developed where applicable for the above aspects and are presented within the EMPr. It is imperative that all impact mitigation recommendations contained in the EMPr, of which the environmental impact assessment took cognisance, are legally enforced.







# A CURRICULUM VITAE





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STAKEHOLDER  
ENGAGEMENT  
REPORT





C

SITE LAYOUT





**D**

**SPECIALIST REPORT:  
AVIFAUNA**







# **E** ENVIRONMENTAL MANAGEMENT PLAN

